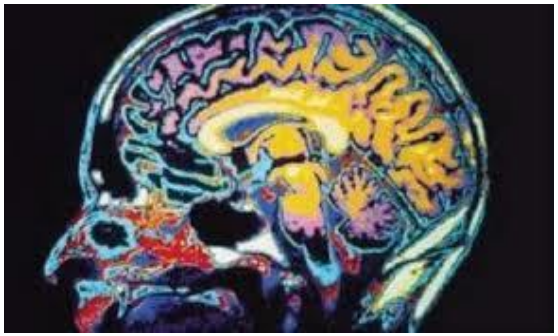
Traumatic Brain Injury: The Rancho Los Amigos Scale & Strategies for Interaction



Brittany Bradham, MSP, CCC-SLP, CBIS

Leah Galluzzi, MS, CCC-SLP, CBIS

Disclosures

- We are both full-time employees at Prisma Health Richland and receive a salary from the hospital.

- We have no additional financial or nonfinancial disclosures.

Our Trauma Center

- Prisma Health Richland is an American College of Surgeons (ACS)-verified Level 1 Trauma Center
- Our trauma team treats about 2,400 serious injuries each year
- Comprised of a surgical-trauma ICU, a surgical stepdown unit, and a dedicated trauma floor
- SLPs are a part of the rehab team in every one of these units

Defining TBI

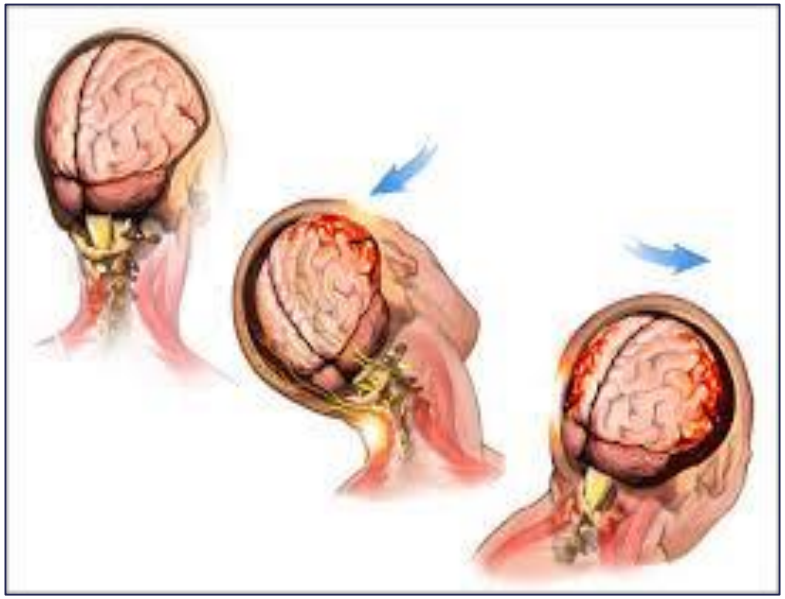
Traumatic Brain Injury

- Alteration in brain function or other evidence of brain pathology caused by an external force

- Two primary mechanisms
  - Impact to the head (closed/open)
  - Inertial forces (acceleration/deceleration)

The Silent Epidemic: National TBI Estimates

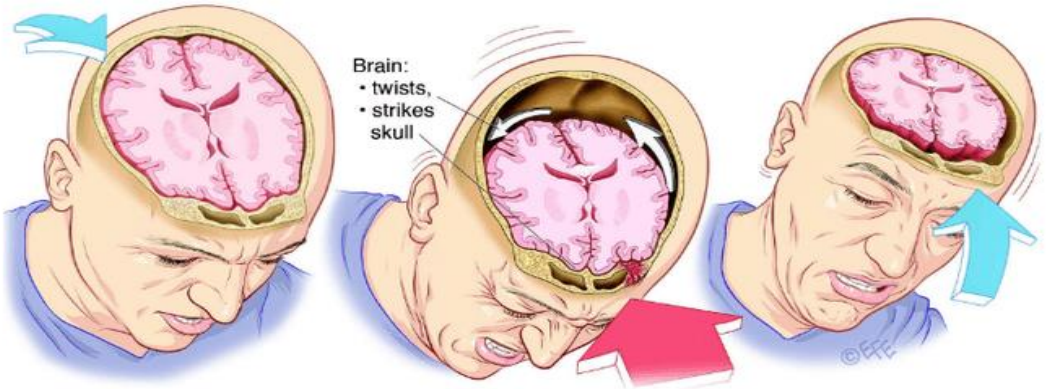
- Each year, an estimated **2.5 million people sustain a TBI**.
- TBI is a contributing factor to a third **(30%)** of all injury-related **deaths** in the United States.
- Currently more than **5.3 million** children and adults in the U.S. live with a lifelong disability as a result of TBI.
- TBI is the **second most prevalent** disability in the US (only behind depression)



