Assessment, Identification, and Management of Mild Cognitive Impairment (MCI) and Dementias in Your Clinical Practice

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Northshore Neurosciences

Overview

- MCI
  - Definitions, Subtypes, Screening/ assessment
- Dementias
  - Definitions, Subtypes, Screening / Assessment
- Management of Cognitive issues for the general clinician
  - Referrals/ treatments
  - Family
  - Legal / Driving

What is
normal aging?

By Bruce Horovitz
Senior Health News

For 91-year-old Joseph Brown, the greatest sign of aging was his inability the other day to remember he had to have his pants unzipped to pull them on.

For 91-year-old Caroline Mayer, it was deciding at age 80 to put away her skis, after two hip replacements.

And for 56-year-old Dr. Thomas Gill, a geriatric professor at Yale University, it's accepting that his daily 3½-mile jog now takes him upward of 50 minutes — never mind that he long prided himself on running the distance in well under that time.

Is there such a thing as normal aging?

The physiological changes that occur with aging are not abrupt, said Gill.

The changes happen across a continuum as the reserve capacity in almost every organ system declines, he said. "Think of it, crudely, as a fuel tank in a car," said Gill. "As you age, that reserve of fuel is diminished."

Drawing on their decades of practice along with the latest medical data, Gill and three geriatric experts agreed to help identify examples of what are often — but not always — considered to be signposts of normal aging for folks who practice good health habits and get recommended preventive care.

50s **Stamina declines**

Gill recognizes that he hit his peak as a runner in his 30s and that his muscle mass peaked somewhere in his 40s. Since then, he said, his cardiovascular function and endurance have slowly decreased. He's the first to admit that his loss of stamina has accelerated in his 50s. He is reminded, for example, each time he runs up a flight of stairs.

In your 50s, it starts to take a bit longer to bounce back from illnesses or illnesses, said Stephen Kritchevsky, 57, an epidemiologist and co-director of the J. Paul Sticht Center for Healthy Aging and Alzheimer's Prevention at Wake Forest University. While our muscles have strong regenerative capacity, many of our organs and tissues can only declare, he said.

60s **Susceptibility increases**

There's a good reason why even healthy folks age 65 and up are strongly encouraged to get vaccines for flu, pneumonia and shingles: Humans' susceptibility and negative response to these diseases increase with age. Those vaccines are critical as we get older, Gill said, since these illnesses can be fatal — even for healthy seniors.

Hearing loss is common, said Kritchevsky, especially for men.

Reaching age 60 can be emotionally trying for some, as it was for Dr. David Kaufman, 61, of UCLA, who recalls his "was a very tough birthday for me. Reflection and self-doubt is pretty common in your 60s," he said. "You realize that you are too old to be hired for certain jobs."

The odds of suffering some form of dementia double every five years beginning at age 65, said Gill.

70s **Chronic conditions faster**

Many folks in their mid-70s function at levels did in their mid-60s just a generation ago, said Gill. But this is the age when chronic conditions — like hypertension or diabetes or even dementia — often take hold. "A small percentage of people will elder their 70s without a chronic condition or without having some experiences with serious illness," he said.

People in their 70s are losing bone and muscle mass, which makes them more susceptible to sustaining a serious injury or fracture in the event of a fall, Gill added. Inequities in the pivotal decade for physical functioning, said Kritchevsky. Toward the end of their 70s, many people start to lose height, strength and weight. Some people report problems with mobility, he said, as they develop issues in their hips, knees or feet.

At the same time, roughly half of men age 75 and older experience some sort of hearing impairment, compared with about 40 percent of women, said Kritchevsky, referring to a 2016 report from the Centers for Disease Control and Prevention.

Another conundrum common to the 70s: People tend to take an increasing number of medications used for "preventive" reasons. But these medications are likely to have side effects on their own or in combination, not all of which are predictable, said Gill. "Our kidneys and liver may not tolerate the insults as well as we did earlier in life," he said.

80s **Fear of falling grows**

Fear of falling — and the emotional and physical blowback from a fall — are part of turning 80.

If you live in your 80s and living at home, the chance that you might fall in a given year grows more likely, said Kritchevsky. About 40 percent of folks 65 and up who are living at home will fall at least once each year, and about 1 in 10 of them will be hospitalized, he said, citing a study from the UCLA School of Medicine and Geriatric Research Education and Clinical Center. The study notes that the risk increases with age, making people in their 80s even more vulnerable.

By age 80, folks are more likely to spend time in the hospital — often due to elective procedures such as hip or knee replacements, said Gill, basing this on his own observation as a geriatric specialist. Because of diminished reserve capacities, it's also tougher to recover from surgery or illnesses in your 80s, he said.

90s & up **Relying on others**

By age 90, people have roughly a 1-in-3 chance of exhibiting signs of dementia caused by Alzheimer's disease, said Gill, citing a Rush Institute for Healthy Aging study. The best strategy to fight dementia isn't essential activity but at least 150 minutes per week of "moderate" physical activity, he said. It can be as simple as brisk walking.

At the same time, most older people — even into their 90s and beyond — seem to be more satisfied with their lives than are younger people, said Kritchevsky.

At 91, Joseph Brown understands this — despite the many challenges he faces daily. "I just feel I've blessed to be living longer than the average Joe," he said.

Brown lives with his 81-year-old companion, Marva Goode, in the same single-family home that Brown has owned for 50 years in Hamden, Conn. The toughest thing about being in his 90s, he said, is the demand (sought) often required to do even the simplest things. "It's frustrating at times to find that you can't do the things you used to do very easily," he said. "Then, you start to question your mind and wonder if it's operating the way it should."

Brown, a former maintenance worker who recently hurried up, said he gets tired — and out of breath — very quickly from physical activity.

He spends ample time working on puzzle books, reading and sitting on the deck, enjoying the trees and flowers. Brown said no one can really tell anyone else what "normal" aging is.

Nor does he claim to know himself. "We all age differently," he said.

Erie Times-News
June 3, 2018

Dementia and Mild Cognitive Impairment

- Globally, the number of people diagnosed with dementia is increasing every year at an alarming rate. There are currently over 46.8 million people living with dementia and this is estimated to rise to 131.5 million people by 2050. (Tozer, 7/5/17)
- Dementia
  - A loss of cognitive processes from a prior level of cognitive processes, as compared to age-mates, and due to a pathophysiological process.
- MCI
  - An intermediate step between normal cognition and dementia
  - A measurable deficit in at least one domain, absent dementia and showing no appreciable deficit in ADL functioning

Mild Cognitive Impairment

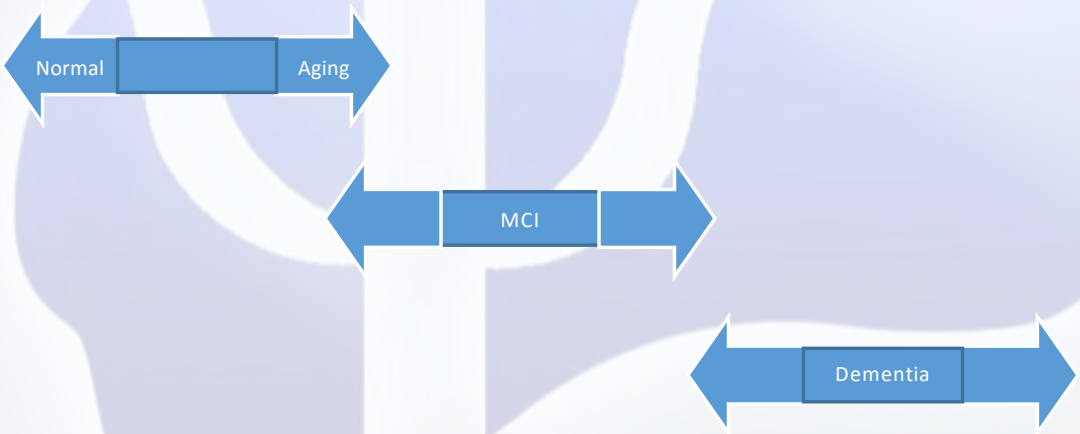
- **Diagnostic concepts to describe cognitive change in aging**
- Benign senescent forgetfulness (BSF) – Kral, 1962
- Mild Cognitive Impairment (MCI) – Reisberg et al., 1982
- Age-Associated Memory Impairment (AAMI) – Cook et al., 1986
- Late-life forgetfulness (LLF) – Blackford & La Rue, 1989
- Age-Associated Cognitive Decline (AACD) – Levy et al., 1994
- Cognitive Impairment No Dementia (CIND) – Graham et al., 1997
- Amnestic Mild Cognitive Impairment (aMCI) – Petersen et al., 1999
- Age Related Cognitive Decline (ARCD) – DSM IV
- Mild Cognitive Disorder (MCD) – ICD-10
- Prodromal AD – Dubois et al., 2010
- MCI due to AD – NIA-AA criteria; Albert et al., 2011
- Mild Neurocognitive Disorder (MNCD) – DSM-5

Mild Cognitive Impairment

- **Typical clinical/cognitive problems in MCI**
- Changes in memory (more dependent on reminders, notes, diaries; misplacing things; etc.)
- More difficulties with multi tasking
- Changes in attention and executive functions (more easily distracted; less flexible; new difficulties with problem solving; less skilled or interested in planning ahead (e.g. traveling)
- Changes in language (word-finding difficulties)
- Changes in visuospatial function
- Often slower or more stressed (routines change)
- Limited insight can occur (what is their theory?)
- Often increase in conflict with significant others (new safety concerns from family members; change of roles in family)
- ADLs can be impacted (new difficulties with driving in challenging situations; subtle new problems with managing finances; cog. decline in skills; e.g. bridge, golf etc.)

