The use of the MoCA as a Brief Screen for Cognitive Impairment (Montreal Cognitive Assessment)

Jonathan Feinberg, M.S.
Dr. Ciara Mahan, Ph.D.
Janet Kohl, R.N. Coordinator

SANTA CLARA VALLEY HEALTH & HOSPITAL SYSTEM

Objectives

1. Briefly describe Santa Clara County Homeless facts and the Medical Respite Program
2. Describe what cognitive assessments are, focusing on the MoCA and MMSE
3. Overview MoCA administration and interpretation
4. Discuss why it is important to give cognitive assessments when seeing the homeless population

HOMELESS FACTS

- **There are 7631 homeless individuals in Santa Clara County.**

- Santa Clara County has the **5th largest** homeless population in the United States

  Top Four:

  - LA
  - NYC
  - San Diego
  - Las Vegas

2013 Santa Clara County Homeless Census

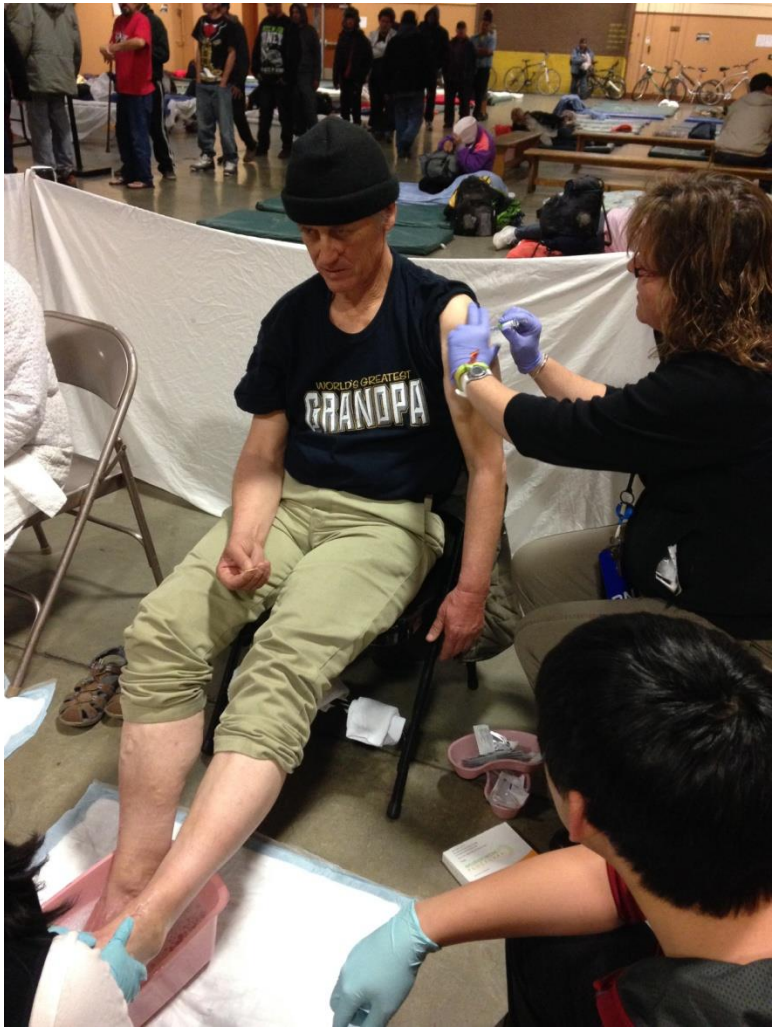
HOMELESS FACTS

Gender Breakdown

- Single Men -67%
- Single Women- 31%
- Transgender- 2%

Age Breakdown

- Children -9%
- Youth -14%
- Adult -77%



2013 Santa Clara Homeless Census

HOMELESS FACTS

Race breakdown

- Caucasian 28%
- African American 22%
- Hispanic 31%
- Multi-Ethnic 19%

2013 Santa Clara County Homeless Census

HOMELESS FACTS

SLEEPING

- **26% sleep sheltered**
- emergency shelters -12%
- transitional housing -13%
- **74% sleep unsheltered**
- Street -31%
- Abandoned buildings -9%
- Cars -16%
- Encampments -19%

2013 Santa Clara County Homeless Census

HOMELESS FACTS

PRIMARY EVENT THAT LED TO HOMELESSNESS

- Lost Job- 17%
- Evicted or landlord stopped renting- 12%
- Argument or asked to leave-9%
- Incarceration- 8%

2013 Santa Clara County Homeless Census

HOMELESS FACTS

Health Status

51% have 2 or more disabling conditions:

- Physical Disabilities
- Chronic substance abuse
- Chronic Mental Illness

2013 Santa Clara County Homeless Census

BREAKDOWN OF CHRONIC HEALTH ISSUES

- HIV/ TB/ Hep C/STD's
- Uncontrolled Hypertension
- Uncontrolled Diabetes
- Poor Dental Health
- Tobacco Dependency
- Mental Health Disorders
- Drug and Alcohol Dependency