Types of TBI: Concussion

Concussion – Mild TBI

- No intracranial bleeding
- 75% of TBIs each year
- Occurs with and without loss of consciousness (LOC)
  - More than 90% of concussions are not accompanied by LOC
- Nerve fibers (axons) are stretched and torn
- This disrupts communication between neurons and causes metabolic and chemical changes within the brain



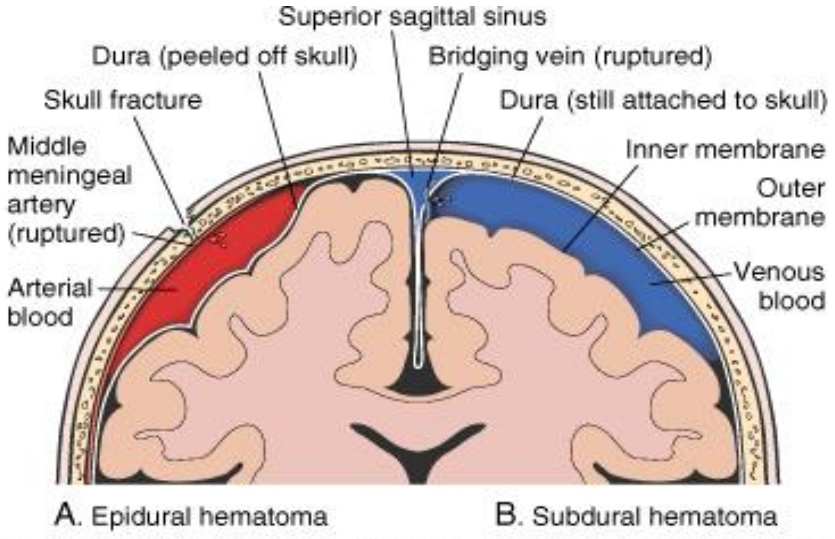
Types of TBI: Extra-axial Bleeds

- Blood from a damaged blood vessels accumulates & collects beneath the meningeal layers that cover the brain.
- Accumulation of blood may begin to exert pressure on the brain and cause shift and/or herniation.

