Neurologic Exam Evaluation Checklist (NEURO OSCE)

Student's Name: _____
Date: _____
Evaluator's Names: _____

Examiner: **Mark A** **if the step was done correctly**
Mark B **if the step was done but if the technique was unsatisfactory**
Mark C **if the step was omitted**

PLEASE NOTE: FOR ITEMS MARKED "B," THE EVALUATOR NEEDS TO BE SPECIFIC AS TO WHY THE STEP WAS UNSATISFACTORY. PLEASE WRITE DIRECTLY ON THIS SHEET.

_____ **1. WASH HANDS**

(Patient is seated.)

Cranial Nerves:

_____ **2. ASSESS VISUAL FIELDS** *(screening test for CN2 & Visual system: peripheral vision)*

-Examiner is positioned
-in front of pt
-about 2 feet away from pt
-at eye level with the pt
-Examiner instructs pt to stare at examiner's nose ("*Don't move your eyes.")*
-Examiner stares at patient's nose
-Both eyes are examined together (Both eyes are open)

a) Examiner holds out his or her index fingers in the periphery of the patient's vision, about 180^{o} apart (e.g., above the patient's right eye and below the patient's left eye), and slightly wiggles **one** index finger at a time.
The patient is asked to identify or point to the finger. You are wiggling or ask the pt to identify how many fingers you are holding up (1, 2, or 5).

b) With the examiner's fingers in the same position as in (a), both fingers are wiggled at the same time, and the patient should identify that **both** are simultaneously moving.

c) Examiner then "rotates" his or her extended index fingers about 90^{o} from the initial position (e.g., now above the patient's left eye and below the patient's right eye), and slightly wiggles **one** index finger at a time.

d) With the examiner's fingers in the same position as in (c), both fingers are wiggled at the same time, and the patient should identify that **both** are simultaneously moving.

e) Examiner holds his or her index fingers about 180^{o} apart in the temporal visual fields (e.g., left of patient's left eye, right of patient's right eye) in a horizontal plane.
The patient is asked to identify or point to the moving finger.

f) With the examiner's fingers in the same position as in (e), both fingers are wiggled at the same time, and the patient should identify that **both** are simultaneously moving.

-Examiner should have his or her finger half way between the pt and his/herself, and gradually move the wiggling finger more towards the center of vision, until it is perceived by the patient.

-Examiner "rotates" his or her index fingers, checking for the visual fields of both eyes superiorly, inferiorly and temporally.

- Any abnormality or problem with this screening test of visual fields, or a complaint of visual loss, prompts retesting of visual fields one eye at a time (see Addendum later). Failure of the patient to recognize ***both*** *simultaneously moving fingers suggests visual extinction from a parietal lobe lesion.*

Note: The examiner should be testing his/herself at the same time and comparing his/her answer to the patients – assuming the examiner has normal visual fields!

_____ **3. DO THE FUNDUS EXAM** (CN2 Student inspects **both eyes** with the ophthalmoscope.)

These are essential (right-right-right, and left-left-left):
-Examiner holds ophthalmoscope with examiner's **right** hand to look through examiner's **right** eye when inspecting patient's **right** eye.
-Examiner holds ophthalmoscope with examiner's **left** hand to look through examiner's left eye when inspecting patient's **left** eye.

These are not essential; however doing these optimizes conditions to facilitate the exam:
Proper patient **position** is helpful for ophthalmoscopy
- Goal is to be eye level with the patient.
    -If the pt is "slouching" tell them to sit up straight so the examiner doesn't have to bend over to attempt the exam
    -If the pt is sitting too far back on the exam table, the examiner might ask patient to sit forward on the table.
    -If patient is already in a good position, nothing may need to be changed
-Examiner should attempt to darken room (i.e., turn off or down lights, close shades, etc.)
    -warn the patient you are going to do this!
-Patient is told to **stare off in the distance** or stare at the wall (*look at the clock on the wall)* and not to look at the light from the ophthalmoscope or not to move their eyes during this exam
-Examiner should stand right next to the pt's mid thigh (you need to be next to the pt)
    -You may need to tell pt to put their legs together so you can be close to them
-Hold the ophthalmoscope so that:
    -the top of the scope is against your eyebrow
    -the bottom of the scope is held against your upper cheek
    -examiner's head and the ophthalmoscope should move as "one"
    -common error – examiner holds the ophthalmoscope too far from their face
-Examiner should start about 12 to 15 inches from the patient and **slowly** move forward to the patient's eye. *(Examiner should not" startle" the patient by moving towards the patient too quickly -a brief introductory statement lets the pt know what to expect)*
-Examiner looks approximately **15 degrees lateral** to pt's line of vision to see the disc
    -common error – examiner is directly in pt's line of vision and then can't locate the disc
-Examiner begins about 12-15 inches from pt's eye with the diopters reading at about +8 to +10 (either green or black numbers on ophthalmoscope) to first see the red reflex.
As the examiner approaches the pt, they slowly change the diopters towards 0 or a negative 1 or 2 (red numbers) to see the optic disc and retina.

