

NURS 221 HEALTH ASSESSMENT (PRACTICAL) PROCEDURE GUIDE AND PERFORMANCE CHECKLIST

MODULE 9 PHYSICAL EXAMINATION OF THE NEUROLOGICAL SYSTEM



Examination Technique:

NURS 221 PHYSICAL EXAMINATION OF THE NEUROLOGICAL SYSTEM, 1ST SEM 1441

- ✓ Physical examination of the neurological system requires the use of inspection, palpation auscultation and special equipment and procedure to test the functions of the system.
- ✓ The assessment begins with an evaluation of the patient's mental status and includes cranial nerves, motor and sensory function, balance, and reflexes.
- ✓ The nurse tests distal to proximal and moves from gross function to fine function, always comparing corresponding body parts.
- ✓ More than one technique can be used to assess one function.

Equipment:

- ✓ Examination gown
- ✓ Clean, nonsterile examination gloves
- ✓ Cotton wisp
- ✓ Percussion hammer
- ✓ Tuning fork
- ✓ Sterile cotton balls
- ✓ Penlight
- ✓ Ophthalmoscope
- ✓ Stethoscope
- ✓ Tongue blade
- ✓ Applicator
- ✓ Hot and cold water in test tubes
- ✓ Objects to touch such as coins, paper clips, or safety pins
- ✓ Substances to smell, for example vanilla, mint and coffee
- ✓ Substances to taste such as sugar, salt, lemon and grape

Helpful hints

- ✓ Data gathering begins with the initial-nurse patient interaction. As the nurse meets the patient, assessment is made regarding their general appearance, personal hygiene, and ability to walk and sit down. These activities are related to cerebral function.
- ✓ Physical assessment of the neurologic system proceeds in a cephalocaudal and distal-to-proximal pattern and includes comparison of corresponding body parts.
- ✓ Several assessments may occur at one time. For example, asking the patient to smile tests cranial nerve VII. The ability to follow directions and initiate voluntary movements tests hearing (cranial nerve VIII) and the functions of the cerebral cortex.
- ✓ Provide specific information about what is expected of the patient. Demonstrate movements
- ✓ Explain and demonstrate the purposes and uses of the equipment.
- ✓ Use Standard Precautions.

PROCEDURE GUIDE

PROCEDURE	NORMAL FINDINGS
Mental Status Assessment	
<p>Instruct the patient.</p> <ul style="list-style-type: none"> ➤ Explain to the patient that you will be conducting a variety of tests. Tell the patient that you will provide instructions before beginning each examination and that moving about and changing position during the examination will be required. ➤ Provide reassurance that the tests will not cause discomfort; however, the patient must inform you of problems if they arise during any part of the assessment. ➤ Identify the types of equipment you will use and describe the purpose in relation to neurologic function. ➤ Tell the patient that you will begin the assessment with some general questions about the present and past. Then you will ask the patient to respond to number and word questions. 	
<p>Position the patient.</p> <ul style="list-style-type: none"> ➤ The patient should be sitting on the examination table wearing an examination gown. 	
<p>Observe the patient.</p> <ul style="list-style-type: none"> ➤ Look at the patient and note hygiene, grooming, posture, body language, facial expressions, speech and ability to follow directions. 	
<p>Note the patient's speech and language abilities.</p> <ul style="list-style-type: none"> ➤ Note patient's rate of speech, ability to pronounce words, tone of voice, loudness or softness (volume) of voice, and ability to speak smoothly and clearly. ➤ Assess patient's choice of words, ability to respond to questions, and ease with which a response is made. 	
<p>Assess the patient's sensorium.</p> <ul style="list-style-type: none"> ➤ Determine the patient's orientation to date, time, place as well as the need for the physical assessment. Grade the level of alertness on a scale from full alertness to coma. 	

Assess the patient's memory.

- Ask for the patient's date of birth, names and ages of any children or grandchildren, educational history with dates and events, work history with dates, and job descriptions. Ask questions for which the responses can be verified.

Assess the patient's ability to calculate problems.

