

Central Nervous System Examination Check List

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Motor System

1-Inspection

- a) asymmetry
- b) deformity
- c) abnormal movement (Fasciculations, tremors and myoclonic jerks...)
- d) Muscle Wasting

💎 Comments:

Normal Symmetrical limbs, No Deformities, No abnormal movement, No Fasciculations, No visible muscle wasting

2-Palpation

As always Ask about pain, warm your hand and keep

- a) Bulk by superficial palpation in general
 - hypertrophy
 - wasting
- b) tenderness (eye-eye)
- C) Masses

💎 Comments:

Good bulk, No muscle wasting or hypertrophy, No tenderness, No masses

3-Tone + Clonus

- a) patient is relaxed and sitting
- b) warm your hands
- c) passively move the joint through full range of motion both slowly and quickly

• *upper limb:* (Bilateral)

hold as if shaking hand & support the elbow flex and extend the hand, forearm, and the shoulder, and rotate the forearm

• *lower limb:* (Bilateral)

Rolling the leg from one side to the other rolling then briskly lift the knee in flexed position

• *Clonus:*

Knee clonus tested by rapidly pushing the patella towards the toes

Ankle clonus repeated dorsiflexion of the ankle in response to brisk dorsiflexion of the foot

💎 Comments:

Normal tone, No spasticity , No rigidity

No clonus

4-Power + pronator drift

- a) Ask about pain
- b) First assess power against gravity
- c) Then apply resistance
- d) compare both sides

• Upper limb:

Shoulder--> abduction

Elbow--> flexion & extension

Wrist-->extension

Fingers--> flexion and extension

Thumb --> abduction

- pronator drift: Patient holds hands outstretched forward, palms up and fingers straight
Eyes closed, wait 10+ seconds to rule out drift

• lower limb:

Hip--> flexion & extension

Knee--> flexion & extension

Ankle-> dorsiflexion & plantar flexion & eversion & inversion

Great toe--> extension

◆ Comments:

Normal power 5 out of 5

Negative pronator drift

5-Reflexes

- a) deep tendon reflexes

1. keep patient as relaxed as possible and ask about pain before
2. Compare each reflex with the other side
3. use reinforcement if necessary
4. Record as: increased, normal, diminished, present only with reinforcement, or absent

•Upper limb

biceps jerk C5

Supinator C6

Triceps jerk C7

Hoffmann's jerk

Finger jerk



•Lower limb

knee jerk L3,4

Ankle jerk S1

b) superficial reflexes

1. abdominal reflexes T8-T12

Normal response: deviation of umbilicus toward the side stroked

Abnormal finding: no deviation

2. cremasteric reflex (only in males) L1,L2

3. plantar reflex S1,S2 (Babinski)

Normal: flexion of the big toe

Abnormal: extension of big toe and contraction of other leg flexor muscles

c) primitive reflexes (Just mention)

Snout, Grasp, Palmomental, Glabellar tap

💎 Comments:

Normal reflex, No hyperreflexia, No hyporeflexia

Coordination Test (Cerebellum Function)

1-Speech

By speaking with patients

💎 Comment: No dysarthria, No staccato speech

2-Stance and Gait

Ask the patient to stand up and putting your hands around him with eyes opening then with closed eyes

Then walk forward and backward

Then walk forward and backward on heel

Then walk forward and backward on tips of your toes

Then walk tandem gait repeat



Finally, Romberg test; outstretched hands with eye closing to 30 seconds

💎 Comments:

No signs of cerebellar ataxia, No sensory ataxia, Negative rombergs sign, Normal stance, Normal gait, No wide steppage, No tandem gait

3-Eye movements

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💎 Comments:

No horizontal nystagmus

4-Upper limb

Tone: hypotonia

Reflexes: pendular reflexes

Finger-to-nose test

- Dysmetria
- intention tremor
- dyssynergia (slow and clumsy movement)

Rapid alternating movement

- dysdiadokinesia

Rebound phenomenon

(Cerebellum Diseases Abnormalities)

◆ Comments:

Tone is normal

Reflexes are normal

No dysmetria

No dyssynergia

No intention tremor

No disdiadokinesia

No rebound phenomena

5-Lower Limb

- Tone: hypotonia
- Reflexes: pendular reflexes
- Heel-to-shin test

◆ Comments:

Normal tone

Normal reflexes

No dysmetria

No intention tremor

No dyssynergia

6-Apraxia

Asking patients to do or Imitate common learned tasks

Sensory Examination

1. Light touch

- Patient should look away or close his eyes
 - Use a touch pen
 - Dabbing rather than stroking
 - Compare but dab Irregularly

2. Superficial pain

- Patient should look away or close his eyes
 - Use special sharp neurologic pen
 - Map out the boundaries of any area of abnormal sensation
 - Move from reduced to higher sensibility

3. Temperature

- Use tuning fork for cold sensation

4. Vibration

- first demonstrate on sternum

Upper limb:

- DIP Joint of forefinger, If impaired progress proximally to radial styloid, olecranon, and acromion

Lower limb:

- Start at tip of great toe, If impaired progress proximally to Interphalangeal, medial malleolus, tibial tuberosity, ASIC

5. Joint position sensation

demonstrate on great toe or middle finger with eyes opened then ask the patient to close eyes

- start examination with the big toe middle finger and proceed proximally if impairing

6. Stereogenesis and graphesthesia

- Ask the patient to close his eyes
 - Stereognosis
 - Place a familiar object in his hand and ask him to identify it.
 - Graphaesthesia:
 - Use the blunt end of a pencil trace letters or digits on the patient's palm and ask him to identify its

7. Point localization and sensory inattention

- Ask the patient to close his eyes
 - point localization
 - Touch his arms/legs in turn and ask which side has been touched.
 - Touch different fingers and ask the patient which is touched
 - sensory inattention
 - Touch both sides simultaneously and ask whether the left, right or both sides were touched.

Cranial nerves

Optic Nerve

INSPECTION

- 1 Head position.
- 2- position of eyelids when looking straight ahead and on eye movement
- 3- proptosis (should be examined from behind and above the pt)
- 4- lid retraction
- 5- lid lag: Examine the seated patient from the right. Hold your finger from a point 45° above the horizontal to point below this plane. Watch how the upper eyelid moves with the downward movement of the eye. In lid lag the sclera can be seen above the iris
- 6- periorbital appearance. edema - redness - chemosis
- 7- lacrimal apparatus.
- 8- eyelid margin.
- 9- conjunctiva:
 - Look for redness or chemosis (oedema) of the white of the eye.
 - Evert the eyelid to examine the upper subtarsal conjunctiva.
 - Ask the patient to look down, hold the upper lid lashes, press gently on the upper border of the tarsal plate with a cotton bud and gently pull the eyelashes up.
 - Look for the giant papillae of allergic eye disease or a hidden foreign body.
- 10- sclera
- 11- cornea: (test for corneal ulceration with a fluorescein strip)
- 12- Resting appearance of the pupils. palpation for any masses or protrusion

◆ Comments:

No head tilting. Normal head and eyes position. No periorbital edema and redness. No proptosis. No eyelid ptosis. Symmetrical regular pupils. Normal gaze. No lid lag. No lid retraction. No excessive lacrimation. Normal nasolabial fold. No tenderness. No periorbital masses. No chemosis

Visual acuity *Just mention*

Use a backlit Snellen chart positioned at 6 meter and dim the room lighting.

Cover one eye and ask the patient to read the chart from the top down until they cannot read any further. Repeat for the other eye. If the patient cannot see the largest font, reduce the test distance to 3 meter, then to 1 meter if necessary.

If they still cannot see the largest font, document instead whether they can count fingers, see hand movement or just perceive the difference between light and dark. If the patient cannot read down to line (6/6), place a pinhole directly in front of the eye (with the patient keeping their usual spectacles on, if they wear them) to correct any residual refractive error.

Assess near vision with a similar test using text of reducing font size held at a comfortable reading distance.

Macular Sparing *Just mention*

- 1- Use an Amsler grid.
- 2- Ask the patient: to cover one eye, to hold the grid at a comfortable reading distance, to fix on the central black spot with the eye being tested a to keep the eye still and look at the grid using the 'sides of his vision' and to outline with a finger the areas where the lines are broken, distorted or missing.

Color Vision *Just mention*

Assess red-green colour vision using Ishihara test plates

Ophthalmoscope(Fundoscopy) *Just mention*


to look for optic disc(posterior retina) swelling from compression.