- Holsinger et al., 2007; Lautenschlager & Kurz, 2010; McCarten et al., 2013 Management of SMC and MCI

Mild Cognitive Impairment



Mild Cognitive Impairment

- Subtypes
  - Amnestic
    - Most Common?* ? Precursor to SDAT
  - Non- Amnestic
    - Impairment in a single or multiple non-memory domain
    - Language, executive functioning, spatial skills
    - Depending: could progress to Fronto-Temporal Dementia (FTD), Vascular Dementia (VD), Primary Progressive Aphasia (PPA), Diffuse Lewy Body Dementia (DLB).

*Mark has issues with this!

Heterogeneity of MCI & possible multiple etiologies

Clinical Presentations

MCI

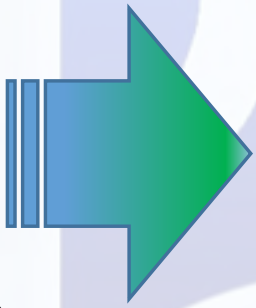
Amnestic

MCI

Multiple Domains

MCI Single

Non-memory Domain



Possible Etiologies

Degenerative

Vascular

Metabolic

Traumatic

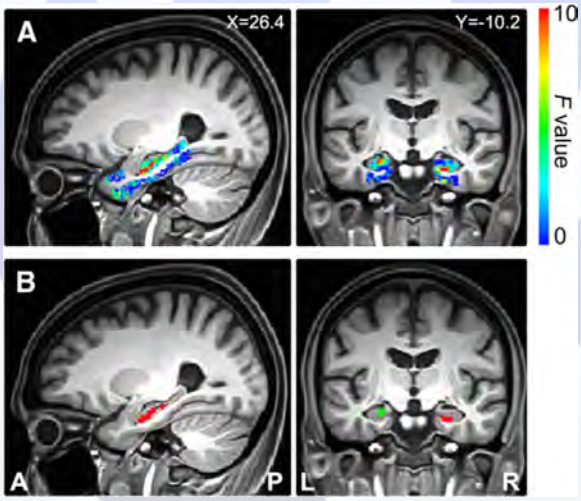
Psychiatric

Others?

Mild Cognitive Impairment

- Rate of progression from MCI to dementia: 2 to 20%
- Risk factors:
  - age, race, lower education
  - HTN, DM, ? sleep disorders
  - Apolipiprotein E- epsilon 4 genotype
  - h/o CVA and h/o cardiac disease have more chance of amnestic than non-amnestic MCI
- Pathology: predominantly, MCI autopsy samples show AD pathology ie, tau distribution in medial temporal lobes

The aging process

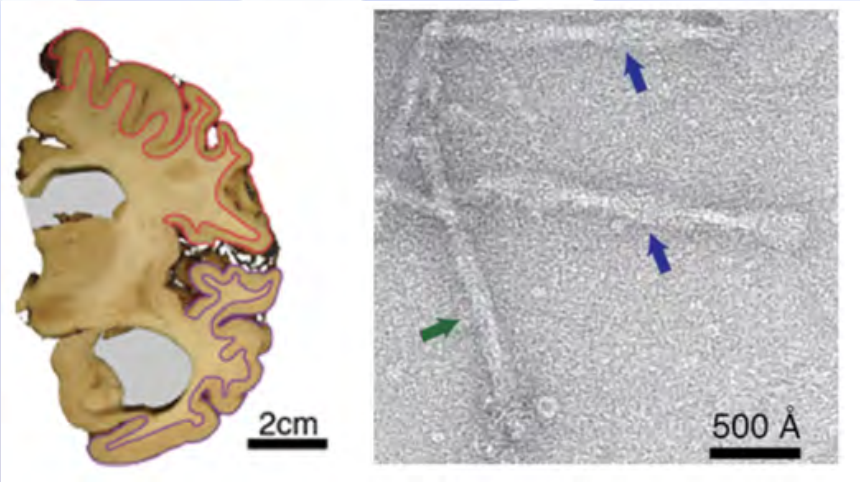


Brain Amyloid-β Burden Is Associated with Disruption of Intrinsic Functional Connectivity within the Medial Temporal Lobe in Cognitively Normal Elderly

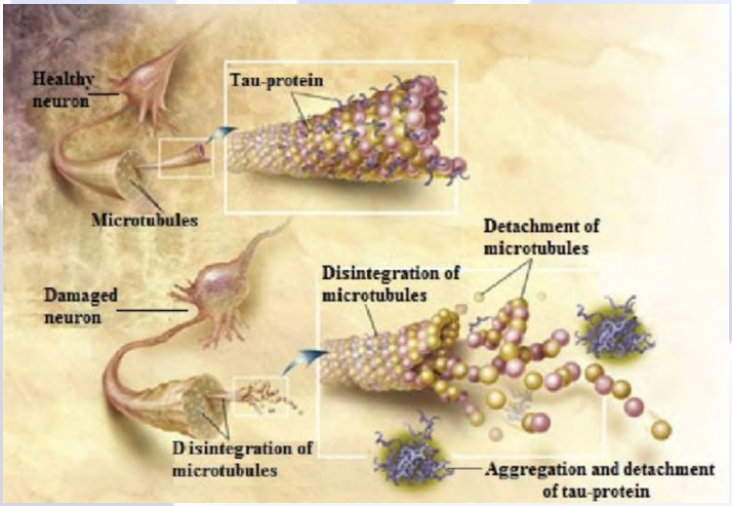
Zhuang Song, Philip S. Insel, Shannon Buckley, Seghel Yohannes, Adam Mezher, Alix Simonson, Sarah Wilkins, Duygu Tosun, Susanne Mueller, Joel H. Kramer, Bruce L. Millerand Michael W. Weiner

Journal of Neuroscience 18 February 2015, 35 (7) 3240-3247; DOI: https://doi.org/10.1523/JNEUROSCI.2092-14.2015

Alzheimer's Process: Destruction of Cortex



Alzheimer's Process: Destruction of Cortex



Agreement of new perspectives

- Currently, biomarkers, esp. CSF markers can be used as research tool
- POSSIBLY: identifying persons @ risk of progressing to AD
- Findings from small # of studies from selected clinical samples cannot be generalized (as yet) to the general population

Genetics

- MCI is a genetically complex condition and there are currently no major genes known to be involved.
- Each of the disorders that my possibly underlay MCI (Eg: AD, vascular pathology, depression) may partially have some genetic components.
- Consequently, different genes could underlie etiologies, and genetic, environmental, health history, drug/etoh abuse likely creates even a more complex and heterogeneous picture.

Mild Cognitive Impairment

- Cognitive:
- Neuropsychiatric: depression, irritability, anxiety, aggression, apathy, dysphoria
- Olfactory changes
- Gait slowing: motoric cognitive risk

Mild Cognitive Impairment

- If patient or a close contact voices concern about memory or impaired cognition, assess for MCI and not assume the concerns are related to normal aging
- MCI can reflect a pathological disease that may progress to dementia.
- Assessment can rule out reversible cause, help pt and family to understand cause of cognitive decline and prognosis

Recommendations for General Criteria: MCI

- **General Criteria for MCI**

  Not normal, not demented (Does not meet criteria (DSM IV, ICD 10) for a dementia syndrome