- Start with a simple problem, such as $4+3$, $8 \div 2$ and $15 - 4$.

CRANIAL NERVES

I. Test the Olfactory Nerve (cranial nerve 1).

- ✓ If you suspect the patient's nares are obstructed with mucus, ask the patient to blow his or her nose.
- ✓ Ask the patient to close both eyes and then apply gentle pressure to the external surface of one naris with his or her index finger. If necessary, the nurse could occlude the patient's naris. Place a familiar odor under the open naris.
- ✓ Ask the patient to sniff and identify the odor. Use coffee, peppermint, or other scents that are familiar to the patient. Repeat with the other naris.



II. Test the optic nerve (cranial nerve II).

- ✓ Test near vision by asking the patient to read from a magazine, newspaper, or prepared card. Observe closeness or distance of page to face. Also note the position of the head.
- ✓ Use the Snellen chart to test distant vision.

III. Test the oculomotor, trochlear, and abducens nerves (cranial nerves III, IV, and VI).

- ✓ Test the six cardinal points of gaze.
- ✓ Test direct and consensual pupillary reaction to light (cranial nerve III).
- ✓ Test convergence and accommodation of the eyes.

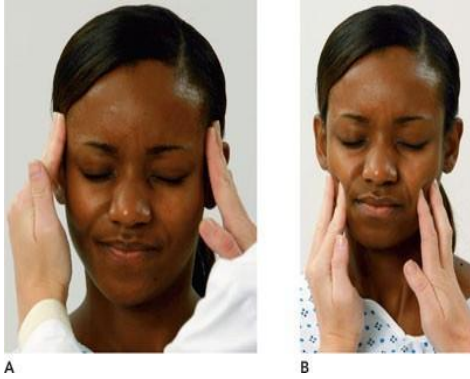
IV. Test the trigeminal nerve (cranial nerve

V).

- ✓ **Test the sensory function.**
- ✓ Ask the patient to close both eyes. Touch the patient's face, forehead, and chin with a wisp of cotton.
- ✓ Direct the patient to say “now” every time the cotton is felt. Repeat the test using sharp and dull stimuli.
- ✓ Be random with the stimulation. Do *not* establish a pattern when testing.



- ✓ **Test the motor function of the nerve.** Ask the patient to clench the teeth tightly. Bilaterally palpate the masseter and temporalis muscles, noting muscle strength.
- ✓ Ask the patient to open and close the mouth several times. Observe for symmetry of movement of the mandible without deviation from midline.

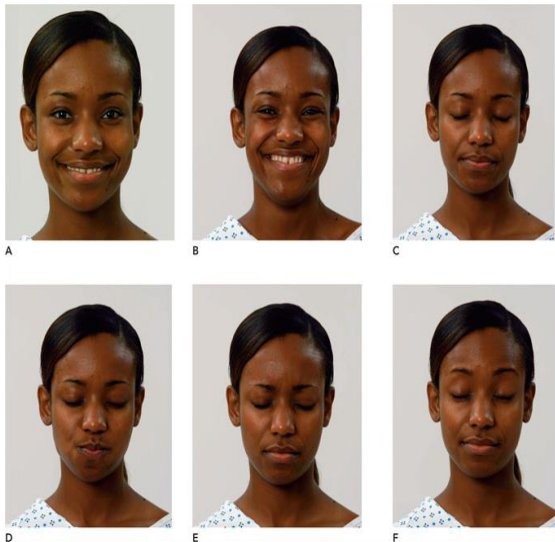


Testing muscle strength. A. Temporalis muscles.
B. Masseter muscles

V. Test the facial nerve (cranial nerve VII).

✓ **Test the motor activity of the nerve.**

- Ask the patient to perform several functions such as the following: smile, show your teeth, close both eyes, puff your cheeks, frown, and raise your eyebrows.



Testing motor function of cranial nerve VII. A. Smile. B. Show teeth. C. Close both eyes. D. Puff cheeks.

- Look for symmetry of facial movements.

➤ **Test the muscle strength of the upper face.**

- ✓ Ask the patient to close both eyes tightly and keep them closed.
- ✓ Try to open the eyes by retracting the upper and lower lids simultaneously



Test the muscle strength of the lower face.