-Examiner should systematically inspect for:
a. Optic disc: color, shape, margins, and cup-to-disc ratio
b. Vessels: caliber, arterial/venous ratio, obstruction, arterial light reflex, and for presence or absence of arterial/venous nicking.
c. Background: inspect for pigmentation, hemorrhages, hard or soft exudates
d. Macula: attempt to identify

_____ **4. ASSESS PUPIL RESPONSE** (CN2, 3)
___Right eye
___Left eye
(The examiner should check for the direct and consensual response to light in each pupil)
(Examiner shined a light into each eye separately)

_____ **5. CHECK FOR ALL 6 CARDINAL POSITIONS OF GAZE** (CN 3, 4, 6)

-Examiner tells pt to not move their head and *"Follow my finger with your eyes open."*
-Examiner places their finger/penlight/ or other object about 12 inches or more from pt
-Examiner makes a large "H" while pt moves their eyes
-from the pt's nose, examiner should move about 1 ft horizontally from the midline and then move vertically about 1 ft up and down at that lateral point and then repeat in the other direction

The 6 cardinal positions of gaze:
-lateral gaze: lateral rectus muscle = CN6 (abducens)
-medial gaze: medial rectus muscle = CN3(oculomotor)
-gaze up and out: superior rectus muscle = CN3
-gaze down and in: superior oblique muscle = CN4 (trochlear)
-gaze up and in: inferior oblique muscle = CN3
-gaze down and out: inferior rectus muscle = CN3

"LR6, SO4, all the rest 3"
-lateral rectus muscle for lateral gaze = CN6 = abducens verve
-superior oblique muscle for gaze down and in = CN4 = trochlear nerve

_____ **6. ASSESS THE 3 SENSORY DIVISIONS OF CN 5** (light touch on pt's face)

-Examiner explains step to pt first
-Examiner tells pt to close their eyes
-Examiner uses a fine wisp of cotton and asking pt to say "yes" each time they feel the touch, and ask pt if the touch feels the same on both sides.
-SIX AREAS MUST BE ASSESSED –
-both sides of the forehead (ophthalmic division of CN5)
-both sides superficial to maxillary sinuses = cheeks (maxillary division of CN5)
-both sides superficial to the mandibles = jaw (mandibular division of CN5)

_____ **7. ASSESS CN 7**

Examiner asked pt to raise both eyebrows or frown or wrinkle my forehead. (CN7)
-Examiner may demonstrate the desired result to the pt first

_____ **8. ASSESS CN 7**

Examiner asked pt to "show my teeth" or "smile and show your teeth" (CN7)
-E*xaminer may demonstrate the desired result*

_____ **9. ASSESS THE AUDITORY DIVISION OF CN 8**

-Examiner asked pt to close their eyes and identify the examiner's gentle rubbing of his/her fingers (or ticking watch or whispered word) –about 3 inches from right and left ear

_____ **10. ASSESS SOFT PALATE MOVEMENT** (CN10, questionably CN9)

-Examiner asks pt to "say ah." Both sides of the palatal arch and the uvula should elevate symmetrically. Use a light source. You don't want to miss any oral pathology.

The gag elicited by the palatal reflex is annoying to some patients, so this reflex should be checked only if palatal elevation upon saying "ah" appears abnormal, or the patient has complained of a problem with swallowing or speech. The peritonsillar area on each side is gently touched with a cotton swab (afferent is CN9) and symmetrical elevation of the palate and uvula occurs (efferent is CN10). It is doubtful that CN9 has any motor function regarding the palate, but it does supply sensory input for the gag (palatal) reflex.

_____ **11. ASSESS PTS ABILITY TO COUGH** (CN10, Vagus nerve, innervates the vocal cords)

Examiner may ask pt to turn their head so the pt does not cough on the examiner.

_____ **12. ASSESS TRAPEZIUS MUSCLE STRENGTH** (CN11, Spinal Accessory Nerve).
-Examiner places his/her hands on pt's trapezii muscles and then asks pt to shrug both shoulders upward against his/her hands. Examiner notes strength and symmetry of contraction.