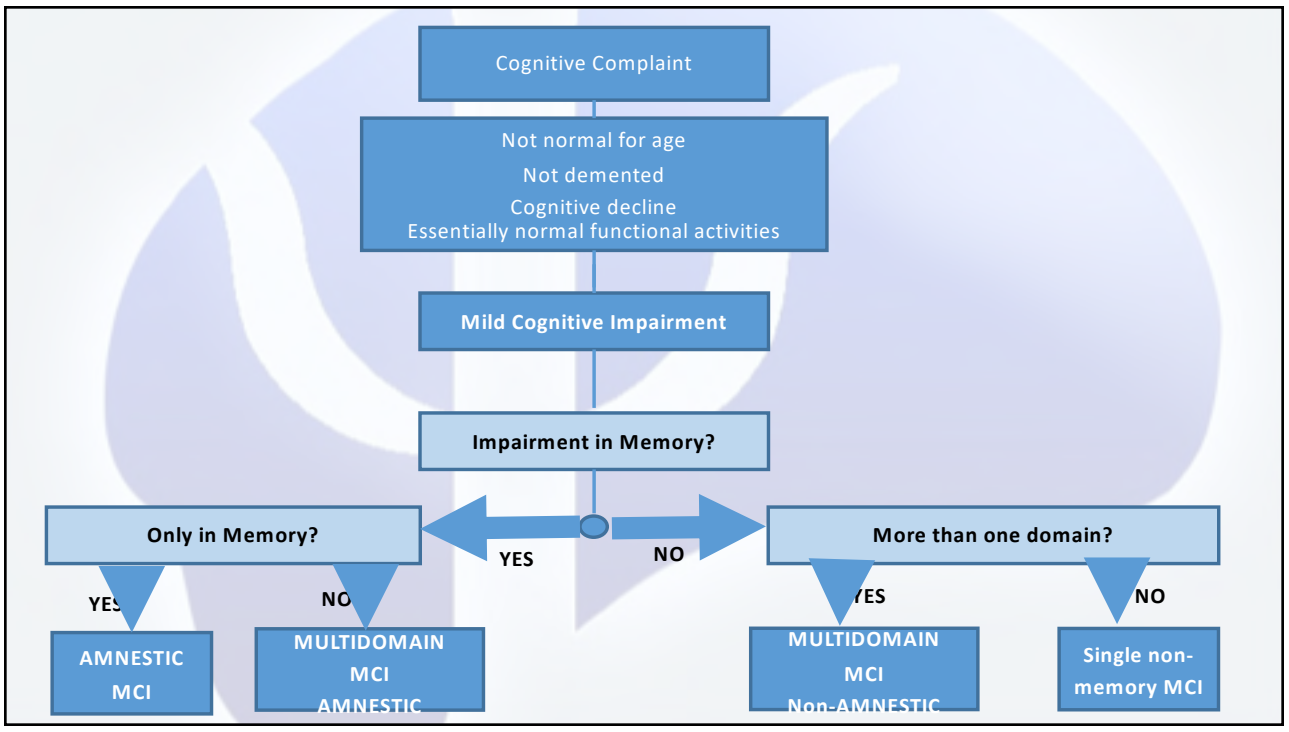
  Cognitive Decline

  - Self and/or informant report - and impairment on objective cognitive tests

  And/or:

  -Evidence of decline over time on objective cognitive tests

  Preserved basic activities of daily living (ADLs) / or minimal impairment in complex instrumental functions.



Mild cognitive Impairment

- should not rely on historical report alone of subjective memory concerns when assessing for MCI
- Subjective cognitive complaints alone can result in both over- and under-diagnosis of MCI and thus are insufficient
- To ***screen*** for MCI - should use a brief, validated cognitive assessment instrument in addition to eliciting patient and informant history regarding cognitive concerns

Mild Cognitive Impairment

- Should use validated assessment tools
- For pts who test positive, perform a more formal clinical assessment
- Various instruments have acceptable diagnostic accuracy but none is superior to another.
- Because brief cognitive assessment tests are more sensitive than specific, patients who test positive for MCI should then have further assessment

Mild Cognitive Impairment

- Assess for the presence of functional impairment related to cognition before diagnosing of dementia.
- Cooking, water running, misplacing food/ incidentals, need to replace lost items, financial management, driving/ directional issues, medication errors, gets lost in stores
- Diagnosing dementia prematurely can lead to negative consequences for patients and families.
- Assess for evidence of functional impairment limiting independence in daily activities
- A requirement for all dementia diagnoses, to help distinguish between MCI and dementia

Mild Cognitive Impairment

- Clinicians who themselves lack the necessary experience should refer these patients to a specialist with experience in cognition
- Remember the possible reversible causes
- Perform a medical evaluation for MCI risk factors that are potentially modifiable
- Some cases of MCI are reversible, including medication adverse events, sleep apnea, depression, anxiety disorders, NPH, Infection, Vitamin B12, D deficiencies, various metabolic disorders (chronic UTIs, chronic infections)

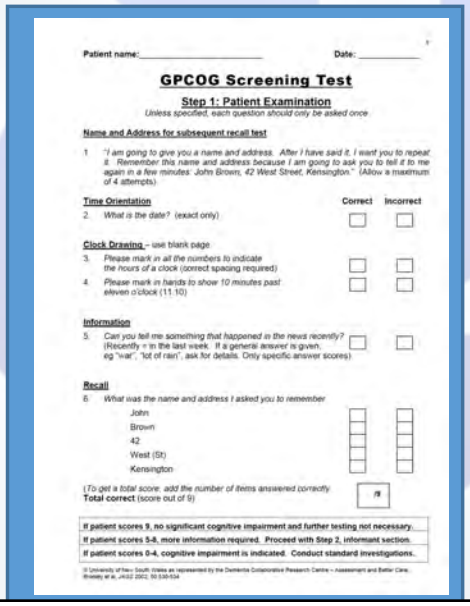
Mild Cognitive Impairment

- Clinicians should perform serial assessments over time to monitor for changes in cognitive status
- MCI can improve, remain stable, or progress over time, which can change diagnosis and approach

Assessments for MCI (incomplete lists)

- Cognitive Assessment Toolkit (Alzheimer's Association)
  - General Practitioner Assessment of Cognition (GPCOG)
  - Memory Impairment Screen (MIS)
  - Mini-Cog
  - Informant Questionnaire
- Mini Mental Status Exam (MMSE)
- Montreal Cognitive Assessment (MoCA)
  - Now APP for iPhone
- Saint Louis University Mental Status (SLUMS).
- Cognistat
  - Cognistat Assessment System: Web based
  - Cognistat Paper
  - Cognistat Active Form-

Cognitive Assessment Toolkit (Medicare Wellness Visit)



Patient name:_____ Date: _____

GPCOG Screening Test

Step 1: Patient Examination

Unless specified, each question should only be asked once.

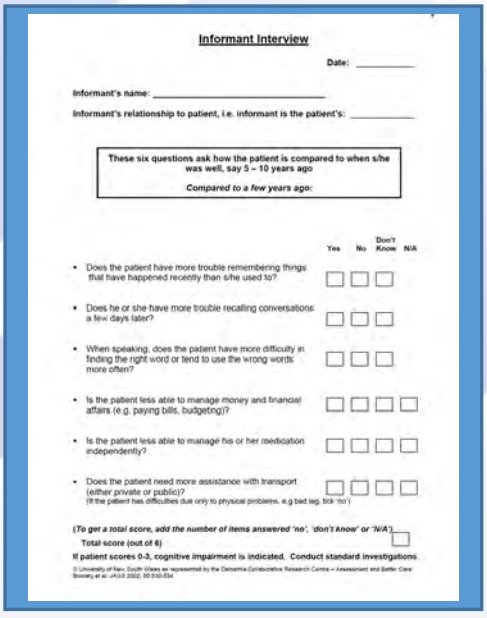
Name and Address for subsequent recall test

1. *"I am going to give you a name and address. After I have said it, I want you to repeat it. Remember this name and address because I am going to ask you to tell it to me again in a few minutes' time: John Brown, 42 West Street, Kensington."* (Allow a maximum of 4 attempts).

	Correct	Incorrect
Time Orientation		
2. *What is the date?* (exact only)	☐	☐
Clock Drawing – use blank page		
3. *Please mark in all the numbers to indicate the hours of a clock* (correct spacing required)	☐	☐
4. *Please mark in hands to show 10 minutes past eleven o'clock* (11.10)	☐	☐
Information		
5. *Can you tell me something that happened in the news recently?* (Recently = in the last week. If a general answer is given, eg "war", "lot of rain", ask for details. Only specific answer scores)	☐	☐
Recall		
6. *What was the name and address I asked you to remember*		
John	☐	☐
Brown	☐	☐
42	☐	☐
West (St)	☐	☐
Kensington	☐	☐

(To get a total score: add the number of items answered correctly.
Total correct (score out of 9) /9

If patient scores 9, no significant cognitive impairment and further testing not necessary.
If patient scores 5-8, more information required. Proceed with Step 2, informant section.
If patient scores 0-4, cognitive impairment is indicated. Conduct standard investigations.



Informant Interview

Date: _____

Informant's name: _____

Informant's relationship to patient, i.e. informant is the patient's: _____

These six questions ask how the patient is compared to when s/he was well, say 5 – 10 years ago

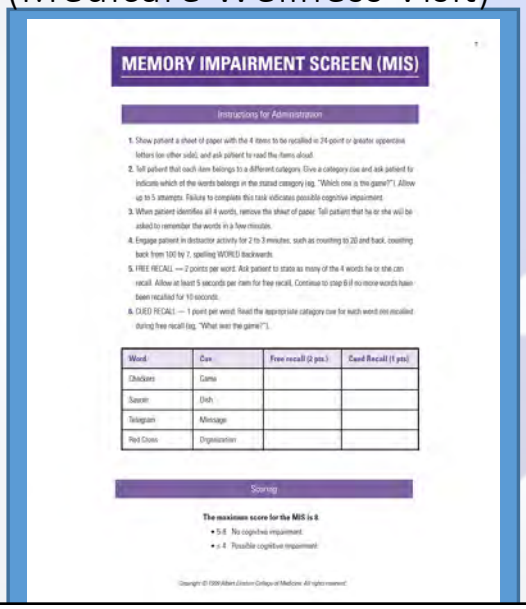
Compared to a few years ago:

	Yes	No	Don't Know	N/A
• Does the patient have more trouble remembering things that have happened recently than s/he used to?	☐	☐	☐	
• Does he or she have more trouble recalling conversations a few days later?	☐	☐	☐	
• When speaking, does the patient have more difficulty in finding the right word or tend to use the wrong words more often?	☐	☐	☐	
• Is the patient less able to manage money and financial affairs (e.g. paying bills, budgeting)?	☐	☐	☐	☐
• Is the patient less able to manage his or her medication independently?	☐	☐	☐	☐
• Does the patient need more assistance with transport (either private or public)? (If the patient has difficulties due only to physical problems, e.g bad leg, tick 'no')	☐	☐	☐	☐

(To get a total score, add the number of items answered 'no', 'don't know' or 'N/A')
Total score (out of 6) ☐

If patient scores 0-3, cognitive impairment is indicated. Conduct standard investigations.