➢ **Epidural Hematoma – EDH**

➢ **Subdural Hematoma – SDH**

➢ **Subarachnoid Hemorrhage – SAH**



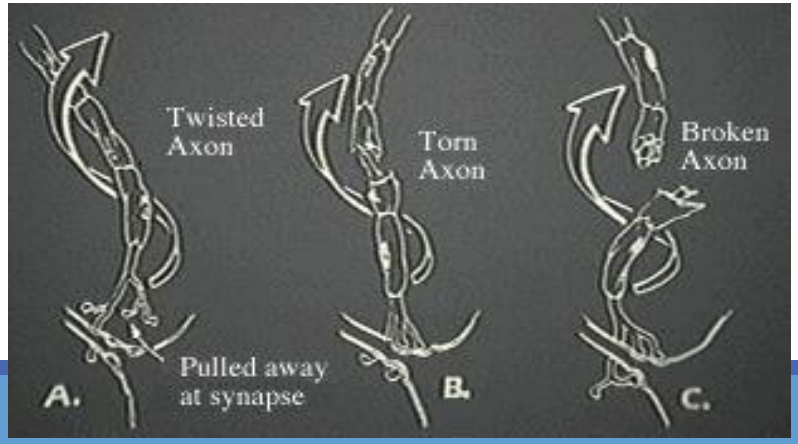
Types of TBI: Intra-axial bleeds

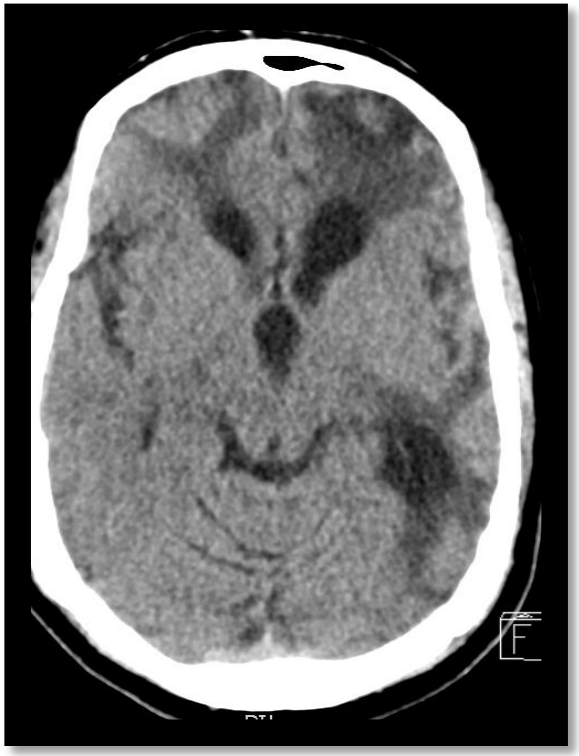
- Bleeding occurs within brain tissue.
- Blood is toxic to brain tissue and results in necrosis

➢ **Intraparenchymal Hemorrhage – IPH**

➢ **Intraventricular Hemorrhage – IVH**

➢ **Diffuse Axonal Injury - DAI**





TBI: Levels of Severity

Criteria	Mild	Moderate	Severe
Structural imaging	Normal	Normal or abnormal	Normal or abnormal
Loss of consciousness (LOC)	0–30 min	>30 min and <24 h	>24 h
Alteration of consciousness/mental state (AOC)[a]	A moment up to 24 hrs	>24 h. Severity based on other criteria	
Posttraumatic amnesia (PTA)	0–1 day	>1 and >7 days	>7 days
Glasgow Coma Scale (best available score in the first 24 h)	13–15	9–12	<9

Classification of TBI severity. This table lists the classification of traumatic brain injury (TBI) severity (Source: VA/DoD Clinical Practice Guideline for Management of Concussion/mTBI (2009))

Cognitive Deficits following TBI

- **Decreased Level of Alertness/Responsiveness**
- **Disorientation**
- **Impaired Attention**
  - Easily distracted, restless, decreased vigilance
- **Impaired Language**
  - aphasia, anomia, paraphasias, perseverations, alexia, agraphia
- **Impaired Memory**
  - Forgetfulness, poor carryover from day to day
  - Confabulations
    - the production of fabricated, distorted, or misinterpreted memories about oneself or the world, without the conscious intention to deceive

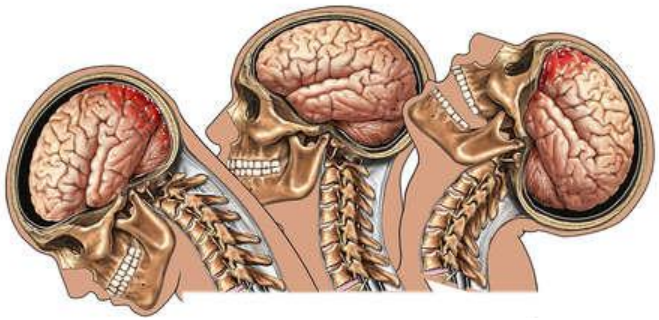
Cognitive Deficits following TBI

- **Impaired Executive Functioning**
  - Poor planning, thought organization, initiation, task completion, troubleshooting
- **Impaired Thought Organization**
  - tangential speech
- **Impaired Reasoning/Judgment**
  - poor safety awareness/insight/problem solving; denial of disability, poor judgment, overestimation of abilities, impaired Self-Awareness/Pragmatics
- **Impaired Visuospatial Skills**
  - Decreased awareness of distance to other objects/people, reduced depth perception
- **Poor Control of Emotions**
  - aggressive behaviors, irritability, high frustration, impulsivity, anxiety, apathy, childlike behaviors

PHR Trauma Team Guidelines:

*A cognitive evaluation & TBI education will be provided by a Speech Language Pathologist prior to discharge on all patients with:

- ✓ Intracranial bleeds
- ✓ + LOC
- ✓ Repetitive questioning at scene
- ✓ Altered GCS at scene
- ✓ Family, medical staff, or patient reporting +s/s of cognitive dysfunction