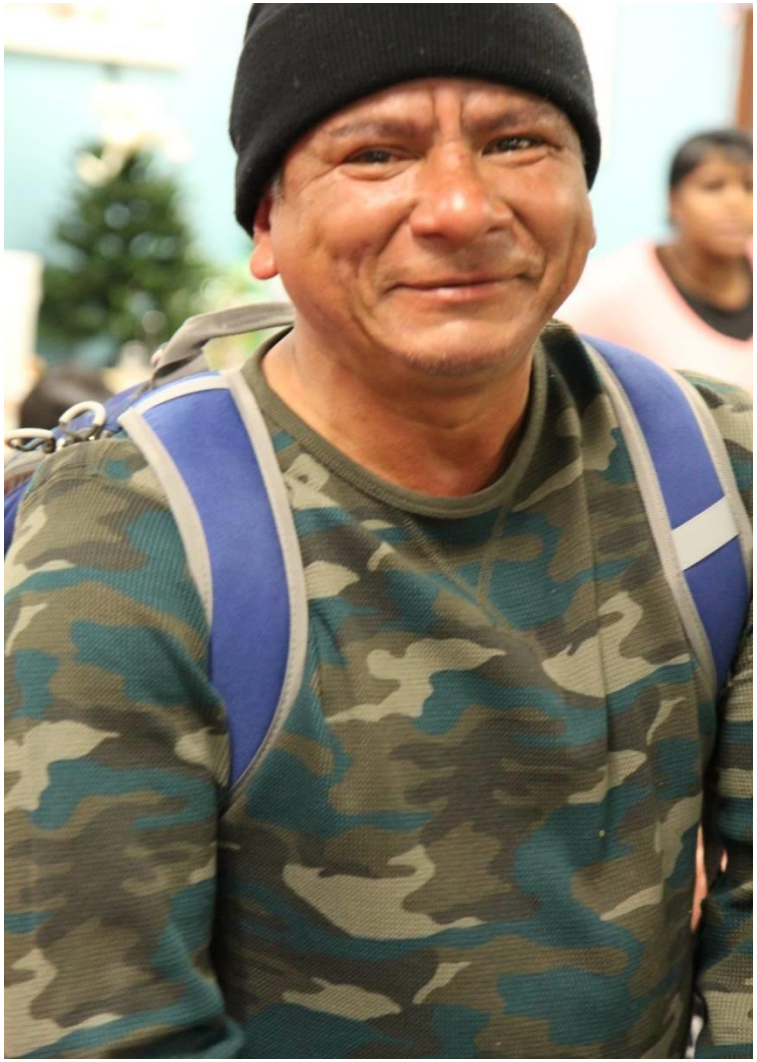
WHO IS VALLEY HOMELESS HEALTHCARE PROGRAM?

We are a patient centered, integrated healthcare team consisting of:

- Medical Providers
- Nurses
- Medical Assistants
- Medical Social Workers
- Psychologists
- Psychiatrists
- Health service representatives
- Outreach workers
- Outreach drivers

MEET “BRUCE WILLIS” A MEDICAL RESPITE CLIENT

- Bruce is a 55 year old male admitted to the Medical Respite after he fell and broke his leg.
- Born to a large Hispanic migrant worker family
- Experienced a traumatic episode
- Spent the next 27 years in a locked facility for the criminally insane
- Chronic alcoholic – worked at a liquor store
- Homeless for the last 20 years



MEDICAL RESPITE PROGRAM (MRP)

- A place for homeless folks to heal after they have been in the hospital. MRP coordinates the medical, social and mental health services in hopes of breaking the cycle of homelessness.
- Takes referrals from 9 Santa Clara County Hospitals
- Integrated staff
- 15 bed unit located in the counties largest homeless shelter- We are expanding to 20 beds!
- A client stays for about 6 weeks in MRP

MEDICAL RESPITE PROGRAM

- Hospitals pay a fee to participate.
- The fee is then paid to the homeless shelter for room and board of our clients
- The staff is paid for by a federal grant through HRSA
- Participating hospitals save a approximately $1M a year through the MRP
- Homeless Factor- 4 days
- An Advisory Board, made up of mostly consumers, helps to guide the MRP

COGNITIVE SCREENING

- Brief check of a patient's cognitive abilities

- Examples- Mini Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA)

COGNITIVE SCREENING

- Oftentimes providers have their own strategies or procedures for determining mental status
- More accurate to have a standardized test
  - Comparisons to normative sample
  - Specific way of asking questions (e.g. leading questions)
  - Memory task- uncommon words, environment cues




MMSE

- First introduced by Folstein, Folstein, & McHugh, 1975
- Designed to quickly screen cognitive functions
- Has been adapted to many different versions

STANDARDIZED MINI-MENTAL STATE EXAMINATION (SMMSE)