- ✓ Ask the patient to puff the cheeks.
- ✓ Apply pressure to the cheeks, attempting to force the air out of the lips.

Test the sense of taste.

- ✓ Moisten three applicators and dab one in each of the samples of sugar, salt, and lemon.
- ✓ Touch the patient's tongue with one applicator at a time and ask the patient to identify the taste.
- ✓ Water may be needed to rinse the mouth between tests.

Test the corneal reflex.

- ✓ This may have been tested with the trigeminal nerve assessment. Cranial nerve VII regulates the motor response of this reflex.

VI. Test the vestibulocochlear nerve (cranial nerve VIII).

- ✓ Test the auditory branch of the nerve by

<p>performing the Weber test. This test uses the tuning fork and provides lateralization of the sound.</p> <ul style="list-style-type: none"> ✓ Perform the Rinne test. This compares bone conduction of sound with air conduction. ✓ Romberg's test assesses coordination and equilibrium 	
<p>VII. Test the glossopharyngeal and vagus nerves (cranial nerves IX and X).</p> <ul style="list-style-type: none"> ○ Test motor activity. <ul style="list-style-type: none"> ▪ Ask the patient to open the mouth. ▪ Depress the patient's tongue with the tongue blade. ▪ Ask the patient to say “ah.” ○ Observe the movement of the soft palate and uvula ○ Inform the patient that you are going to place an applicator in the mouth and lightly touch the throat. ○ Touch the posterior wall of the pharynx with the applicator. ○ Observe pharyngeal movement. ○ Test the gag reflex. This tests the sensory aspect of cranial nerve IX and the motor activity of cranial nerve X. <ul style="list-style-type: none"> ○ Inform the patient that you are going to place an applicator in the mouth and lightly touch the throat. ○ Touch the posterior wall of the pharynx with the applicator. ○ Test the motor activity. <ul style="list-style-type: none"> ▪ Ask the patient to drink a small amount of water and note the ease or difficulty of swallowing. ▪ Note the quality of the voice or hoarseness when speaking. 	<p>Normally, the soft palate rises and the uvula remains in the midline. Test the gag reflex. This tests the sensory aspect of cranial nerve IX and the motor activity of cranial nerve X.</p>



VIII. Test the accessory nerve (cranial nerve XI).

- ✓ Test the trapezius muscle. Ask the patient to shrug the shoulders.
- ✓ Observe the equality of the shoulders, symmetry of action, and lack of fasciculations.



- ✓ Test the sternocleidomastoid muscle
 - Ask the patient to turn the head to the right and then to the left
 - Ask the patient to try to touch the right ear to the right shoulder without raising the shoulder.
 - Repeat with the left shoulder.
 - Observe ease of movement and degree of range of motion.



✓ **Test trapezius muscle strength**

- Have the patient shrug the shoulders while you resist with your hands.



✓ **Test sternocleidomastoid muscle strength.**

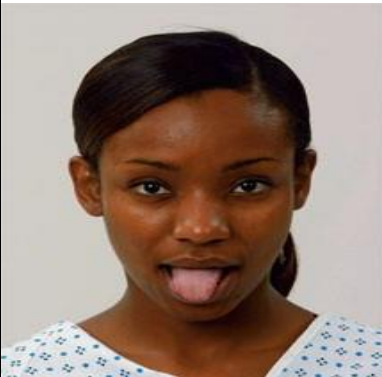
- Ask the patient to turn the head to the left to meet your hand.
- Attempt to return the patient's head to midline position.
- Repeat the preceding steps with the patient turning to the right side.



IX. Test the hypoglossal nerve (cranial nerve XII).

- ✓ **Test the movement of the tongue.** Ask the patient to protrude the tongue.
- Ask the patient to retract the tongue.
 - Ask the patient to protrude the tongue and move it to the right and then to the left.

- Note ease of movement and equality of movement



Protruding movement of tongue



Lateralization of tongue.