The Rancho Los Amigos Levels of Cognitive Functioning Scale

- A neurological scale that records **the level of cognitive recovery following a traumatic brain injury**.
- The scale describes behavioral characteristics and cognitive deficits typically seen after brain injury.
- It is most appropriate for use with TBI patients who are less than one-year post onset.
- The scale helps the rehabilitation team…
  - Understand and focus on the person's abilities in designing an appropriate treatment program.
  - Identify behaviors that signify recovery, decline, and/or plateauing of progress

Original Scale co-authored by Chris Hagen, Ph.D., Danese Malkmus, M.A., Patricia Durham, M.A. Communication Disorders Service, Rancho Los Amigos Hospital, 1972. Revised 11/15/74 by Danese Malkmus, M.A., and Kathryn Stenderup, O.T.R. Revised scale 1997 by Chris Hagen.

Stages of Recovery

- Patients progress through each stage at different rates.
- A patient may remain in one stage longer that another, progress varies widely person to person.
- Many patients demonstrate characteristics of more than one level. For Example: “Rancho III- Emerging IV”
- Depending on the severity of the brain injury, a patient may not progress to later stages of recovery.

Rancho Level & Severity of Deficits

- Rancho I-III
  - Profound Cognitive Impairment; Disorders of Consciousness
  - Total Assistance for ADL's
- Rancho IV-VI
  - Moderate-Severe Cognitive Impairment
  - Moderate-Max Assistance for ADL's
- Rancho VII-VIII
  - Mild-Moderate Cognitive Impairment
  - Minimal to Stand-By Assistance for ADL's

Rancho Los Amigos Revised Scale (RLAS-R)

This was developed later to more accurately distinguish the higher levels of recovery

- Rancho IX
  - Mild Cognitive Impairment
  - Stand by assistance on request
- Rancho X
  - Mild Cognitive Impairment
  - Modified Independent

Rancho I – No Response

- **Coma**
- Complete absence of observable change in behavior when presented visual, auditory, tactile, proprioceptive, vestibular, or painful stimuli.

Rancho II – Generalized Response

- **Vegetative state**
- Begins to respond to sounds, sights, touch, or movement
- Responds slowly, inconsistently, or after delay
- Responds the same way to various sensory stimulation
- Responses may include: gross body movement, “chewing”, diaphoresis, vegetative sounds, or change in vitals
- May open eyes

Rancho III – Localized Response

- **Minimally conscious state**
- Presence of sleep/wake cycles
- Makes more movements than before and react more specifically to stimuli
  - For example: turns toward sound, withdraws from pain, visual fixation and tracking
- Reacts slowly and inconsistently
- Begins to recognize family and friends; may respond to some people, but not others
- May follow simple commands or respond inconsistently to yes/no questions with head nods

Tips for Interaction: Rancho I-III

- Keep the room calm and quiet
- Limit visitors to 2-3 people at a time
- Provide short periods of stimulation. Stop if patient demonstrates signs of overstimulation such as:
  - Increased restlessness, stiffening of muscles, diaphoresis, facial grimacing, change in vitals, posturing, or lack of responses.

Tips for Interaction: Rancho I-III

- Introduce yourself, tell the patient where he is, why he is in the hospital, and the date.
- Explain to the patient what your are going to do
- Talk in a normal tone of voice
- Keep commands and questions short and simple
- Allow time for the patient to respond
- Encourage family to bring in familiar pictures, smells, music
- Consider having conversations with family outside of the room

Cognitive evaluations for RI-III

- Rappaport Coma/No Coma Scale
  - Auditory
  - Command responsivity
  - Visual
  - Threat
  - Olfactory
  - Tactile
  - Pain
  - Vocalization
- JFK Coma Recovery Scale
  - Auditory function
  - Visual function
  - Motor function
  - Oromotor/verbal function
  - Communication
  - Arousal

Treatment activities/goals for RI-III

- In response to multimodal sensory stimulation, patient will:
  - Tolerate without signs of distress or overstimulation
  - Participate with generalized responses
  - Participate with localized responses
  - Sustain eye opening
  - Demonstrate visual fixation
  - Demonstrate visual tracking
  - Produce vocalization

- Pt will follow 1-step commands.