Visual Field

- 1- Sit directly facing the patient, about 1 meter away.
- 2- Ask the patient to keep looking at your eyes.
3. Homonymous defects
Keep your eyes open and asks the patient to do the same. Hold your hands out to their full extent. Wiggle a fingertip and ask the patient to point to it as soon as he sees it move. Do this at 10 and 2 o'clock, and then 8 and 4 o'clock (to screen the four outer quadrants of the patient's visual field)

 **Comment:** No homonymous defect

- 4- Sensory inattention
Test both eyes together. Both you and the patient should keep your eyes open. Test both left and right fields at the same time. Note whether the patient reports seeing only one side moves and which quadrant or side is affected.


 **comment:** No sensory inattention

- 5- Perieheral visual fields
Test each eye separately. Ask the patient to cover one eye and look directly into your opposite eye. Shut your eye that is opposite the patient's covered eye. Test each quadrant separately with a wiggling finger or white-tipped hatpin. Hold the target equidistant between you and the patient. Start peripherally and move the target along the diagonal towards the center of vision until the patient detects it. Repeat for the other quadrants. Compare your visual field with the patient's.

 **Comment:** No peripheral visual field defect


6-Central visual field

Test each eye separately using a red hatpin. Shut your eye that is opposite the patient's covered eye. Ask the patient to cover one eye and look directly at your open eye. Hold the hatpin in the center of the visual field as close fixation as possible. Ask the patient what colour the hatpin is. A 'pale' or 'pink' response implies colour desaturation. Compare the four quadrants of the visual field centrally; each time ask about colour desaturation. Note that the visual field for red may be smaller than for white.

 **comment**: No colour desaturation, No central visual field defect

7-Blind spot

- Test one eye at a time
 - Ask the patient to cover one eye and look directly at you. a Shut your eye that is opposite the patient's covered eye.
 - Hold the hatpin at the fixation point; you and the patient focus on each other's eye.
 - Move the hatpin temporally and horizontally until it disappears from your visual field.
- Maintaining the same temporal horizontal position, move it anteriorly or posteriorly until it also disappears from the patient's visual field. Compare the size of the patient's blind spot to yours.

 **Comment**: Blind spot is same as mine

Pupils

1. Direct and consensual light reflex

With the patient fixating on a point in the distance and in ambient lighting, shine a bright light from the temporal side into one eye and look for constriction of the ipsilateral pupil (Direct Light reflex)

To test the consensual reflex, assess the pupil response in the contralateral pupil when light is directed towards the ipsilateral pupil. Repeat for the other pupil.

2. Relative afferent pupillary defect

Use a bright light source.

Move the light briskly from one eye to the other, but place it on each eye for a minimum of 3 seconds.

3. Accommodation

With his vision still fixed on a distant point, present an object about 15 cm in front of the eyes and ask the patient to focus on it (convergence). Look for pupil constriction (accommodation reflex).

 **Comments**:

Intact direct and consensual pupillary reflex, No relative afferent pupillary defect, Normal convergence and accommodation reflex

Ocular movements (CN III, IV, XI)

In the same seating position, ask the patient to look at a target or pen-torch light about 50 cm away. Draw an H shape with your moving finger

Ask them to say if and when they experience diplopia.

Starting from the primary position, move the target in the six positions of gaze and up and down.

If diplopia is present, ask whether this is horizontal, vertical or a combination of the two.

Determine where the image separation is most pronounced.

Look for nystagmus and determine whether the eye movement is smooth

Examine direct and consensual light reflex

No nystagmus No diplopia No blurred vision

Trigeminal nerve:

Sensory exam:

Ask the patient to close their eyes and say 'yes' each time they feel a light touch (you use a cotton-wool tip for this test). Do this in the areas of V1, V2 and V3.

Repeat using a fresh neurological pin, such as a Neurotip, to test superficial pain.

Compare both sides. **Intact symmetrical sensation**

Normal sensation in anterior two thirds of the tongue

Nasal tickle test: not done routinely

Motor (signs rare)

Inspect for wasting of the muscles of mastication **No muscle wasting No tenderness**

Ask the patient to clench their teeth; feel the masseters estimating their bulk. **Good bulk at**

Ask the patient to open their jaw and note any deviation; **Good power masseter**

Corneal reflex

no deviation of jaw

Gently depress the lower eyelid while the patient looks up.