	QUESTION	TIME ALLOWED	SCORE
1	a. ***What year is this?***	10 seconds	/1
	b. ***Which season is this?***	10 seconds	/1
	c. ***What month is this?***	10 seconds	/1
	d. ***What is today's date?***	10 seconds	/1
	e. ***What day of the week is this?***	10 seconds	/1
2	a. ***What country are we in?***	10 seconds	/1
	b. ***What province are we in?***	10 seconds	/1
	c. ***What city/town are we in?***	10 seconds	/1
	d. ***IN HOME – What is the street address of this house?*** ***IN FACILITY – What is the name of this building?***	10 seconds	/1
	e. ***IN HOME – What room are we in? IN FACILITY – What floor are we on?***	10 seconds	/1
3	**SAY:** ***I am going to name three objects. When I am finished, I want you to repeat them. Remember what they are because I am going to ask you to name them again in a few minutes.*** Say the following words slowly at 1-second intervals - **ball/ car/ man**	20 seconds	/3
4	***Spell the word WORLD. Now spell it backwards.***	30 seconds	/5
5	***Now what were the three objects I asked you to remember?***	10 seconds	/3
6	**SHOW** wristwatch. **ASK:** ***What is this called?***	10 seconds	/1
7	**SHOW** pencil. **ASK:** ***What is this called?***	10 seconds	/1
8	**SAY:** ***I would like you to repeat this phrase after me: No ifs, ands or buts.***	10 seconds	/1
9	**SAY:** ***Read the words on the page and then do what it says.*** Then hand the person the sheet with CLOSE YOUR EYES on it. If the subject reads and does not close their eyes, repeat up to three times. Score only if subject closes eyes	10 seconds	/1
10	**HAND** the person a pencil and paper. **SAY:** ***Write any complete sentence on that piece of paper.*** (Note: The sentence must make sense. Ignore spelling errors)	30 seconds	/1

Provided by the Alzheimer's Drug Therapy Initiative for physician use

MMSE

- Moderate to high reliability in identifying cognitive deficits in moderate to severe dementia, but less-so for mild cognitive impairment
- Highly influenced by age and education
- Lack of screening for executive functioning

What is the Montreal Cognitive Assessment (MoCA)

- The MoCA is a brief cognitive screen originally designed to detect mild cognitive impairment

- The **Montreal Cognitive Assessment** (**MoCA**) was created in 1996 by Dr. Ziad Nasreddine in Montreal, Canada. It was validated in the setting of mild cognitive impairment, and has subsequently been adopted in numerous other settings clinically.

MoCA

- Test Access
  - The test and instructions have been translated to a number of different languages, all available on the website. the English version also has three forms, so they can be used for retesting if necessary

- The test is in the public domain for clinical usage, and the test and instructions can be printed at mocatest.org

Friday, May 2nd, 2014

Welcome to the Montreal Cognitive Assessment

The MoCA© is a cognitive screening test designed to assist Health Professionals for detection of mild cognitive impairment

TEST | INSTRUCTIONS

MoCA© NEWS | NORMATIVE DATA | REFERENCES

PERMISSION TO USE THE MoCA©

Receive UPDATES on MoCA©

For more information or feedback on MoCA© contact Dr Z. Nasreddine at info@mocatest.org

CEDRA

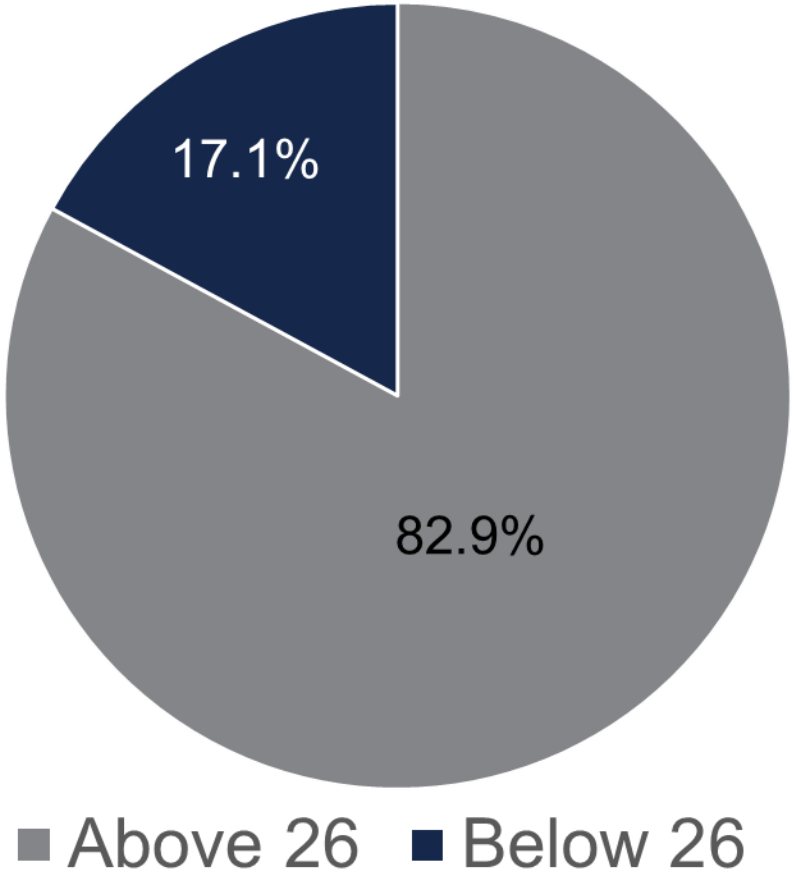
MoCA

- MoCA outperformed the MMSE in detecting, particularly mild cognitive impairments in
- Parkinson's Disease
  - Dalyrmple-Alford et al, 2010
  - Nazem et al, 2009
- Post acute stroke
  - Dong et al, 2010
- Heart Failure
  - Athilingam et al, 2010
- Mixed Diagnosis Longitudinal Inpatient Rehab
  - Aggarwal & Kean, 2010