_____ **13. ASSESS STERNOCLEIDOMASTOID MUSCLE STRENGTH** (CN11, Spinal Accessory Nerve).
Examiner asks pt to turn the head to each side against resistance from the examiner's hand. As the pt attempts to turn the head to each side, examiner observes the strength of the contraction of the OPPOSITE sternocleidomastoid muscle. (*The pt's right SCM contracts and turns pt's head to pt's left)*

_____ **14. ASSESS HYPOGLOSSAL NERVE** (CN12)
-Examiner asked pt to protrude their tongue, and then to move it from side to side.
-Normally, the tongue protrudes in the midline

MOTOR SYSTEM: Examiner should inspect muscles for asymmetry, atrophy and fasciculations while testing muscle tone and strength.

_____ **15**. **ASSESS MUSCLE TONE IN THE UPPER LIMBS** (RESISTANCE TO PASSIVE STRETCH)
___RUE
___LUE

The patient is asked to relax. The examiner supports the patient's elbow, and grasping the patient's hand passively flexes and extends the wrist, elbow and shoulder through a moderate range of motion. With practice this can be combined into a single, smooth movement.
Normal resistance is felt as mild resistance to passive stretching, which is felt evenly throughout the entire ROM at each joint in each extremity. Abnormal tone is either decreased or increased (which is divided into "clasp-knife" spasticity or "lead pipe" rigidity)

Muscle strength is graded 0-5:
0 = no contraction
1 = barely detectable flicker or trace of contraction
2 = active movement with gravity eliminated *(horizontal motion is seen)*
3 = active movement against gravity
4 = active movement against gravity and some resistance
5 = active movement against full resistance – this is normal.
Examiner always compares pt's right side to left side and should detect symmetry; pt's dominant side may be slightly stronger.

_____ **16**. **ASSESS MUSCLE STRENGTH OF THE UPPER EXTREMITIES**
Examiner determined muscle power by gently trying to overpower contraction of each group of muscles bilaterally:

<u>upper extremities (ask student to grade each with 0-5 scale);</u>

___ shoulder-abduction *(start with hands at pt's side, then ask pt to abduct arms to 90 degrees)*
___ elbow flexion (biceps muscle - C5, C6 - musculocutaneous nerve)
___ elbow extension (triceps muscle - C7, C8 - radial nerve)
___ wrist flexion (C6, C7, C8 - median and ulnar nerves) be sure to isolate wrist movement.
___ wrist extension (C7, C8 – radial nerve) be sure to isolate writs movement.
___ hand grip (finger flexion – C7, C8, T1 – median and ulnar nerves)
Patient is asked to squeeze the extended index and middle fingers of examiner.

Examiner normally has difficulty removing his/her fingers from pt's grip.

(Patient may be supine or seated from here on.)

_____ **17. ASSESS LIMB TONE IN THE LOWER LIMBS (RESISTANCE TO PASSIVE STRETCH)**
___RLE
___LLE

The patient is asked to relax. The examiner supports the patient's thigh behind the knee, and grasps the patient's foot with the other hand, passively flexing and extending the knee and ankle in a single, smooth movement. As the foot is dorsiflexed, if a sustained, rhythmical plantar flexion of the foot occurs, this represents **clonus***, corresponding to an abnormal, grade 4 ankle reflex.*

_____ **18. ASSESS MUSCLE STRENGTH OF THE LOWER EXTREMITIES**

Student determined muscle power by gently trying to overpower contraction of each group of muscles **lower extremities):**

___ hip flexion *(elevate one knee at a time off the examination table)*
(iliopsoas muscle - L2, L3, L4 –femoral nerve)
___ knee flexion (hamstrings - L5, S1, S2 –sciatic nerve)
___ knee extension (quadriceps - L2, L3, L4 – femoral nerve)
___ ankle dorsiflexion (L4, L5 – peroneal nerve)
___ ankle plantar flexion (S1, S2 – tibial nerve) *("step on the gas")*

REFLEXES: Examiner elicited the following deep tendon reflexes **bilaterally and graded with 0-4 scale**:
0=absent reflex, no response
1=diminished, low normal (brought out with reinforcement = Jendrassik maneuver)
2=normal, average
3=brisker than average, possibly but not necessarily indicative of disease
4=hyperactive with clonus

Patient is sitting, relaxed, limbs are symmetrically positioned
Examiner holds reflex hammer between their thumb and index finger
Examiner swings the reflex hammer briskly (quick and direct) using a rapid wrist movement, the overall effect is a pendulum swinging, not like hammering a nail

If the reflexes appear asymmetrical, this may be due to the patient's poor posture or tenseness. Retest the reflexes in the supine position on the examination table.