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Feasibility of Instrumental Swallowing Assessments in Patients With Prolonged Disordered Consciousness While Undergoing Inpatient Rehabilitation

Susan L. Brady, MS, CCC-SLP, BRS-S; Theresa L.-B. Pape, DrPH, MA, CCC-SLP/L; Meghan Darragh, MS, CCC-SLP; Nelson G. Escobar, MD; Noel Rao, MD

Objective: To evaluate the feasibility, safety, and potential benefit of instrumental swallowing assessments for patients with prolonged disordered consciousness participating in rehabilitation. **Design:** Case-control, retrospective. **Participants:** Thirty-five participants divided into 2 cohorts according to cognitive level at the time of baseline instrumental swallowing assessment. Group 1 ($n = 17$) participants were at Rancho Los Amigo (RLA) level II/III or RLA level III, while Group 2 ($n = 18$) participants were rated better than RLA level III. **Results:** Aspiration and laryngeal penetration rates for both groups were similar (aspiration rate Group 1 = 41%, Group 2 = 39%; laryngeal penetration rate Group 1 = 59%, Group 2 = 61%). Overall, 76% (13/17) of Group 1 and 72% (13/18) of Group 2 were able to receive some type of oral feedings following baseline video fluoroscopic swallow study (VFSS) or endoscopic exam of the swallow (FEES). **Conclusion:** The majority of participants who underwent an instrumental swallowing examination while still functioning at RLA level II/III or RLA level III were able to return to some form of oral feedings immediately following their baseline examination. Swallowing as a treatment modality can be considered a part of the overall plan to facilitate neurobehavioral recovery for patients with prolonged disordered consciousness participating in rehabilitation. **Keywords:** *brain injury, coma, deglutition, disordered consciousness, dysphagia, rehabilitation*

Rancho IV – Confused & Agitated

- Alert and in heightened state of activity
- Purposeful attempts to remove restraints or tubes or crawl out of bed
- May perform motor activities, but without any apparent purpose
- Very brief and usually non-purposeful moments of sustained and divided attention
- Absent short-term memory
- Exhibit aggressive, uncooperative, or fight/flight behavior
- Mood may swing from euphoric to hostile with no apparent relationship to environmental events
- Have verbalizations which are incoherent and/or inappropriate

https://www.youtube.com/watch?v=5Kfiojg--Ic

Tips for Interaction: Rancho IV

- Emphasize patient's location, reason for hospitalization, and reassure his safety
- Allow as much movement as is safe
- Experiment to find a calming activity (music, quiet, turning off lights, removing restraints and allowing patient to hold caregiver's hand)
- Redirect. **Do not argue or reason with patient.**
- This patient becomes distracted, restless, or agitated easily. Provide breaks or change activities as needed
- Keep the room quiet and calm, limit visitors, turn off TV

Rancho V – Confused & Inappropriate

- Alert not agitated. May become agitated in response to overstimulation and/or lack of environmental structure
- Frequent, brief periods of non-purposeful sustained attention
- Confused and disoriented: may not know the date, where he is, why he is hospitalized
- Poor staff recognition
- Poor initiation and may not be able to start or complete basic ADLs
- Severely impaired recent memory, with confusion of past and present in reaction to ongoing activity
- May try to fill in gaps in memory by confabulating

Tips for Interaction: Rancho V

- Provide frequent re-orientation: date, time, reason for hospitalization, location
- Repeat things as needed, remember the patient's short term memory is still severely impaired or absent
- Keep commands, questions, conversations short and simple
- Help patient organize and initiate ADLs such as: brushing teeth, setting up meal tray, encourage patient to assist with hygiene
- Remember these patients can easily become agitated, therefore continue to limit visitors and overstimulation

Rancho VI – Confused & Appropriate

- Inconsistently oriented to person, time and place
- Attention improving when distractions are minimized
- Better recall of long term memory vs. short term
- Vague recognition of some staff
- Emerging awareness of appropriate response to self, family, and basic needs
- Unaware of impairments, disabilities and safety risks
- Can perform basic ALDs, but requires supervision or assistance.
- Verbal expressions are more appropriate in simple conversations

Tips for Interaction: Rancho VI

- Continue to provide frequent re-orientation
- Verbalize expectations for the day and continue to remind patient of previous activities, daily events, recent visitors
- Encourage patient to participate in all therapies and provide explanation regarding the benefits
- Review limitations & safety risks as these patients present with poor insight

Cognitive evaluations for R IV-VI

- Informal evaluations that are flexible and can be done across multiple sessions
- Assess all domains of cognition including:
  - Orientation
  - Attention
  - Memory
  - Language
  - Executive function (safety awareness, problem solving, organization, etc.)