RESPITE MoCA DATA

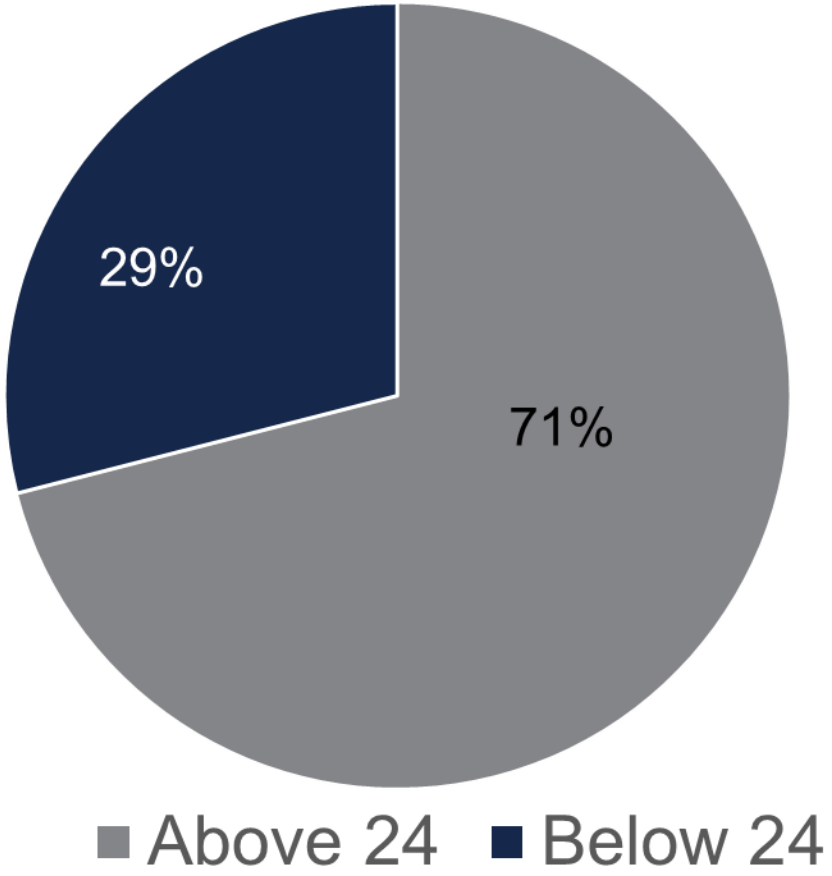
- # MoCAs- 76
- # Below 26- 63
- % Below 26- 82.9%

- No significant difference between men and women, *p* = .80



RESPITE MoCA DATA

- With the lower cutoff
- % Below 24- 71%



Bruce with the Medical Respite Staff Holiday Party 2013

Spent 2 months in the Medical Respite healing from his broken leg

Connected and developed trust with the MRP staff

Returned to work and returns to respite support groups regularly

MoCA score 19/30

Bruce has moved into an alcohol treatment facility and is working with his case manager for permanent housing!

Meet “Florence”

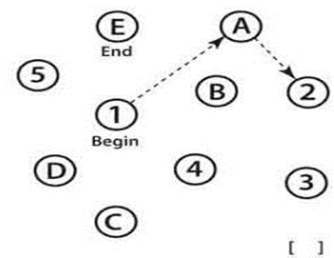
- Woman in her early 60’s
- Found “down” at Walmart- emaciated
- Malnourished and dehydrated
- Sent to Respite after her hospital admission to gain weight and strength
- MoCA:12/30
- Brain Atrophy / Dementia

MoCA DEMO

MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.1 Original Version

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

VISUOSPATIAL / EXECUTIVE — POINTS



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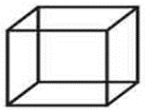


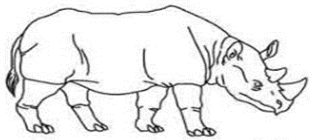
[ ] [ ]

Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands ___/5

NAMING

[ ]



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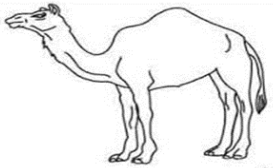

[ ] ___/3

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

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION Read list of digits (1 digit/ sec.).
Subject has to repeat them in the forward order [ ] 2 1 8 5 4
Subject has to repeat them in the backward order [ ] 7 4 2 ___/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors
[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B ___/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65
4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt** ___/3

LANGUAGE Repeat : I only know that John is the one to help today. [ ]
The cat always hid under the couch when dogs were in the room. [ ] ___/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words) ___/1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler ___/2