Cognitive Assessment Toolkit (Medicare Wellness Visit)



MEMORY IMPAIRMENT SCREEN (MIS)

Instructions for Administration

1. Show patient a sheet of paper with the 4 items to be recalled in 24-point or greater uppercase letters (on other side), and ask patient to read the items aloud.
2. Tell patient that each item belongs to a different category. Give a category cue and ask patient to indicate which of the words belongs in the stated category (eg, "Which one is the game?"). Allow up to 5 attempts. Failure to complete this task indicates possible cognitive impairment.
3. When patient identifies all 4 words, remove the sheet of paper. Tell patient that he or she will be asked to remember the words in a few minutes.
4. Engage patient in distractor activity for 2 to 3 minutes, such as counting to 20 and back, counting back from 100 by 7, spelling WORLD backwards.
5. FREE RECALL — 2 points per word. Ask patient to state as many of the 4 words he or she can recall. Allow at least 5 seconds per item for free recall. Continue to step 6 if no more words have been recalled for 10 seconds.
6. CUED RECALL — 1 point per word. Read the appropriate category cue for each word not recalled during free recall (eg, "What was the game?").

Word	Cue	Free recall (2 pts.)	Cued Recall (1 pt)
Chickens	Game		
Season	Dish		
Telegram	Message		
Red Cross	Organization		

Scoring

The maximum score for the MIS is 8

- 5-8 No cognitive impairment
- ≤ 4 Possible cognitive impairment

Mini-Cog™ Instructions for Administration & Scoring

ID: _____ Date: _____

Step 1: Three Word Registration

Look directly at person and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. The words are (select a list of words from the versions below). Please say them for me now." If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

The following and other word lists have been used in one or more clinical studies.[1] For repeated administrations, use of an alternative word list is recommended.

Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Banana	Leader	Village	River	Captain	Daughter
Sunrise	Season	Kitchen	Nation	Garden	Heaven
Chair	Table	Baby	Finger	Picture	Mountain

Step 2: Clock Drawing

Say: "Next, I want you to draw a clock for me. First, put in all of the numbers where they go." When that is completed, say: "Now, set the hands to 10 past 11."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say: "What were the three words I asked you to remember?" Record the word list version number and the person's answers below.

Word List Version: ____ Person's Answers: _____ _____ _____

Scoring

Word Recall: _____ (0–3 points)	1 point for each word spontaneously recalled without cueing.
Clock Draw: _____ (0 or 2 points)	Normal clock = 2 points. A normal clock has all numbers placed in the correct sequence and approximately correct position (e.g., 12, 3, 6 and 9 are in anchor positions) with no missing or duplicate numbers. Hands are pointing to the 11 and 2 (10:11). Hand length is not scored. Inability or refusal to draw a clock (abnormal) = 0 points.
Total Score: _____ (0–5 points)	Total score = Word Recall score + Clock Draw score. A cut point of <3 on the Mini-Cog™ has been validated for dementia screening, but many individuals with clinically meaningful cognitive impairment will score higher. When greater sensitivity is desired, a cut point of <4 is recommended as it may indicate a need for further evaluation of cognitive status.

Mini Cog Validity and Reliability

- Validity and Reliability
- The primary validation of the Mini-Cog© was tested in studies of accuracy in detecting the presence of dementia, now termed major neurocognitive disorder. Most studies included mainly individuals with Alzheimer type and mixed degenerative/vascular dementias. The recommended cut score for dementia screening (0-2 = positive; 3-5 = negative) was derived empirically to optimize the balance of sensitivity and specificity. High specificity is usually preferable in screening large populations, such as older adults in health care settings; some studies, seeking higher sensitivity to subtler cognitive impairments, have used 0-3 as "positive", but this has not been adequately tested against formal cognitive disorder diagnoses. Individuals with mild cognitive impairment (cognitive impairment/no dementia; mild neurocognitive disorder) are often detected by the Mini-Cog© using the conventional cut score, but there is insufficient evidence to recommend the Mini-Cog© as a 'screen for MCI.' Studies conducted in primary care settings have shown that non-professionals, including medical assistants, can administer the Mini-Cog© with high reliability after minimal training and practice.

Seitz D, Chan C, Newton H, Sudeep g, Hermann N, Smailagic N, Nikolaou V, Fage B, (2018), ***Mini-Cog for the diagnosis of Alzheimer's disease dementia and other dementias within a primary care setting***. Cochrane Library, Cochrane Dementia and Cognitive Improvement Group, John Wiley & Sons, LTD Feb. 22, DOI: 10.1002/14651858.CD011415.pub2

Authors' conclusions:

There is a limited number of studies evaluating the accuracy of the Mini-Cog for the diagnosis of dementia in primary care settings. Given the small number of studies, the wide range in estimates of the accuracy of the Mini-Cog, and methodological limitations identified in most of the studies, at the present time there is insufficient evidence to recommend that the Mini-Cog be used as a screening test for dementia in primary care. Further studies are required to determine the accuracy of Mini-Cog in primary care and whether this tool has sufficient diagnostic test accuracy to be useful as a screening test in this setting.

Mini Mental Status Exam (MMSE)

Mini-Mental State Examination (MMSE)

Patient's Name: _____ Date: _____

Instructions: ***Ask the questions in the order listed. 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 of the week? Month?"
5		"Where are we now: State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then 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. Number of trials: _____
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Stop after five answers. 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

(Adapted from Rovner & Folstein, 1987)

Interpretation of the MMSE

Method	Score	Interpretation
Single Cutoff	<24	Abnormal
Range	<21	Increased odds of dementia
	>25	Decreased odds of dementia
Education	21	Abnormal for 8th grade education
	<23	Abnormal for high school education
	<24	Abnormal for college education
Severity	24-30	No cognitive impairment
	18-23	Mild cognitive impairment
	0-17	Severe cognitive impairment

Sources:

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- Folstein MF, Folstein SE, McHugh PR. "Mini-mental state": a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12:189-198.
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Arevalo-Rodriguez Et. Al**.: Mini-Mental State Examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI).** *Cochrane Database of Systematic Reviews* 2015, Issue 3. Art. No.: CD010783. DOI: 10.1002/14651858.CD010783.pub2.

Main results

- 11 heterogeneous studies with a total number of 1569 MCI patients followed for conversion to dementia.
- Four studies assessed the role of baseline scores of the MMSE in conversion from MCI to all-cause dementia
- Eight studies assessed this test in conversion from MCI to Alzheimer´ s disease dementia.
- Only one study provided information about the MMSE and conversion from MCI to vascular dementia.
- For conversion from MCI to dementia in general, the accuracy of baseline MMSE scores ranged from sensitivities of 23% to 76% and specificities from 40% to 94%.
- In relationship to conversion from MCI to Alzheimer's disease dementia, the accuracy of baseline MMSE scores ranged from sensitivities of 27% to 89% and specificities from 32% to 90%.
- Only one study provided information about conversion from MCI to vascular dementia, presenting a sensitivity of 36% and a specificity of 80% with an incidence of vascular dementia of 6.2%.

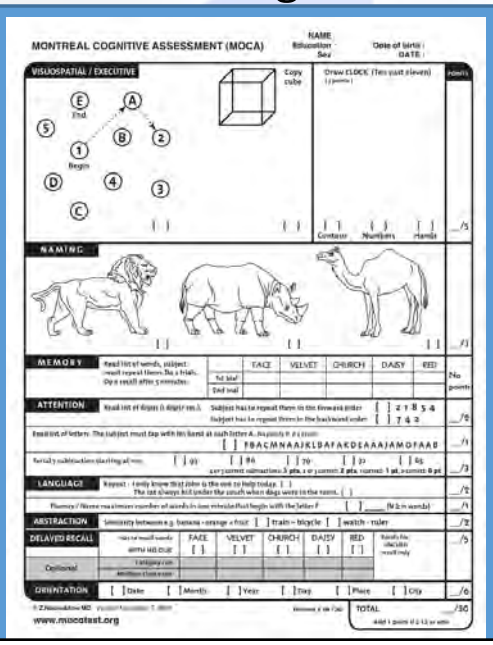
MMSE: In detecting MCI

- **Authors' conclusions**
- Our review did not find evidence supporting a substantial role of MMSE as a stand-alone single-administration test in the identification of MCI patients who could develop dementia. Clinicians could prefer to request additional and extensive tests to be sure about the management of these patients. An important aspect to assess in future updates is if conversion to dementia from MCI stages could be predicted better by MMSE changes over time instead of single measurements. It is also important to assess if a set of tests, rather than an isolated one, may be more successful in predicting conversion from MCI to dementia.