Treatment activities/goals for R IV-VI

- Simple orientation using environmental aids (white board in room, calendar)
- Attention:
  - Counting (forwards/backwards)
  - Selective word responsivity
- Memory:
  - Immediate/delayed word recall
  - Digit recall
  - Biographical information for long-term memory
  - Story recall
- Language:
  - Confrontation/generative naming
  - Yes/no questions
  - Command following
- Executive function:
  - Simple problem solving/safety awareness

Rancho VII – Automatic & Appropriate

- Consistently oriented to person and place. May require assistance for orientation to time.
- Attention improving; however, may have difficulty in distracting or stressful environments
- Demonstrates carry over for new learning, short term memory improving
- Independent with most ADLs; however, may need assistance with higher level tasks or with problem solving and troubleshooting
- Unrealistic planning for the future, overestimates abilities, may be oppositional/uncooperative
- Superficial awareness of condition, but unaware of specific impairments and disabilities and the limits they place on ability to safely, accurately and completely carry out ADLs

Rancho VIII –Purposeful & Appropriate

- Consistently oriented
- May use assistive memory devices to recall daily schedule, "to do" lists, and record critical information for later use
- Initiates and carries out steps to complete familiar routines with assistance and can modify the plan when needed with minimal assistance
- Acknowledges impairments and disabilities; however, may still overestimate or underestimate abilities
- May begin to think about consequences of a decision or action
- Depressed, irritable, low frustration tolerance/easily angered, argumentative, self-centered
- Increased awareness of inappropriate social interaction & behaviors

Tips for Interaction: Rancho VII-VIII

- Continue to provide frequent re-orientation
- Verbalize expectations for the day and continue to remind patient of previous activities, daily events, recent visitors
- Encourage patient to participate in all therapies and provide explanation regarding the benefits.
- Review limitations & safety risks as these patients present with poor insight

Cognitive evaluations for R VII-VIII

- Standardized assessments
  - GOAT-The Galveston Orientation and Amnesia Test
  - MOCA-Montreal Cognitive Assessment
  - SLUMS-The Saint Louis University Mental Status Examination
  - CLQT-Cognitive-Linguistic Quick Test
  - COGNISTAT
  - MMSE-Mini Mental State Examination

The Galveston Orientation and Amnesia Test (GOAT)

Question	Error score	Notes
What is your name?	/ 2	Must give both first name and surname.
When were you born?	/ 4	Must give day, month, and year.
Where do you live?	/ 4	Town is sufficient.
Where are you now?		
(a) City	/ 5	Must give actual town.
(b) Building	/ 5	Usually in hospital or rehab center. Actual name necessary.
When were you admitted to this hospital?	/ 5	Date.
How did you get here?	/ 5	Mode of transport.
What is the first event you can remember after the injury?	/ 5	Any plausible event is sufficient (record answer)
Can you give some detail?	/ 5	Must give relevant detail.
Can you describe the last event you can recall before the accident?	/ 5	Any plausible event is sufficient (record answer)
What time is it now?	/ 5	1 for each half-hour error, etc.
What day of the week is it?	/ 3	1 for each day error, etc.
What day of the month is it? (i.e. the date)	/ 5	1 for each day error, etc.
What is the month?	/ 15	5 for each month error, etc.
What is the year?	/ 30	10 for each year error.
Total Error:		
100 - total error		Can be a negative number.

76-100 = Normal

66-75 = Borderline

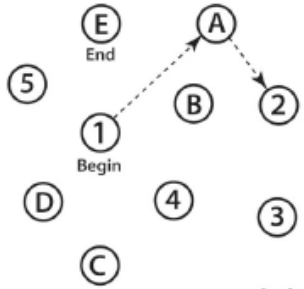
< 66 = Impaired

MONTREAL COGNITIVE ASSESSMENT (MOCA)

Version 7.1 Original Version

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

VISUOSPATIAL / EXECUTIVE



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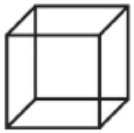


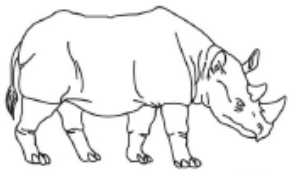
[ ] [ ]

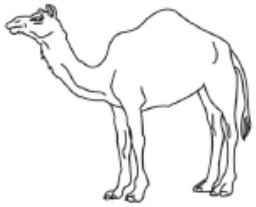
Draw CLOCK (Ten past eleven)
(3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS ___/5