DELAYED RECALL

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

___/5

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

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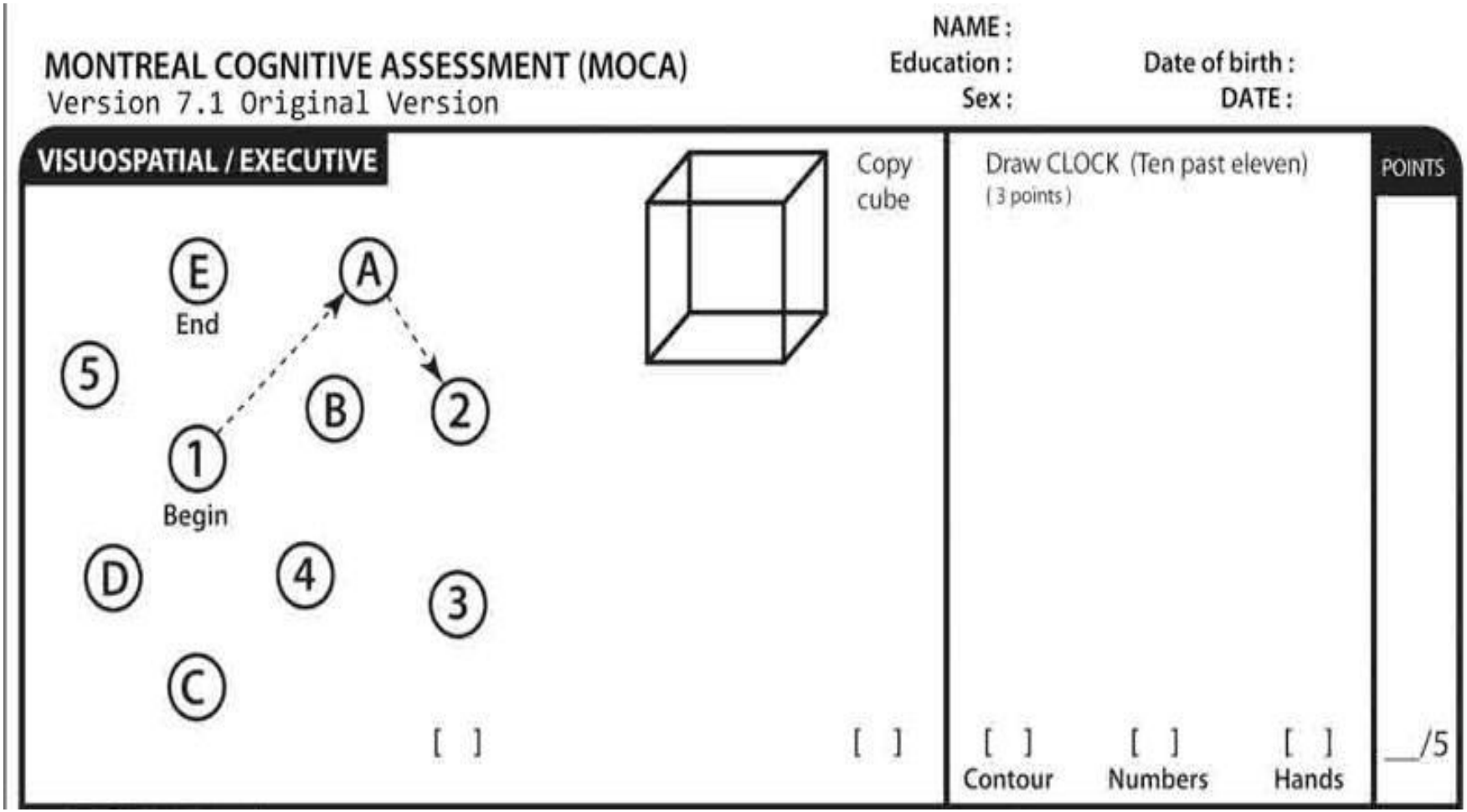
TOTAL ___/30
Add 1 point if ≤ 12 yr edu