MMSE in detecting MCI

- **PLAIN LANGUAGE SUMMARY**
- **Baseline scores of Mini-Mental State examination (MMSE) for early prediction of developing dementia in people with mild cognitive impairments (MCI)**
- Patients with MCI should be evaluated and monitored due to their increased risk of progression to dementia.
- At present there are no agreements about what the best approach is to register the progression to dementia.
- Several cognitive function tests have been proposed for this task because most of them are easy to administer, take no longer than 10 minutes to complete, involve major executive functions, and yield an objective score.
- After an extensive search and analysis of available information, we did not find evidence supporting a substantial role of MMSE as a stand-alone single-administration test in the identification of patients who will convert to dementia in the future.

Montreal Cognitive Status Assessment (MoCA)



The scoring breakdown is as follows:

- Visuospatial and Executive Functioning: 5 points
- Animal Naming: 3 points
- Attention: 6 points
- Language: 3 points
- Abstraction: 2 points
- Delayed Recall (Short-term Memory): 5 points
- Orientation: 6 points
- Education Level: 1 point is added to the test-taker's score if he or she has 12 years or less of formal education

Brief Stats on MoCA

- In a study by the original test authors, the MoCA was administered to three groups: Alzheimer's disease (AD) patients, mild cognitive impairment (MCI) patients, and normal elderly controls.
- all test items were capable of discriminating between at least two of the groups, in the expected direction ($p < 0.001$).
- Content validity was assessed by comparing scores from MoCA and the Mini-Mental State Exam (MMSE) and correlation was found to be high ($r = 0.87$).
- Sensitivity was found to be high for identifying both AD and MCI patients (100% and 90%, respectively). The specificity of the MoCA (defined as the ability to identify non-cognitively impaired subjects) was 87%.
- Positive and negative predictive values were also high for both AD patients (89% and 100%, respsectivly) and MCI patients (89% and 91%, respectively).

Brief Stats on MoCA

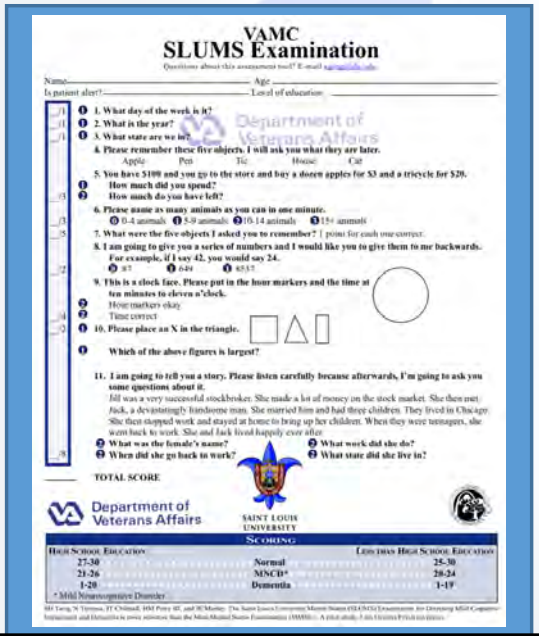
- The MoCA was determined to be useful for screening for mild stages of cognitive impairment (including MCI and mild AD), while not as useful as the MMSE for assessing more advanced stages of AD.
- **Reliability (Quantitative):** Test-retest reliability (patients tested 35 days apart) was high, with an intraclass correlation coefficient of 0.92. The internal consistency was also found to be high (Cronbach alpha on standardized items = 0.83) (Nasreddine et al., 2005).
- The MoCA is a promising alternative to the MMSE because of its sensitivity to early detection of dementia and MCI. Although Holsinger et al. (2007) recommended the MoCA for use by primary care physicians with "plenty of time available" (p. 2401), further empirical attention is needed. The MoCA's range of specificity is wide across the few studies that have examined its clinical utility, and it has not been compared to screens other than the MMSE. Therefore, comparisons across cutscores and CDR* rating to other recently developed dementia screens requiring less time to administer is recommended.

[redacted] (2010). Chapter 19- Screening [redacted] Brief Battery for Dementia [redacted] Handbook of Assessment in Clinical Gerontology (second ed). Academic Press. Cited: https://doi.org/10.1016/B978-0-12-374961-1.10019-3

- Global Clinical Dementia Rating

The President's Physician

VAMC Saint Louis University Mental Status (SLUMS)



VAMC
SLUMS Examination

Name: _____ Age: _____
Is patient alert?: _____ Level of education: _____

1. What day of the week is it?
2. What is the year?
3. What state are we in?
4. Please remember these five objects. I will ask you what they are later.
   Apple Pen Tie House Car
5. You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.
   How much did you spend?
   How much do you have left?
6. Please name as many animals as you can in one minute.
   0-4 animals 5-9 animals 10-14 animals 15+ animals
7. What were the five objects I asked you to remember? 1 point for each one correct.
8. I am going to give you a series of numbers and I would like you to give them to me backwards. For example, if I say 42, you would say 24.
   67 649 6515
9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.
   Hour markers okay
   Time correct
10. Please place an X in the triangle.
    Which of the above figures is largest?
11. I am going to tell you a story. Please listen carefully because afterwards, I'm going to ask you some questions about it.
    Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.
    What was the female's name?
    When did she go back to work?
    What work did she do?
    What state did she live in?

TOTAL SCORE

Department of Veterans Affairs

SAINT LOUIS UNIVERSITY

SCORING

High School Education		Less than High School Education
27-30	Normal	25-30
21-26	MNCD*	20-24
1-20	Dementia	1-19

* Mild Neurocognitive Disorder

St. Louis University Mental Status (SLUMS) Examination

This tool was created to automate the scoring of the 'Saint Louis University Mental Status (SLUMS) Exam.[1] This assessment tool was developed at the Division of Geriatric Medicine, Saint Louis University School of Medicine in affiliation with the Veterans Association. It was initially developed as a screening tool for detecting mild cognitive impairment in a veteran population, however, it is now used in several other patient populations. [2] This examination has been found to measure up to the popular Montreal Cognitive Assessment (MOCA)[3] and has also been shown to be superior to the Mini-Mental State Exam (MMSE) in the detection of early dementia.[4] For additional information, please visit the primary source of this tool.

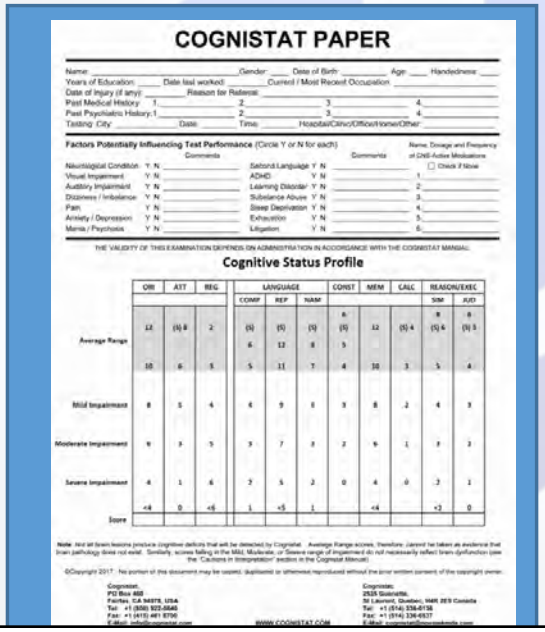
Brief Stats on VAMC SLUMS

- **Utility of the SLUMS as a cognitive screening tool among a nonveteran sample of older adults.** Am J Geriatr Psychiatry. 2013 Jul;21(7):623-30. doi: 10.1016/j.jagp.2013.01.024. Epub 2013 Feb 6.
- The SLUMS showed statistically a smaller mean, lower rank scores, and less skewness than the MMSE.
- Comparisons of the correlations of the screening tests with the neuropsychological measures indicated that the SLUMS demonstrated stronger relationships with the TMT compared with the MMSE.
- Multiple regression analyses were conducted to determine the ability of the SLUMS and the MMSE to predict scores on common neuropsychological tests after controlling for demographic variables.
- Results demonstrated that the SLUMS significantly predicted performance across all measures over the MMSE and demographic variables, with the exception of the WCST's perseverative errors.

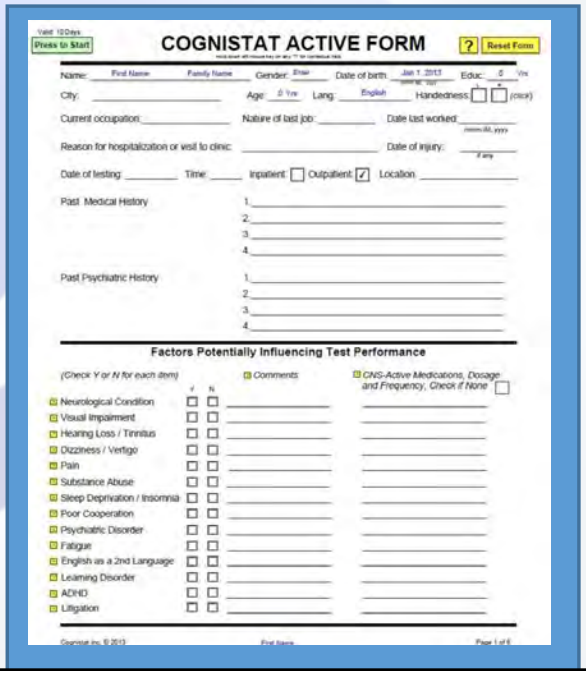
Brief Stats on VAMC SLUMS

- **Utility of the SLUMS as a cognitive screening tool among a nonveteran sample of older adults.** Am J Geriatr Psychiatry. 2013 Jul;21(7):623-30. doi: 10.1016/j.jagp.2013.01.024. Epub 2013 Feb 6.
- **CONCLUSION:**
- Although the SLUMS and the MMSE are strongly correlated, the SLUMS significantly adds to the prediction of neuropsychological measures beyond the MMSE scores. Our findings suggest that the SLUMS may be an appropriate measure to use as a screening tool among older adults and may have fewer ceiling effects than the MMSE.