NAMING





[ ] [ ] [ ] ___/3

MEMORY

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

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION

Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2 ___/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B ___/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt** ___/3

LANGUAGE

Repeat : I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ] ___/2

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

ABSTRACTION

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

DELAYED RECALL

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

___/5

ORIENTATION

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

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

TOTAL ___/30

Add 1 point if ≤ 12 yr edu

Administered by: _____

VAMC
SLUMS EXAMINATION

Questions about this assessment tool? E-mail aging@slu.edu

Name_____ Age_____

Is the patient alert?_____ Level of education_____

__/1 (1) 1. What day of the week is it?

__/1 (1) 2. What is the year?

__/1 (1) 3. What state are we in?

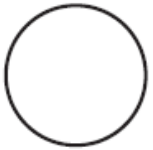
4. Please remember these five objects. I will ask you what they are later.
Apple Pen Tie House Car

5. You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.
(1) How much did you spend?
__/3 (2) How much do you have left?

6. Please name as many animals as you can in one minute.
__/3 (0) 0-4 animals (1) 5-9 animals (2) 10-14 animals (3) 15+ animals

__/5 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.
__/2 (0) 87 (1) 648 (1) 8537



9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.
(2) Hour markers okay
__/4 (2) Time correct

(1) 10. Please place an X in the triangle.

__/2 (1) 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.

(2) What was the female's name? (2) What work did she do?
__/8 (2) When did she go back to work? (2) What state did she live in?

_____ TOTAL SCORE

SCORING

High School Education		Less than High School Education
27-30	Normal	25-30
21-26	Mild Neurocognitive Disorder	20-24
1-20	Dementia	1-19

CLINICIAN'S SIGNATURE DATE TIME

SH Tariq, N Tumosa, JT Chibnall, HM Perry III, and JE Morley. The Saint Louis University Mental Status (SLUMS) Examination for detecting mild cognitive impairment and dementia is more sensitive than the Mini-Mental Status Examination (MMSE) - A pilot study. *Am J Geriatr Psych* 14:900-10, 2006.

Treatment activities/goals for R VII-VIII

- Treatment typically addresses higher level memory and executive function
  - Delayed sentence/paragraph recall
  - Recall of daily activities
  - Identifying problems and solutions
  - Identifying similarities/differences
  - Abstract categorization
  - Medication management/sorting
  - Mock bill paying
  - Reading/interpreting calendars/maps/menus
  - Clock drawing
  - Reasoning/Calculations
  - Sequencing activities

Treatment activities/goals for R VII-VIII

- Safety awareness
  - "What are some reasons to call 911?"
  - "What would you do if a piece of bread got stuck in your toaster and started smoking?"
  - "What would you do if there was a fire in your house?"
  - "What would you do if a broken pipe was flooding your kitchen?"
  - "What would you do if you locked yourself out of your house?"
  - "What do you do if someone is trying to break into your house?"
  - "What do you do if you can't remember how much medicine to take?"

Rancho IX-Purposeful & Appropriate

- Able to shift between tasks and completes them accurately for at least two hours
- Able to carry out familiar tasks independently and unfamiliar tasks with assistance when requested
- Aware of impairments and takes appropriate corrective action but requires stand-by assist to anticipate a problem and avoid it
- Accurately estimates abilities and able to think about consequences of actions
- Stand-by assistance to respond to other's needs/feelings
- Depression may continue
- May be easily irritable and low frustration tolerance

Rancho X-Purposeful & Appropriate

- Can handle multiple tasks simultaneously but may require breaks
- Able to independently maintain assistive memory devices
- Can independently carry out familiar and unfamiliar tasks, however may require extra time to complete
- Anticipates problems caused by impairment and takes action to avoid them, however may require extra time to complete
- Accurately estimates abilities
- Able to recognize needs/feelings of others
- Periodic periods of depressions
- Irritability when sick, fatigued, or stressed
- Social interactions are appropriate

QUESTIONS??

Case Study #1

42 yo M admitted 9/7 s/p MCC vs. street sweeper. +Etoh. +LOC. Intubated on arrival d/t low GCS (5). Converted to #8 suctionaid trach 6 days later.

Injuries: DAI, R holohemispheric SDH, L SDH, subdural hygromas, SAH, cortical contusions, L temporal bone fx, skull base fx, pneumocephalus, seizures, PNA, tracheitis … multiple additional injuries

Case Study #1

Cognitive/sensory stimulation evaluation 9/23. Pt was still on a ventilator.