- ✓ **Test the strength of the tongue.**
 - Ask the patient to push against the inside of the cheek with the tip of the tongue.
 - Provide resistance by pressing one or two fingers against the patient's outer cheek
 - Repeat on the other side.
- ✓ Repeat on the other side.



Testing the strength of the tongue.

MOTOR FUNCTION

I. Assess the patient's gait and balance.

- ✓ Ask the patient to walk across the room and return.
- ✓ Ask the patient to walk heel to toe (or tandem), by placing the heel of the left foot in front of the toes of the right foot, then the heel of the right foot in front of the toes of the left foot. Be sure the patient is looking straight ahead and not at the floor. Continue this pattern for several yards.
- ✓ Ask the patient to walk on his or her toes.
- ✓ Ask the patient to walk on the heels. Observe the patient's posture. Does the posture demonstrate stiffness or relaxation? Note the equality of steps taken, the pace of walking, the position and coordination of arms when walking, and the ability to maintain balance during all of these activities.



Evaluation of Gait



Heel-to-toe walk

II. Perform Romberg's test.

- ✓ **Romberg's test** assesses coordination and equilibrium (cranial nerve VIII).
- ✓ Ask the patient to stand with feet together and arms at the sides. The patient's eyes are open.
- ✓ Stand next to the patient to prevent falls. Observe for swaying.
- ✓ Ask the patient to close both eyes without changing position.
- ✓ Observe for swaying while the patient's eyes are closed.



- ✓ Swaying normally increases slightly when the eyes are closed

III. Perform the finger-to-nose test.

- ✓ The finger-to-nose test also assesses coordination and equilibrium. It is sometimes called the pass-point test.
- ✓ Ask the patient to resume a sitting position.
- ✓ Ask the patient to extend both arms from the sides of the body.
- ✓ Ask the patient to keep both eyes open.
- ✓ Ask the patient to touch the tip of the nose with the right index finger, and then return the right arm to an extended position.
- ✓ Ask the patient to touch the tip of the nose with the left index finger, and then return the left arm to an extended position.
- ✓ Repeat the procedure several times.
- ✓ Ask the patient to close both eyes and repeat the alternating movements.

- ✓ Observe the movement of the arms, the smoothness of the movement and the point of contact of the finger. Does the finger touch the nose or is another part of the face touched?
- ✓ An alternative technique is to have the patient touch the nose with the index finger and then touch the finger of the nurse.



Finger-to-nose test



Alternative for finger-to-nose test

IV. Assess the patient's ability to perform a rapid alternating action.

- ✓ Ask the patient to sit with the hands placed palms down on the thighs).
- ✓ Ask the patient to turn the hands palms up.
- ✓ Ask the patient to return the hands to a palms-down position.
- ✓ Ask the patient to alternate the movements at a faster pace. If you suspect any deficit, test one side at a time.
- ✓ Observe the rhythm, rate, and smoothness of the movements.

- ✓ Ask the patient to touch the thumb to each finger in sequence with increasing pace.



Testing rapid alternating movements, palms down.



Testing rapid alternating movements, palms up.



Testing coordination using the finger-to-finger test.

- V.** Ask the patient to perform the heel-to-shin test.
- ✓ Assist the patient to a supine position.
 - ✓ Ask the patient to place the heel of the right foot below the left knee.
 - ✓ Ask the patient to slide the right heel along the shin bone to the ankle.
 - ✓ Ask the patient to repeat the procedure, reversing the legs.
 - ✓ Observe the smoothness of the action.

The patient should be able to move the heel in a straight line so that it does not fall off the lower leg.



Heel-to-shin test.

SENSORY FUNCTION

- ✓ This part of the physical assessment evaluates the patient's response to a variety of stimuli. This assessment tests the peripheral nerves, the sensory tracts, and the cortical level of discrimination. A variety of stimuli are used, including light touch, hot/cold, sharp/dull, and vibration.

ALERT!