_____ **19. BICEPS REFLEX** (C5, C6)
-Pt's arms are partially flexed at the elbow
-Examiner places his or her thumb or index finger over biceps tendon
-Examiner then strikes his or her thumb/index finger

_____ **20**. **TRICEPS REFLEX** (C7, C8)
-Flex the pt's arm 90 degrees at the elbow, palm towards their body, pulled slightly across the chest
-Examiner directly strikes triceps tendon, just proximal to the olecranon
OR
-Examiner positions and supports the pt's arm so that it is horizontal and elbow is flexed to 90 degrees, with the forearm hanging limp

-Examiner directly strikes triceps tendon, just proximal to the olecranon

_____ **21**. **BRACHIORADIALIS REFLEX** (C5, C6)

-Pt's hand rests on his/her lap, with forearm halfway between supination and pronation
-Examiner strikes radius about 1 to 2 inches proximal to the wrist to see forearm flexion and supination.

_____ **22**. **KNEE REFLEX (**L2, L3, L4)

-Pt is sitting so that the legs are freely dangling (Pt's feet should not be resting on the stoop)
-Pt's legs should not be flush against the end of the exam table.
-Examiner should stand to patient's side so as not to be hit by a brisk reflex!
-Examiner strikes patellar tendon just distal to patella. (Examiner may place his/her other hand on patient's distal quadriceps muscle to feel for a contraction as they strike the tendon with the reflex hammer in the other hand.)
(If done supine, see addendum later.)

_____ **23**. **ANKLE REFLEX** (S1)

-With the patient's leg still dangling, examiner grasps pt's foot and slightly dorsiflexes pt's foot (foot should about be parallel to the floor)
-Examiner strikes Achilles' tendon and watches and feels for plantar flexion. *(If done supine, see addendum later.)*

_____ **24. TEST FOR THE PLANTAR RESPONSE ON EACH FOOT**. (Babinski sign)

-Examiner holds the patients heel and strokes the lateral side of the sole, beginning at the heel and moving to the ball of the foot, curving medially across the ball.
-Examiner begins with the lightest stimulation that provokes a response
-Pt's toes normally flex
-a Babinski response = dorsiflexion of big toe, often accompanied by fanning of the other toes.

SENSORY SYSTEM:

_____ **25. ASSESS LIGHT TOUCH IN ALL FOUR EXTREMITIES** (both posterior column and spinothalamic tracts) with a wisp of cotton

_____ **26. ASSESS PAIN IN ALL FOUR EXTREMITIES** (spinothalamic tract) sense with a splintered cotton tip applicator or broken tongue blade

-Examiner first explained the step
-Examiner asked patient to close his/her eyes and report each time the soft touch or pain stimulus is detected equally (to the same degree) over all four limbs
-Begin testing over the feet, and alternating from side to side, quickly ascend up the legs and thighs. Repeat in the upper extremities, beginning at the hand and ascending up the forearm and arm, alternating side to side.
(In a patient with peripheral neuropathy and distal sensory impairment, stimuli at the feet may be absent or reduced, becoming detectable or "sharper" more proximally. Also, a patient with a spinal cord lesion may not detect any sensation up to the dermatomal level involved.)
-Examiner should vary the pace of stimuli so pt doesn't merely respond to rhythm
-Check **3 or more areas in each extremity**, **beginning distally and moving proximally**.

_____ **27. ASSESS POSITION SENSE IN ALL FOUR EXTREMITIES** (posterior columns)

-Examiner first explains/demonstrates the step
-Examiner tested all four extremities and asked patient to close his/her eyes during the tests

(*Using the index finger and thumb to hold the pt's big toe or a finger at its sides, the big toe or finger is moved up or down (avoid contact with pt's other toes/fingers) and the patient is asked to report the position – did it move up or down?)*
-Examiner should repeat several times on each side
-A patient should be able to detect a movement as small as 1-2 mm!