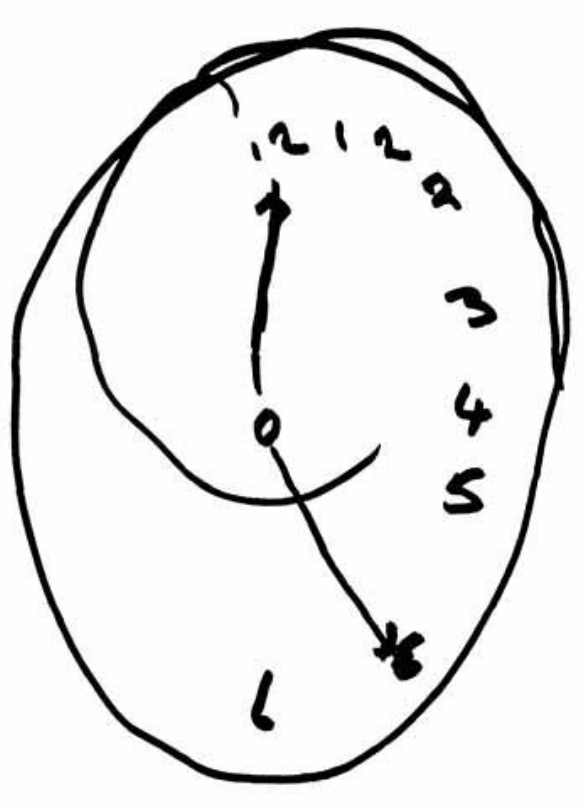
Administered by: _____

Visuospatial / Executive



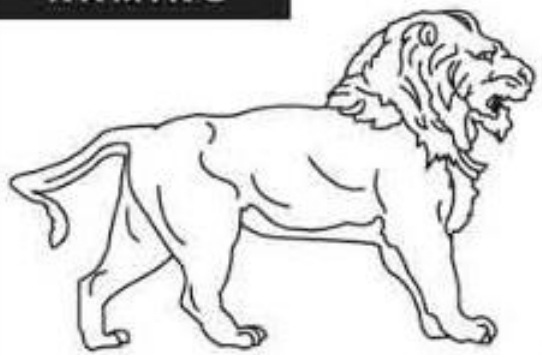
Visuospatial / Executive

- Executive Functioning
  - Multitasking, problem solving
- Visuospatial
  - Perceiving the world accurately



Naming and Memory

NAMING



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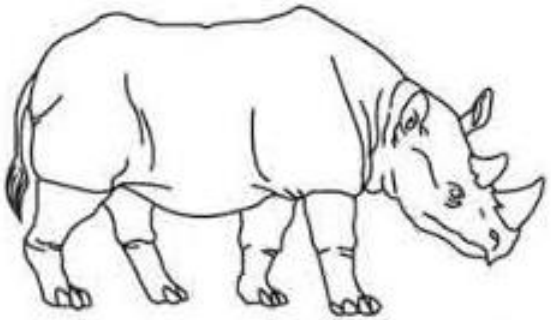

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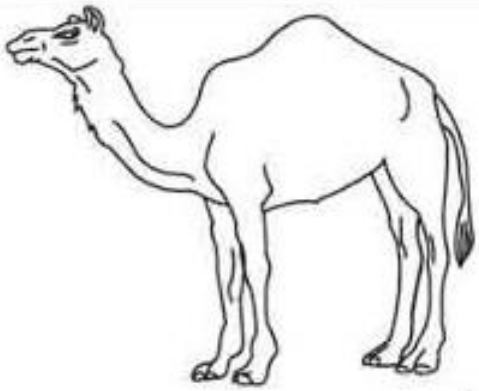


[ ]

___/3

MEMORY

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

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

Naming and Memory

- Naming
  - Simply name objects, word finding difficulties
- Memory
  - Immediate registration of words
  - Always repeat words twice
  - No points for answering correctly
  - Reminder that they will need to recall later

Attention, Language, and Abstraction

ATTENTION	Read list of digits (1 digit/ sec.).	Subject has to repeat them in the forward order [ ] 2 1 8 5 4 Subject has to repeat them in the backward order [ ] 7 4 2	__/2
	Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors	[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B	__/1
	Serial 7 subtraction starting at 100	[ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65 4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**	__/3
LANGUAGE	Repeat : I only know that John is the one to help today. [ ] The cat always hid under the couch when dogs were in the room. [ ]		__/2
	Fluency / Name maximum number of words in one minute that begin with the letter F	[ ] _____ (N ≥ 11 words)	__/1
ABSTRACTION	Similarity between e.g. banana - orange = fruit	[ ] train – bicycle [ ] watch - ruler	__/2

Attention, Language, and Abstraction

- Attention
  - Attend to verbal information and manipulate it
- Language
  - Repetition and verbal fluency
- Abstraction
  - Out of the box thinking

Delayed Recall and Orientation

DELAYED RECALL	Has to recall words WITH NO CUE	FACE [ ]	VELVET [ ]	CHURCH [ ]	DAISY [ ]	RED [ ]	Points for UNCUED recall only	/5
Optional	Category cue							
	Multiple choice cue							
ORIENTATION	[ ] Date	[ ] Month	[ ] Year	[ ] Day	[ ] Place	[ ] City		/6

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

Add 1 point if ≤ 12 yr edu

Administered by: _____

Delayed Recall and Orientation

- Delayed Recall
  - First without a cue, can they remember the words
  - Optional giving category cue then multiple choice
  - Only receive points for free recall

- Orientation
  - To time and place

Lowering MoCA Cutoff

- Research is showing that the original suggested cutoff (26) is too high, and it would be better to lower it to 23

- For our population, would highly recommend interpreting 23 and below as impaired

The MoCA at VHHP

- Use as a cognitive baseline
- Basic treatment planning
- Indication that more neuropsychological testing is needed

Meet Gary

- 59 year old male from Boston. History of door to door vacuum salesman. Divorced.
- Drove his supervisors car across the country to California
- Found “down” living in car. Unresponsive, suspected seizures from alcohol
- In ICU for almost 2 weeks

Meet Gary

- MoCA:18/30 2013 (impaired language and memory)
- January 2014- admitted back to hospital for severe seizure activity-due to drinking
- Returned to respite again with loss of memory, and noticeably withdrawn
- MoCA: 18/30 2014 (language improvement but not oriented x 4)
- Now in alcohol treatment

Importance of Cognitive Assessments

- Why give cognitive assessments when working with a homeless population?
  - Prevalence of cognitive impairment is much higher for the homeless population
  - Having cognitive impairments can negatively impact treatment outcomes

Cognitive Impairment in the Homeless

St. Michael's

Inspired Care. Inspiring Science.