CogniStat


COGNISTAT PAPER

Cognitive Status Profile


COGNISTAT ACTIVE FORM

Factors Potentially Influencing Test Performance

Brief Stats on Cognistat

- A survey of 12 medical factors that frequently invalidate screening exams as well as lengthy neuropsychological testing
- An efficient screen and metric approach that streamlines testing
- A clear and immediately understandable graphic profile of impairments
- Normative information for adolescent, adult and geriatric populations
- Availability in 11 languages, including Spanish, Cantonese, Japanese, and Hebrew
- More than 225 clinical and research articles in peer-reviewed medical, psychiatric, rehabilitation medicine and psychological journals document its power in:
  - Dementia
  - Stroke
  - Traumatic Brain Injury
  - Substance Abuse
  - Geriatrics
  - Epilepsy

Cognistat is the tool of choice for cognitive screening in:

- Neuropsychology
- Neurology & Psychiatry
- Neurosurgery
- Rehabilitation Medicine
- Speech Therapy
- Geriatrics
- Nursing Home Assessments
- Elder Abuse Investigation
- Alcohol and Substance Abuse

COGNISTAT is capable of differentiating late-life depression from late-onset AD, based on higher scores in orientation and comprehension subtests, among patients with both depressive symptoms and cognitive dysfunction at baseline, despite similar scores on MMSE. At endpoint, patients with late-life depression showed significant improvement in subtests for memory, similarities, and judgment, whereas patients with late-onset AD showed significant worsening in the calculation subtest compared to baseline.

THE TAKE HOME OF COGNITIVE SCREENS

1. These are tasks almost never missed by age mates.
2. If you get them all correct, it doesn't mean there is NOT a problem due to the low floor, and low ceiling effects of the tasks.
3. If you start missing a number of these items, you need to become suspicious of "some cognitive problem."
4. It is irresponsible to declare that, due to a 30/30 on the MOCA that you have "ruled out early onset Alzheimer's or other dementias."
5. Smarter people can "fool" a brief cognitive screen.
6. I regularly tell people that, "Thinking I'm going to know all about your brain health in a 10-15 minute exam is somewhat of an insult."

Mild Cognitive Impairment-- Medications

- There are no pharmacologic or dietary agents currently shown to have symptomatic cognitive benefit in MCI and no FDA- approved medications

- If Cholinesterase inhibitors are being used, discuss that this as an "off label" use
- May be more acceptable with multi-dimensional, or amnestic MCI
- Side effects of cholinesterase inhibitors are common, including gastrointestinal symptoms and cardiac concerns.
- "On-Off-ON" research designs suggests that, unless poorly tolerated, once used the person should stay on them for life.

Mild Cognitive Impairment

- Assess for behavioral and neuropsychiatric symptoms in MCI and treat with both pharmacologic and nonpharmacologic approaches
- Behavioral/psychiatric symptoms are common in MCI and may be associated with greater functional impairment and an increased risk of progression from MCI to dementia.
- Clinicians may recommend cognitive interventions may be beneficial in improving measures of cognitive function.

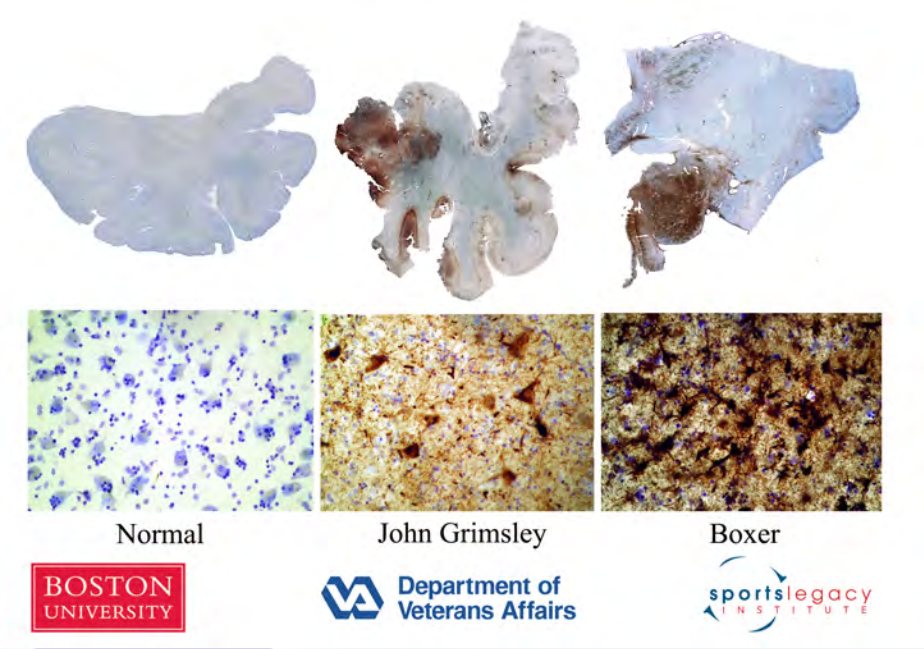
Other Dementias (Brief OVERVIEW)

- Alzheimer's disease. Alzheimer's disease is the most common cause of neurocognitive disorder.*
- Creutzfeldt-Jakob disease.
- Dementia with Lewy bodies.
- Frontotemporal dementia.
- Parkinson's disease.
- Huntington's disease.
- Mixed dementia.
- Normal pressure hydrocephalus.
- Vascular dementia
- Binswanger's disease (subcortical Leukoencehalopathy)
- Wernicke-Korsakoff Syndrome
- Primary Progressive Aphasia
- Dementia due to TBI
  - Acquired Bipolar disorder
- Chronic Traumatic Encephalopathy
- Dementia Pugilistica

*Once again, Mark's "issue" with this

What is CTE?

- This trauma, which includes multiple concussions, triggers progressive degeneration of the brain tissue, including the build-up of an abnormal protein called tau.
- These changes in the brain can begin months, years, or even decades after the last concussion or end of active athletic involvement.
- The brain degeneration is associated with memory loss, confusion, impaired judgment, paranoia, impulse control problems, aggression, depression, and, eventually, progressive dementia.



Managing MCI / Dementia at home and office

Common issues

Managing MCI at home and office

- 1. Remain active socially
- Seek out educational venues, (presentations, Elderhostles, college classes)
- Remain active with friends
- Exercise regularly
  - https://www.nia.nih.gov/health/exercise-physical-activity
- Cognitive Remediation:
  - https://www.lumosity.com
  - https://www.neuronation.com
  - Puzzles
  - Visuo-spatial skills
- Cards
  - Turn taking, memory, sequencing
- Video games:
  - Speeded processing, flexibility of thought, problem solving.

Managing Mild Cognitive Impairment

- **Anything that's good for the heart is good for the head**
  - Exercise or general increase in activity
  - Diet
  - Medication compliance
  - Smoking
  - Alcohol (within limits)
- **If you don't use it, you lose it**
  - Cognitive activity that is enjoyed, hopefully with some history of use
  - Reading, Crossword puzzles
  - Jigsaw Puzzles, Sudoku
  - Cards
  - Conversation
  - TV with caveat

- Journal of the American Geriatrics Society

Can Exercise Improve Cognitive Symptoms of Alzheimer's Disease?

- Gregory A. Panza, MS; Beth A. Taylor, PhD; Hayley V. MacDonald, PhD; Blair T. Johnson, PhD; Amanda L. Zaleski, MS; Jill Livingston, MS; Paul D. Thompson, MD; Linda S. Pescatello, PhD. J Am Geriatric Soc. 2018;66(3):487-495.

Conclusion Our findings suggest that exercise training may delay the decline in cognitive function that occurs in individuals who are at risk of or have AD, with aerobic exercise possibly having the most favorable effect. Additional randomized controlled clinical trials that include objective measurements of cognitive function are needed to confirm our findings.