Lightly touch the lateral edge of the cornea with a wisp of damp cotton wool

Look for both direct and consensual

Jaw jerk

Ask the patient to let their mouth hang loosely open.

Place your forefinger in the midline between lower lip and chin.

Percuss your finger gently with the tendon hammer in a downward direction, noting any reflex closing of the jaw.

An absent, or just present, reflex is normal.

Comments on inspection:

Symmetrical face, Symmetrical wrinkles, No deviation in angle of mouth, Preserve Nasolabial fold, No ptosis, No abnormal movement No Fasciculations
Symmetrical eyes No tearing

Facial nerve:

Motor function

Inspect the face for asymmetry or differences in blinking or eye closure on one side.

Watch for spontaneous or involuntary movement.

Ask the patient to :

- raise their eyebrows and observe for symmetrical wrinkling of the forehead (frontalis muscle). **Comment by Symmetrical wrinkles**
- screw their eyes tightly shut and resist you opening them (orbicularis oculi). **Intact power of oculi**
- bare their teeth (orbicularis oris). **No deviation**
- blow out their cheeks with their mouth closed (buccinators and orbicularis oris). -Ask the patient to open his mouth to assess the function of the Platysma **Normal bulk of buccinator And platysma**

Taste sensation over the anterior two thirds of the tongue

Corneal reflex

Test hearing (stapedius muscle)

Vestibulocochlear (VIII) nerve

Whispered voice test

Stand behind the patient.

Start testing with your mouth about 15 cm from the ear you are assessing.

Mask hearing in the patient's other ear by rubbing the tragus ('masking').

Ask the patient to repeat a combination of multisyllable numbers and words. Start with a normal speaking voice to confirm that the patient understands the test.

Lower your voice to a clear whisper.

Repeat the test but this time at arm's length from the patient's ear. People with normal hearing can repeat words whispered at 60 cm.

Weber's test

Strike the prongs of the tuning fork against a hard surface to make it vibrate.

Place the base of the vibrating tuning fork in the middle of the patient's forehead

Ask the patient, 'Where do you hear the sound?' Record which side Weber's test lateralizes to

Rinne's test

If not contral

Strike the prongs of the tuning fork against a hard surface to make it vibrate.

Place the vibrating tuning fork on the mastoid process

Now place the still-vibrating base at the external auditory meatus and ask, 'Is it louder in front of your ear or behind?'

Normally he could because air conduction Is better than bone conduction

Glossopharyngeal (IX) and vagus (X) nerves

Assess the patient's speech for dysarthria or dysphonia

Ask them to say 'Ah'. Look at the movements of the palate and uvula using a torch

Ask the patient to puff out their cheeks with their lips tightly closed. Listen for air escaping from the nose.

Ask the patient to cough; assess the strength of the cough.

Testing pharyngeal sensation and the gag reflex Is unpleasant. Instead, and in fully conscious patients only, use the swallow test. Administer 3 teaspoons of water and observe for absent swallow, cough or delayed cough, or change in voice quality after each teaspoon. If there are no problems, observe again while the patient swallows a glass of water. Use an orange stick to test Common sensation from the posterior one third of the tongue.

Test for Taste sensation From the posterior one third of the tongue

Accessory (XI) nerve

Face the patient and inspect the sternomastoid muscles for wasting or hypertrophy; Skin color/scars palpate them to assess their bulk.

Stand behind the patient to inspect the trapezius muscle for wasting or asymmetry.

Ask the patient to shrug their shoulders, then apply downward pressure with your hands to assess the power.

Test power in the left sternomastoid by asking the patient to turn their head to the right while you provide resistance with your hand placed on the right side of the patient's chin.

Reverse the procedure to check the right sternomastoid.

Test both sternocleidomastoid muscles simultaneously by asking the patient to flex their neck. Apply your palm to the forehead as resistance.

Hypoglossal (XII) nerve

Ask the patient to open their mouth. Look at the tongue at rest for wasting, fasciculation or involuntary movement.

Ask the patient to put out their tongue. Look for deviation or involuntary movement.

Ask the patient to move their tongue quickly from side to side.

Test power by asking the patient to press their tongue against the inside of each cheek in turn while you press from the outside with your finger.

Assess speech by asking the patient to say 'yellow lorry'.

Assess swallowing with a water swallow test