Newsroom

Our Stories

Study finds almost half of homeless men had traumatic brain injury in their lifetime, vast majority before they lost their homes

Toronto, April 25, 2014

Tweet 45 g+1 11 Like 106

Almost half of all homeless men who took part in a study by St. Michael's Hospital had suffered at least one traumatic brain injury in their life and 87 per cent of those injuries occurred before the men lost their homes.

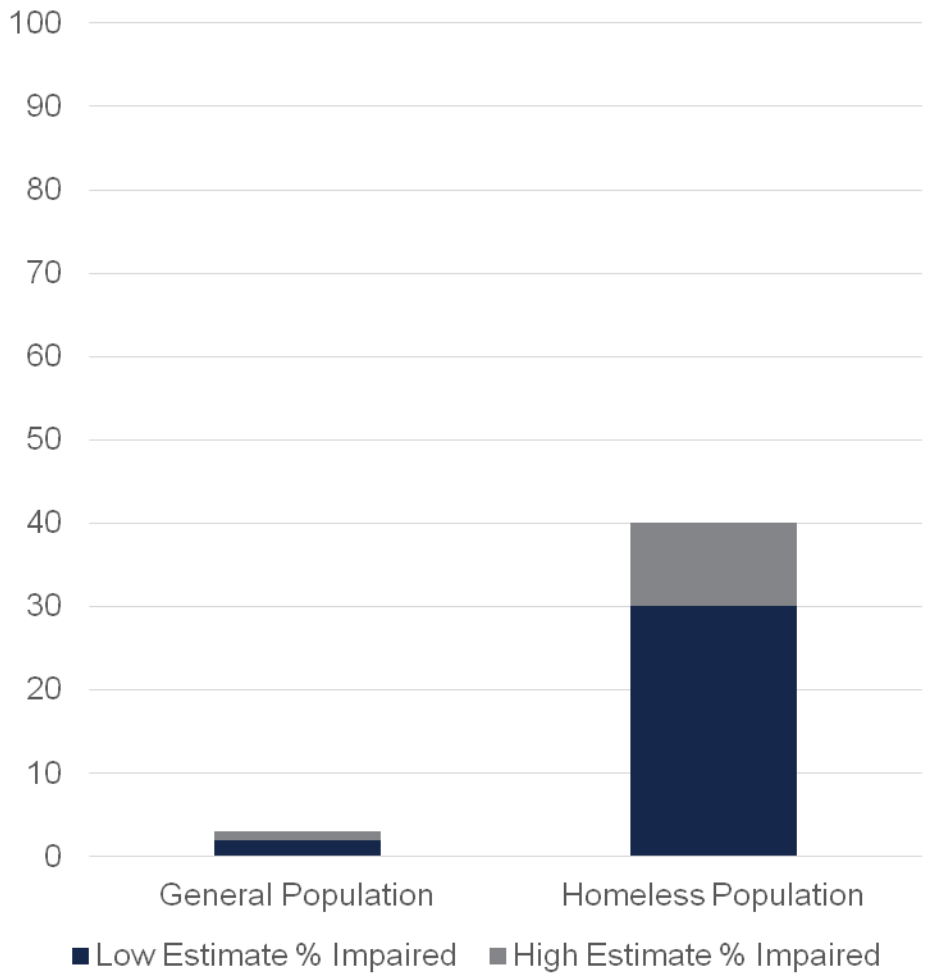
Importance of Cognitive Assessments

- Cognitive dysfunction in homeless adults: a systematic review
  - Sean Spence, MD MRC Psych, Richard Stevens, PhD, Randolph Parks, PhD
- Meta-analytic study of prevalence of cognitive dysfunction in homeless adults

Importance of Cognitive Assessments

- Comparison of Cognitive Impairments on the MMSE of homeless adults vs. general population

- "Among adults living in the community, the proportion expected to exhibit deficits on the MMSE is about 2-3%, whereas most studies of the homeless have shown much higher rates, reaching 30-40%."
  - Spence, Stevens, & Parks, 2004



Importance of Cognitive Assessments

- Spence, Stevens, & Parks
  - “Our findings suggest that it may be prudent to assess cognition when encountering patients who are homeless, especially if they are also mentally ill.”