- ✓ The patient may tire during these procedures. If this happens, stop the assessment and continue at a later time. Be sure to test corresponding body parts.
- ✓ Take a distal-to-proximal approach along the extremities. When the patient describes sensations accurately at a distal point, it is usually not necessary to proceed to a more proximal point. If a deficit is detected at a distal point, then it becomes imperative to proceed to proximal points while attempting to map the specific area of the deficit.
- ✓ Repeat testing to determine accuracy in areas of deficits.
- ✓ Remember, always ask the patient to describe the stimulus and the location. Do not suggest the type of stimulus or location.
- ✓ Tell the patient to keep both eyes closed during testing.
- ✓ To promote full patient understanding and cooperation, you may have to demonstrate what you will be doing and what you expect the patient to do while using a wisp of cotton, the uncovered end of an applicator, or a tongue blade. Specific dermatomes are tested as you assess corresponding locations.

I. Assess the patient's ability to identify light touch.

- ✓ Using a wisp of cotton, touch various parts of the body, including feet, hands, arms, legs, abdomen, and face.
- ✓ Touch at random locations and use random time intervals.
- ✓ Ask the patient to say “yes” or “no” when the stimulus is perceived. Be sure to test corresponding dermatomes.



Evaluation of light touch.

II. Assess the patient's ability to distinguish the difference between sharp and dull.

- ✓ Ask the patient to say “sharp” or “dull” when something sharp or dull is felt on the skin.
- ✓ Touch the patient with the uncovered end of an applicator or the irregular edge of a broken tongue blade. The sharp edge is used to identify pain, while the dull edge is a repeat of step 1.
- ✓ Now touch the patient with the cotton end of the applicator or the smooth edge of a tongue blade.
- ✓ Alternate between sharp and dull stimulation.
- ✓ Touch the patient using random locations, random time intervals, and alternating patterns.
- ✓ Be sure to test corresponding body parts. This tests specific dermatomes.
- ✓ Discard the applicator or tongue blade.



Testing the patient's ability to identify sharp sensations



Testing the patient's ability to identify dull

sensations.

III. Assess the patient's ability to distinguish temperature.

- ✓ Perform this test only if the patient demonstrates an absence or decrease in pain sensation.
- ✓ Randomly touch the patient with test tubes containing warm and cold water.
- ✓ Ask the patient to describe the temperature.
- ✓ Be sure to test corresponding body parts.

REFLEXES

- ✓ Reflex testing is usually the last part of the neurologic assessment.
- ✓ The patient is usually in a sitting position; however, you can use a supine position if the patient's physical condition so requires.
- ✓ Position the patient's limbs properly to stretch the muscle partially.
- ✓ Evaluate the response on a scale from 0 to 4+:

0	No response
1+	Diminished
2+	Normal
3+	Brisk, above normal
4+	Hyperactive

1. Assess the biceps reflex (C5, C6).

- ✓ Support the patient's lower arm with your nondominant hand and arm. The arm needs to be slightly flexed at the elbow with palm up.
- ✓ Compress the biceps tendon with the thumb of your nondominant hand.
- ✓ Using the pointed side of a reflex hammer, briskly tap your thumb.
- ✓ Look for the contraction of the biceps muscle and slight flexion of the forearm.



2. Assess the triceps reflex (C6, C7).

- ✓ Support the patient's elbow with your nondominant hand.
- ✓ Sharply percuss the tendon just above the olecranon process with the pointed end of the reflex hammer.
- ✓ Observe contraction of the triceps muscle with extension of the lower arm.



3. Assess the brachioradialis reflex (C5,C6).

- ✓ Position the patient's arm so the elbow is flexed and the hand is resting on the patient's lap with the palm in a semi-pronating position.
- ✓ Using the flat end of the reflex hammer, briskly strike the tendon toward the radius about 2 or 3 inches above the wrist.
- ✓ Observe flexion of the lower arm and supination of the hand.



4. Assess the patellar (knee) reflex (L1, L2,L3,L4).
- ✓ Palpate the patella to locate the patellar tendon inferior to the patella.
 - ✓ Briskly strike the tendon with the flat end of the reflex hammer.
 - ✓ Note extension of lower leg and contraction of the quadriceps muscle.