Neurology: Clinical Practice

- **Exercise for cognitive brain health in aging**
- **A systematic review for an evaluation of dose**

Joyce Gomes-Osman, Danylo F. Cabral, Timothy P. Morris, Katalina Mclnerney, Lawrence P. Cahalin, Tatjana Rundek, Augusto Oliveira and Alvaro Pascual-Leone. First published May 30, 2018, DOI: https://doi.org/10.1212/CPJ.0000000000000460

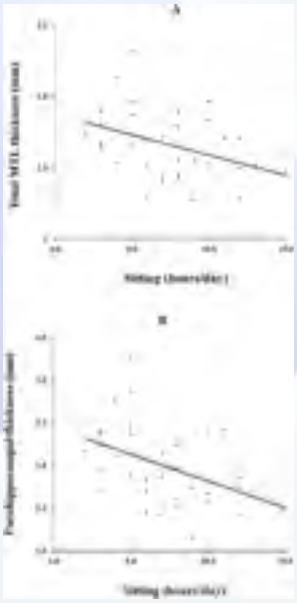
- **Purpose of review** We systematically appraised randomized controlled trials proposing exercise to influence cognition in older adults to (1) assess the methodologic quality using Cochrane criteria; (2) describe various exercise dose measures and assess their relationship with improved cognitive performance; and (3) identify consistent patterns of reported effects on cognition.
- **Recent findings** There was overall good methodologic quality in all 98 included studies. The assessment of the relationship between improved cognition and various measures of exercise dose (session duration, weekly minutes, frequency, total weeks, and total hours) revealed a significant correlation with total hours. Improvements in global cognition, processing speed/attention, and executive function were most stable and consistent.
- **Summary** We found that exercising for at least 52 hours (over 6 months) is associated with improved cognitive performance in older adults with and without cognitive impairment. Exercise modes supported by evidence are aerobic, resistance (strength) training, mind–body exercises, or combinations of these interventions.

Sitting & Aging

- **Sedentary behavior associated with reduced medial temporal lobe thickness in middle-aged and older adults**

Prabha Siddarth , Alison C. Burggren, Harris A. Eyre, Gary W. Small, David A. Merrill. Published: April 12, 2018. https://doi.org/10.1371/journal.pone.0195549

- Summary: In this preliminary study of middle-aged and older adults, self-reported hours per day spent sitting, but not physical activity level, was associated with less thickness in the MTL substructures. These findings are novel and require further exploration in longitudinal studies and analysis of mediating mechanisms. Better understanding the effects of sedentary behavior on our brains is important given the global epidemic of physical inactivity and sedentary lifestyles



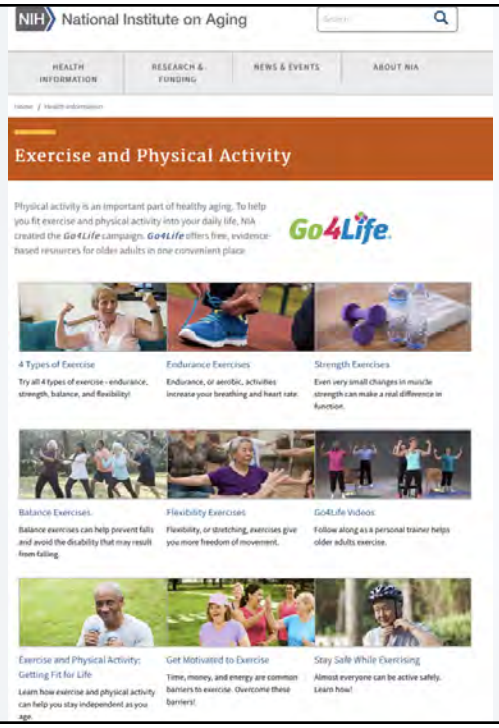
- Journal of the American Geriatrics Society
- MEMO+: Efficacy, Durability and Effect of Cognitive Training and Psychosocial Intervention in Individuals With Mild Cognitive Impairment
- Sylvie Belleville, PhD; Carol Hudon, PhD; Nathalie Bier, PhD; Catherine Brodeur, MD; Brigitte Gilbert, PhD; Sébastien Grenier, PhD; Marie-Christine Ouellet, PhD; Chantal Viscogliosi, PhD; Serge Gauthier, M. J Am Geriatr Soc. 2018;66(4):655-663.

Participants were randomized to cognitive training, a psychosocial intervention, or a no–contact control condition. Interventions were provided in small groups in eight 2–hour sessions.

Outcome measures were immediate and delayed composite performance memory scores, psychological health (depression, anxiety, well–being), and generalization effects of the intervention (strategy use in everyday life, difficulties in complex activities of daily living, memory complaints). Testing was administered before training and immediately, 3 months, and 6 months after training.

Participants in the cognitive training condition improved on the delayed composite memory score and on strategy use in everyday life. Improvement was maintained at the 3– and 6–month follow–up assessments. Participants in the psychosocial and no–contact conditions did not show any significant improvement.

Conclusion Cognitive training improves the memory of persons with amnestic MCI. The effect persists over a 6–month period, and learned strategies are used in everyday life. Cognitive training is a valid way to promote cognition in MCI.



For More Information About Exercise and Physical Activity

American College of Sports Medicine
1-317-637-9200
publicinfo@acsm.org
www.acsm.org

American Council on Exercise
1-888-825-3636 (toll-free)
mailto:receptionist@acefitness.org
www.acefitness.org

Centers for Disease Control and Prevention (CDC)
1-800-232-4636 (toll-free)
1-888-232-6348 (TTY/toll-free)
cdcinfo@cdc.gov
www.cdc.gov

MedlinePlus
National Library of Medicine
www.medlineplus.gov

President's Council on Fitness, Sports, and Nutrition
1-240-276-9567
fitness@hhs.gov
www.fitness.gov

National Council on Aging
1-571-527-3900
www.benefitscheckup.org

Super Agers

- 85+ year olds who live without significant memory problems
- Active
- Upbeat
- Cognitively Challenge
- Push Through

Driving

Driving

WWSS

- A recent diagnosis of dementia does not necessarily mean that a patient is incapable of driving safely. Dementia progresses differently among different patients and for some it can incapacitate them rapidly, for others the decline is much slower.
- Nonetheless, given the diagnosis, it is desirable to have a discussion with the patient about the eventual day when she will not be able to drive carefully and it is desirable to have the children involved. Ideally, the children will be willing to speak up when the time comes. A history of recent accidents is a sign that driving abilities may be deteriorating.
- Discussions of alternatives could include reliance on Uber or similar companies, using home deliveries for groceries, etc. It is important that the loss of driving should not mean a decline of social contact.
- Insight and receptiveness to feedback are important. I worry most about patients who refuse to accept feedback or discuss the issue.
- If it seems that she can drive safety right now, patients can nevertheless take some additional steps to ensure safe driving such as by driving only in non-rush hour times, going only to familiar places, or taking routes with only right turns.
- Information that leans toward the side of making a report to the Department of Motor Vehicles include recent accidents, failure to acknowledge the potential for a driving problem, failure to adopt safe driving strategies, and an observation of general decline in cognitive functioning.

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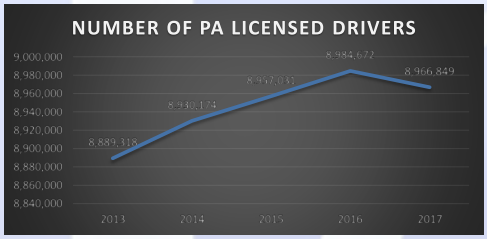
Sam Knapp 5/10/2018

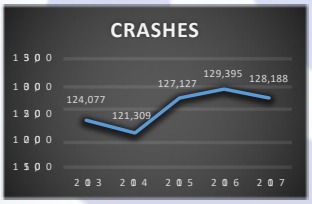
PPA List serve

PennDOT's Medical Program

- Pennsylvania regulations outline the minimum medical standards required for licensure.
- The Bureau of Driver Licensing reviews medical information submitted to the Department for an applicant/license holder to ensure the minimum licensing standards are met.
- PA currently has over 8.9 million licensed drivers:
  - Over 1.9 million drivers are 65 years of age and older.

The "Overall Picture" In PA





Age Group	PA Drivers Involved in Crashes	*PA Total Drivers	% Involved in Crashes
16	1,942	72,452	2.7%
17	4,732	107,468	4.4%
18	5,588	118,741	4.7%
19	5,268	125,537	4.2%
20	5,334	130,034	4.1%
21	5,503	134,293	4.1%
22-24	16,393	421,070	3.9%
25-29	23,599	742,730	3.2%
30-39	33,810	1,416,209	2.4%
40-54	42,273	2,252,847	1.9%
55-59	13,103	880,245	1.5%
60-64	10,463	807,428	1.3%
65-69	7,751	679,976	1.1%
70-74	5,337	484,490	1.1%
75 and Over	8,037	770,185	1.0%
Unknown	33	N/A	N/A

* PA Total Drivers includes total PA Licensed Drivers and PA Drivers who have their Learner's Permit (no driver's license).