Meet “Larry”

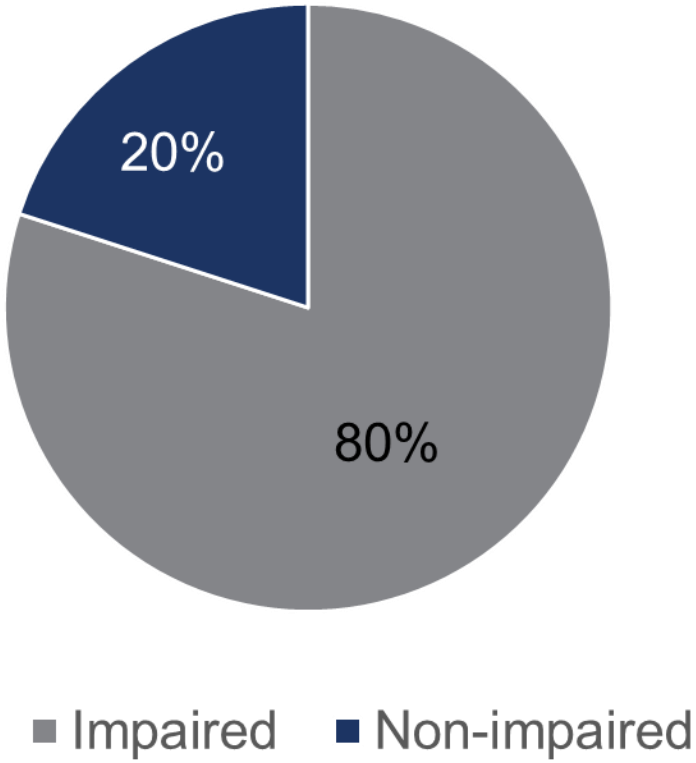
- 51 year old male history of traumatic injury secondary to train accident
- History of ETOH
- Hepatic encephalopathy with elevated ammonia level.
- Discharged to Medical Respite; MoCA score 20/30
- Two weeks into his stay, he stopped taking his Lactulose and again had elevated ammonia levels and was sent back to the hospital.

Importance of Cognitive Assessments

- Neuropsychological Functioning of Homeless Men
  - Solliday-McRoy et al., 2004
  - Neuropsychological testing of 90 homeless male patients

Importance of Cognitive Assessments

- Neuropsychological Functioning of Homeless Men
  - Possible cognitive impairment found in 80% of the sample, as measured by the Cognistat
  - Some memory deficits present in more than half the sample



Importance of Cognitive Assessments

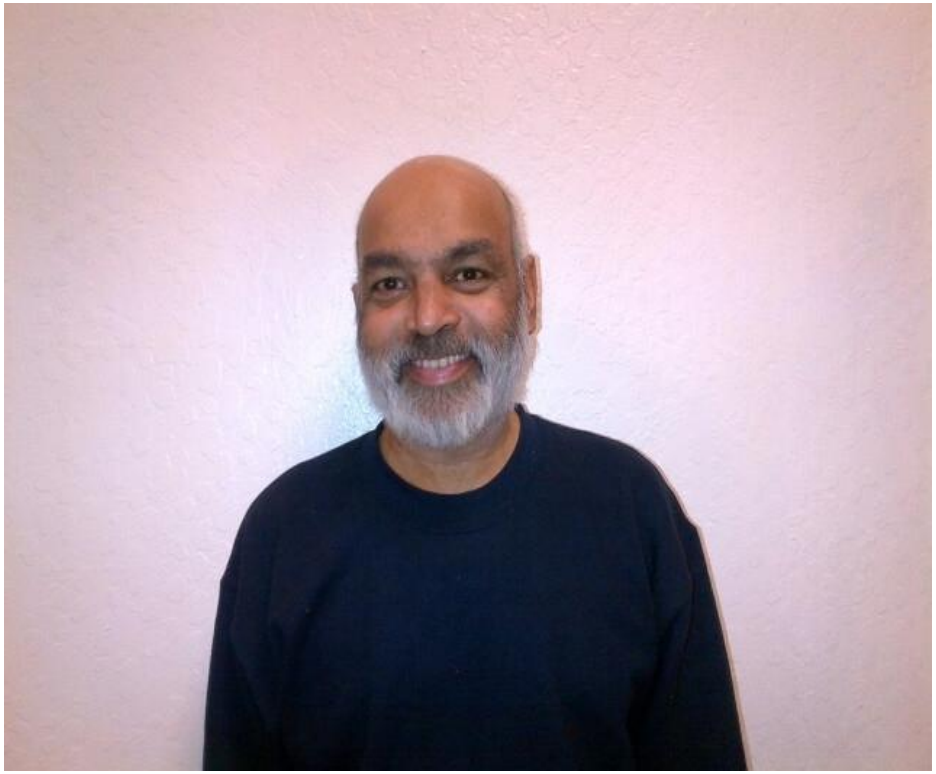
- The presence of cognitive impairment will likely negatively impact treatment outcomes
  - Labeled as “noncompliant” when actually the result of cognitive issues
  - Difficulty understanding and/or remembering rules in a shelter or treatment program

MOCA use at the Medical Respite

- Case management
- Altered treatment plan
- SSI Applications
- Day to day interactions
- Disposition
- Use at primary care center in waiting room (SW RN)
- Electronic medical record

Meet “HiTech”

- HiTech came to the Medical Respite in 2013.
- This was his second admission
- History of ETOH
- MoCA score 20/30



Meet “HiTech” Now

- HiTech has been sober now for several months
- He has been the “Medical Respite Lead”
- He is well respected by staff at the Shelter and the Patients.

QUESTIONS?

- Jonathan Feinberg, MS- jfeinberg@paloaltou.edu
- Ciara Mahan, PhD- ciara.mahan@hhs.sccgov.org
- Janet Kohl, RN- janet.kohl@hhs.sccgov.org

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