Testing patellar reflex, patient in a sitting position



Testing patellar reflex with patient in a supine position



Testing patellar reflex using a distraction technique

5. Assess the Achilles tendon (ankle) reflex (S1).

- ✓ Flex the leg at the knee.
- ✓ Dorsiflex the foot of the leg being examined.
- ✓ Hold the foot lightly in the nondominant hand.
- ✓ Strike the Achilles tendon with the flat end of the reflex hammer.



Testing the Achilles tendon reflex

6. Assess the plantar reflex (L5,S1).

- ✓ Position the leg with a slight degree of external rotation at the hip.
- ✓ Stimulate the sole of the foot from the heel to the ball of the foot on the lateral aspect. Continue the stimulation across the ball of the foot to the big toe.
- ✓ Observe for plantar flexion, in which the toes curl toward the sole of the foot.



Attachment: Glasgow Coma Scale

BEST EYE-OPENING RESPONSE 4 = Spontaneously 3 = To speech 2 = To pain 1 = No response (Record "C" if eyes closed by swelling)
BEST MOTOR RESPONSE to painful stimuli 6 = Obeys verbal command 5 = Localizes pain 4 = Flexion—withdrawal 3 = Flexion—abnormal 2 = Extension—abnormal 1 = No response (Record best upper limb response)
BEST VERBAL RESPONSE 5 = Oriented × 3 4 = Conversation—confused 3 = Speech—inappropriate 2 = Sounds—incomprehensible 1 = No response (Record "E" if endotracheal tube in place, "T" if tracheostomy tube in place)

**College of Nursing
Medical Surgical Department**

**NURS 221 HEALTH ASSESSMENT (PRACTICAL)
Performance Checklist
Neurological System Assessment**

Performance Criteria	Competency Level			Comments
	Done Correctly	Done with Mistakes	Not Done	
Preparation				
Prepare the necessary equipment.				
Explain the procedure to the patient.				
Prepare the patient. Position the client appropriately.				
ASSESSMENT OF MENTAL STATUS				
1. Instruct the patient.				
2. Position the patient.				
3. Observe the patient's hygiene, grooming, posture, body language, facial expressions, speech and ability to follow directions.				
4. Note the patient's speech and language abilities.				
5. Assess the patient's sensorium.				
6. Assess the patient's memory.				
7. Assess the patient's ability to calculate problems.				
CRANIAL NERVE ASSESSMENT				
1. Test the olfactory nerve (Cranial Nerve I).				
2. Test the optic nerve (Cranial Nerve II).				
3. Test the oculomotor, trochlear and abducens nerves (cranial nerves III, IV, and VI).				
4. Test the Trigeminal nerve (Cranial Nerve V).				
5. Test the Facial Nerve (Cranial Nerve VII).				
6. Test the vestibulocochlear nerve (Cranial Nerve VIII).				
7. Test the glossopharyngeal and vagus nerves (Cranial Nerves IX and X).				
8. Test the accessory nerves (Cranial Nerve XI).				
9. Test the hypoglossal nerve (Cranial Nerve XII).				
MOTOR FUNCTION ASSESSMENT				
1. Assess the patient's gait and balance.				
2. Perform Romberg's test.				
3. Perform the finger-to-nose test.				
4. Assess the patient's ability to perform a rapid				

alternating action.				
5. Ask the patient to perform the heel-to-shin test.				
SENSORY FUNCTION ASSESSMENT				
1. Assess the patient's ability to identify light touch.				
2. Assess the patient's ability to distinguish between sharp and dull.				
3. Assess the patient's ability to distinguish temperature.				
REFLEXES ASSESSMENT				
1. Assess the biceps reflex.				
2. Assess the triceps reflex.				
3. Assess the brachioradialis reflex.				
4. Assess the patellar (knee) reflex.				
5. Assess the Achilles (ankle) reflex.				
6. Assess the plantar reflex.				

Dated evaluated _____

Evaluated by _____

References Ed. (2016). rd D' Amico, D. Health & Physical Assessment in Nursing, 3 Pearson, Cloth. ISBN-10: 0133876403 • ISBN-13: 9780133876406