_____ **28**. **ASSESS VIBRATION SENSE IN ALL FOUR EXTREMITIES** (posterior columns)
-Examiner first explains the step
-Examiner checks a toe joint, then a knuckle on the left and right sides
-Examiner places a vibrating tuning fork over the ankle or knuckle and then instructs patient to report when the vibration sense is lost. (tuning fork must be placed on a bony prominence)
(Vibration sense is often the first sense lost in peripheral neuropathy, but may be normally reduced in healthy, elderly patients)

COORDINATION (this requires 4 components of the nervous system to work together:
Motor system – cerebellar system – vestibular system – sensory system
(FTN and fine finger movements can be tested with the **patient seated or supine**; HTS is best tested **supine**. Patients keep their eyes open. Elicited movements should be smooth and "on target" without tremor.)

_____ **29**. **ASSESS COORDINATION WITH 3 DIFFERENT MANUEVERS**
_____finger-to-nose-to-finger
-Examiner explains or demonstrates the test
-Examiner holds his or her index finger in front of the patient
-Pt touches examiner's finger, then touches pt's own nose (make the pat fully extend their arm when they reach for your nose)
-Examiner moves his or her finger and pt repeats the step 2-3 times for each hand
_____fine finger movements
-Examiner explains or demonstrates the test
-Pt rapidly taps the tips of the thumb and index finger together, multiple times
(Note – a patient's non-dominant side always performs less well)
-This can be tested simultaneously with both hands and each hand separately
_____heel-to-knee-to-shin
-Examiner explains or demonstrates the test
-Pt places the heel on the opposite knee, then runs that heel down the shin to the foot
-The test is repeated with the other heel and leg

(Patient is standing)

GAIT/STATION

_____ **30**. **DO THE ROMBERG TEST** (for position sense)
-Examiner instructed patient to stand (eyes open), <u>feet together</u> with arms at their side Examiner then instructed patient to close his/her eyes for **20-30** seconds and stand still.
(Examiner should be close enough to pt to catch patient if patient loses their balance)
-Normally, only minimal swaying occurs and pt can maintain an upright posture
(+ *Romberg* *= pt can stand still with eyes open, but loses balance with* ***eyes closed****)*
(With ***cerebellar ataxia*** *=pt cannot stand still with eyes* ***either open or closed****.)*

(*Note: elderly, frail patients may be anxious and fearful of falling, or are often dizzy. They may sway during the Romberg test for these reasons. Position sense can be tested during the sensory examination described above.)*

_____ **31**. **ASSESS GAIT (NORMAL GAIT AND TANDEM GAIT):**
-Examiner instructed patient to walk barefoot back and forth across the exam room

(Examiner observes for posture, balance, arm swing.)
-Examiner instructed patient to walk heel-to-toe (tandem) in a straight line.
(Examiner should be near enough to catch patient if necessary)
Tip – examiner may ask patient to walk on a line in the tile floor if available.

_____ **32**. **WASH HANDS**

NOW GIVE THIS PAGE TO THE SECOND YEAR STUDENT TO DO AND GRADE A MINI-MENTAL STATUS EXAMINATION

Max Score	Score	Orientation: 1 point for each correct answer
5	_____	**What is the**: year, season, day, day of the week, and month?
5	_____	**Where are we**: state, city, street, hospital, floor?
		Registration
3	_____	**Name 3 objects**: 1 second to say each, then ask patient to repeat all 3. Give 1 point for each correct answer. Repeat them until he learns all 3. Count trials and record. (Patient must learn
No. of trials _____		3 objects so you can test recall after attention.)
		Attention and Calculation
5	_____	**Serial 7's**: 1 point for each correct. Stop after five answers. Alternatively **spell "world" backwards.** The score is then the number of correct letters, i.e., d1row = 5, dlorw = 3.
		Recall
3	_____	**Ask the three objects repeated above**. Give 1 point for each correct.
9	_____	**Language**
	_____	Show the patient a pencil and a watch - 1 point for **naming** each.
	_____	**Repeat the following: "No if's, and's or but's"** 1 point; only one trial; if error, score = 0.
	_____	**Follow a three-stage command**: "Take a paper in your right hand, fold it in half, and put it on the table." - 1 point for each correct execution.
		Read and obey the following:
	_____	• close your eyes (1 point)
	_____	• write a sentence (1 point)
	_____	• copy design on a sheet of paper draw two pentagons with two angles intersecting and ask patient to copy it. All ten angles must be present, and two must intersect (1 point)
		TOTAL SCORE Assess level of consciousness along a continuum
30	_____	Alert{ }, Drowsy{ }, Stupor{ }, Coma{ }.

The test provides a formal measure of memory and orientation, as well as cognitive and language abilities.

Out of a possible score of 30, depressed but non-demented patients usually score 24-30. Demented patients generally score below 20.