"**Profound** cognitive impairment c/w **Rancho II**. Pt scored 2.7 on the Rappaport Coma/Near Coma scale, which is indicative of moderate coma or **vegetative state**. Pt responds to repeated stimuli with physiological changes, gross body movements, and decerebrate posturing. More complex brain stem reflexes noted, including yawning and swallowing. Copious secretions around trach hub and suctioned from subglottic port. Pt opens eyes and briefly orients toward this clinician, but minimal visual fixation and no tracking observed. No response to visual theat. Unable to follow simple commands. Unable to answer simple yes/no questions with head nod. Will follow for continued sensory stimulation/cognitive tx."

Case Study #1

Passy Muir speaking valve evaluation and bedside swallow evaluation completed 11/7 when pt weaned from vent.

Pt was a Rancho III: localized responses.

Pt tolerated PMV with no s/sx distress, no change in vitals, transtracheal manometry EEP remained at 0 cmH20. PMV left bedside for use with supervision.

Bedside swallow evaluation revealed +s/s oropharyngeal dysphagia and high risk for silent aspiration given severe TBI, prolonged intubation, and trach.

Rec: NPO and VFSS, which was completed the next day.

Case Study #1

VFSS 11/8 revealed mild oropharyngeal dysphagia with flash penetration of thin liquids and trace penetration of puree. No aspiration.

Rec: puree/thin with 1:1 assist d/t oral and cognitive deficits.

Pt was upgraded to mechanical soft/thin 8 days later. Pt was a Rancho IV at that time.

Pt never progressed beyond a Rancho IV (5 months later).

Still hospitalized d/t no funding (insurance).

Case Study #2

48 yo F admitted 7/23 s/p MCC. +LOC. Intubated upon arrival d/t combativeness. Converted to trach 4 days later (#8 cuffed Shiley XLT, G-tube also placed).

Injuries: extensive SAH, SDH, DAI, IPH with severe global mass effect, midline shift, and uncal herniation, L scalp injury, R occipital fx extending through skull base, L lamina papyracea fx, maxillary dental incisor injuries, extensive chest wall trauma with multiple rib fx and flail chest, large tension PTX, HTX, L3-L4 fx

Pt underwent L decompressive hemicraniectomy upon arrival.

Case Study #2

Cognitive/sensory stimulation evaluation 8/18 revealed profound cognitive impairment c/w Rancho II – emerging III: generalized - localized response.

"Pt is most responsive to noxious stimulation to which she demonstrates flexion withdrawal/avoidance & facial grimace. Unable to fixate or track. Unable to localize to auditory input. Responds to discomfort with generalized writhing (in response to RN in & out cath'ing). Restless with mostly nonpurposeful movements of L arm. Unable to follow commands. Some intermittent, unintelligible attempts at mouthing words. Unable to answer simple yes/no questions with head nod. Poor secretion management with significant drooling.
SLP will continue to follow for sensory stimulation tx. Will monitor readiness for swallow and PMV evaluations as appropriate."

Case Study #2

Passy Muir evaluation completed 8/30 when pt downsized to #6 cuffless trach. Pt tolerated PMV and valve was left bedside for use with 1:1 supervision.

Bedside swallow evaluation also completed 8/30.

+s/s oropharyngeal dysphagia, +overt s/s aspiration and pt with green dye return from trach (indicative of gross aspiration). Did not recommend instrumental swallow study that date d/t poor PO acceptance and severe bolus holding.

Case Study #2

FEES 9/14 (~2 weeks later). Pt was a Rancho II-III + global aphasia.

Mild-moderate oropharyngeal dysphagia with deep penetration of thin liquids and trace penetration of puree, mod-severe post-swallow pharyngeal residue, waxing/waning LOA.

Rec: puree solids, nectar thick liquids

Case Study #2

Pt subsequently developed change in status, seizure, and increased herniation noted on CT head. Pt was taken for washout craniotomy and made NPO.

Repeat **FEES** 10/19: severe oropharyngeal dysphagia with silent aspiration of all consistencies. Rec: NPO

Pt transferred to acute rehab (Craig Rehab in CO) 10/23

Pt was Rancho IV, NPO + PEG.

THANK YOU FOR YOUR ATTENTION!

QUESTIONS???

Resources

http://www.rancho.org/research_rancholevels.aspx

https://www.myshepherdconnection.org/docs/Rancho_Scale_English.pdf

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