Pennsylvania Crash Information Tool

https://www.dotcrashinfo.pa.gov/PCIT/welcome.html

Crash Statistics 2017

- Number of drivers 65+
  - 2,115,442
- Crashes involving 65+ driver
  - 21,319 (1%)
- Fatalities involving 65+ driver
  - 270 (.01%)

- Number of drivers 75+
  - 772,495
- Crashes involving 75+ driver
  - 8,423 (1.1%)
- Fatalities involving 75+ driver
  - 153 (.02%)

Crash Statistics 2016

Crash Type	All Drivers	16-21	65-74	75+
Non collision	3.3% (4310)	2.6% (747)	2.1% (279)	1% (80)
Rear End	22.8% (29,499)	25.2% (7,300)	28.8% (3,927)	23 % (1,892)
Head on	3.7% (4,754)	4.2% (1,211)	4.7% (643)	5.2% (432)
Backing up	0.3% (387)	0.2% (56)	0.4% (60)	0.4% (30)
Angle	26.9% (34,794)	30% (8,685)	39.6% (5,394)	46.6% (3,840)
Sideswipe	6.6% (8517)	5.1% (1,487)	6.8% (925)	7% (578)
Hit fixed object	29.6% (38,176)	30.1% (8,703)	12.7% (1,728)	13% (1,070)
Hit pedestrian	3.1% (4.034)	0.9% (272)	2.4% (324)	2.5% (202)
Other	3.7% (4,727)	1.6% (467)	2.5% (339)	1.4% (116)

Crash Statistics 2016

Number of Vehicles	All Drivers	16-21	65-74	75+
Single	44.1% (56,940)	37.1% (10,742)	20.4% (2,779)	20.2% (1,668)
Multiple	55.9% (72,258)	62.9% (18,186)	79.6% (10,840)	79.8% (6,572)
Location				
Intersection	38.3% (49,487)	40% (11,566)	49.6% (6,758)	54% (4,447)
Non Intersection	61.7% (79,711)	60% (17,362)	50.4% (6,861)	46% (3,793)

Methods for Identifying Medically Unqualified Drivers:

- The Re-Examination Program

  § 1514(b): Examination of applicants for renewal

- Mandatory Physician Reporting

  § 1518(b): Reports by health care personnel

Re-Examination Program:

- This is a proactive approach to randomly assess driver's medical qualifications to determine if they meet the Department's minimum standards for the safe operation of a motor vehicle.

- Every month drivers over the age of 45 are randomly selected for a medical exam seven months prior to their license expiration date.
  - License will not be renewed if driver fails to comply.

Re-Examination Program:

- Each driver is required to undergo both a vision screening and a physical examination.
  - Results from an examination within the last 12 months are acceptable.
  - Vision screenings are given for free at all PennDOT Driver License Centers.
- If warranted by the results of the medical examination, an individual may also be required to submit additional medical information and/or successfully complete a driver's examination.

Mandatory healthcare Reporting:

- PA law requires all physicians or licensed health care providers to report to PennDOT any patient 15 years of age or older that has a medical condition that may affect their ability to drive safely.
- In 2016, over 60,000 medical reports were received.
  - Over 23,000 of those reports were considered initial reports.
  - Approximately 13,000 drivers were determined to have a condition that warranted recalling their driving privilege.
  - Approximately 4,000 drivers had their license suspended for non-compliance of PennDOT's request for information.
  - Half involve drivers under the age of 65
- Drivers wishing to surrender their driving privilege for medical reasons are entitled to one (1) free photo identification card using a DL-54A application.

Some statistics

Jan 2, 2017 – June 1, 2017

- Total medical condition reports to Penndot
  - 34,957 – 10,003 through initial form
- Cognitive
  - 3,579 – 1,553 through initial form
- Substance Use
  - 3,492 – 1,648 through initial form
- Psychiatric
  - 1,008 – 330 through initial form

- #1 Seizures
- #2 Vision

- Majority reported through the DL-13
  - Specific reporting forms
  - Crash/ citizen reports
  - POA papers
  - Rehab centers
  - Self report
  - Driving schools
  - ER

Minimum Medical Standards

- The minimum standards for licensure are outlined in Chapter 83.
  - http://www.pacode.com/secure/data/067/chapter83/chap83toc.html.
- The minimum standards for school bus drivers are outlined in Chapter 71.
  - http://www.pacode.com/secure/data/067/chapter71/chap71toc.html

Sources of information

- Law enforcement
- Rehab facilities
- Self report
- Crash reports
- Family report / signed 'other' individuals
- Physician / Psychologist referral

Interview Questions - Driving

- Any accidents in the last 6-9 mos.- near misses
- Directional uncertainty
- Lost in familiar places
- Drifting center line/ outer edge
- Family afraid to drive with you
- Stop signs/ traffic lights
- Wide turns
- Excessively slow driving
- Helpful to have corroboration / input from family / others

Some Neuropsychological "flags"

1. Significantly reduced speeded processing
2. Significantly reduced Visuo-spatial skills
3. Significantly reduced Memory skills*
4. Significantly reduced Executive Functions

If present and/or in combination, may lead to disqualification or recommendation to be further evaluated; eg: Erie County has Transportation Solutions.

Possible actions by PennDOT

Upon careful evaluation of the information that is received, the Medical Unit will do one of the following:

(1) Recall the driving privilege;

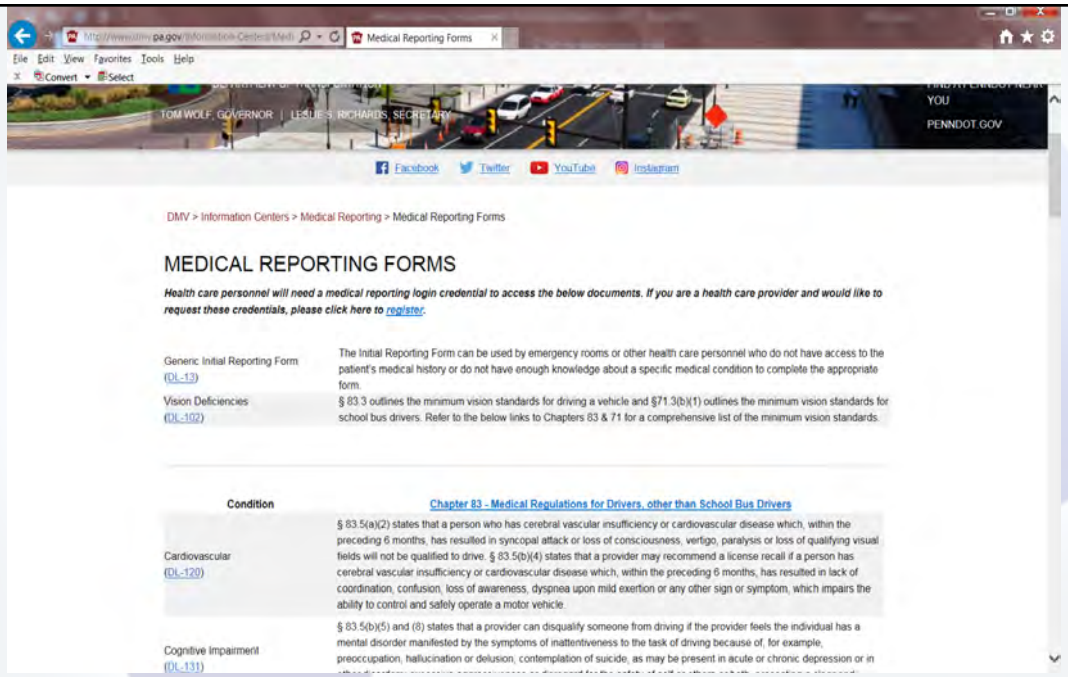
(2) Restore the driving privilege;

(3) Add medical restrictions to the driving privilege;

(4) Delete medical restrictions from the driving privilege;

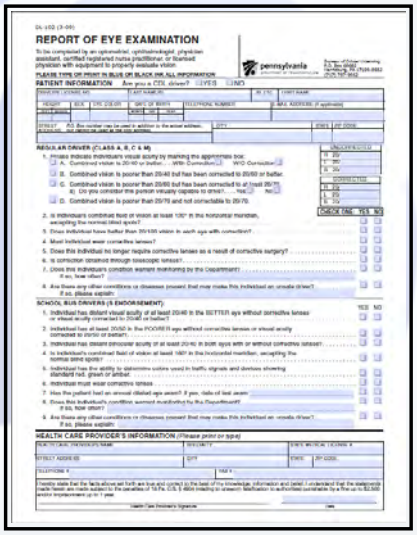
(5) Request additional examinations, such as a medical examination or a driver's test; or

(6) Take no action.



To access the specific medical condition forms you will need to register for a user name and password.

The DL-13 and DL-102 are not password protected and can be accessed at http://www.dmv.state.pa.us/pdotforms/dl_forms/DL-13.pdf



Mature driver program

Social Living

Social Living

- Behavior
  - Deficit Awareness
  - Inappropriate
- Medical Decision Making
- Financial Management
  - Guardianship
- Independent Living
  - Basic ADL's
  - Handle Emergency Situations
  - Compensate for limitations

Caregiver Distress

Adjusting to Caregiving

- May experience grief or loss
  - Personal choice
  - Relationship with loved one
  - Change in relationship with other family members
  - Social isolation
  - Loss of spontaneity
  - Loss of privacy
  - Loss of control
  - Ongoing cycle of grief

Adjusting to Caregiving

- Short and Long-term impact of caregiving
  - Health issues
  - Emotional impact
  - Financial issues

Adjusting to Caregiving

- Adapting to the situation and finding ways to cope
  - Support systems
    - Types of support vary
  - Spirituality
  - Time for self

Questions / Concerns?

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