Nervous System & Special Senses

United States Medical Licensing Examination (USMLE) Step 1

5 to 10% of Step 2 CK · 9 sections · content outline and specifications

The nervous system and special senses make up about 5 to 10% of Step 2 CK. Questions ask what to do next for a real patient: the most likely diagnosis, the best first test, the right drug and the safe order of steps. Many items are emergencies where time matters, such as stroke, meningitis, status epilepticus, a growing hematoma or cord compression. Others test office care: headache, epilepsy in a woman who may become pregnant, Parkinson disease in an older adult, vertigo and eye screening in diabetes. Read the time of onset, the pattern of signs and any red flags first, then choose the step that protects the patient fastest.

You should be able to: After this guide, you should be able to choose the next step, the best test and the first-line treatment for the common emergencies and office problems of the nervous system, eye and ear.

Every section: the key point and the trap

1 Stroke and transient ischemic attack

Sudden focal deficit: check fingerstick glucose, then noncontrast CT of the head at once to rule out bleeding.

Trap: Do not lower blood pressure toward normal in acute ischemic stroke and do not give heparin. Lower it only to the thrombolysis limit, or above 220/120 mm Hg if no thrombolysis is given.

2 Headache: red flags and primary headaches

Red flags: thunderclap onset, new headache after age 50, fever with neck stiffness, papilledema, focal signs, pregnancy, cancer or weak immunity.

Trap: A normal CT does not end the workup of a thunderclap headache when the scan was late. Do not discharge the patient; do the lumbar puncture.

3 Seizures and epilepsy

First seizure: check glucose, sodium, calcium, magnesium, a pregnancy test and a toxicology screen; then brain imaging (MRI preferred) and EEG.

Trap: Do not wait for EEG or imaging to treat a seizure that is still going. Treatment comes first, testing after.

4 Infections of the central nervous system

Suspected bacterial meningitis: blood cultures, then dexamethasone and empiric antibiotics within the hour. Never delay antibiotics for CT or lumbar puncture.

Trap: The most common wrong step is to order CT and lumbar puncture first and give antibiotics after. Antibiotics go in first whenever there will be any delay.

5 Demyelinating and neuromuscular disease

Multiple sclerosis: episodes separated in time and place, such as optic neuritis and later leg numbness. Best test: MRI of the brain and spine with gadolinium.

Trap: In Guillain-Barre and myasthenic crisis, normal oxygen saturation is a late warning. Follow forced vital capacity and negative inspiratory force, and intubate before the patient tires.

6 Movement disorders and cognitive decline

Parkinson disease: rest tremor, rigidity and slow movement, often starting on one side. Carbidopa-levodopa is the most effective drug and the best choice in older adults.

Trap: Gait trouble that comes first, with incontinence, points to normal pressure hydrocephalus, not Alzheimer disease. Look at the order in which the symptoms began.

7 Head and spinal injury and cord compression

Head injury: assess airway, breathing and circulation, and the Glasgow Coma Scale. Use a validated rule to decide on CT; always scan older adults and patients on anticoagulants.

Trap: A patient who talks normally after a head injury is not safe. The lucid interval of an epidural hematoma ends in sudden decline, so watch closely and scan.

8 The eye

Acute angle-closure glaucoma: painful red eye, halos, a mid-dilated fixed pupil and a hard eye. Give pressure-lowering drops and acetazolamide now; laser iridotomy is the definitive treatment.

Trap: Do not dilate the pupil of a patient with suspected angle-closure glaucoma, and do not mistake its vomiting and headache for migraine.

9 The ear and dizziness

Benign paroxysmal positional vertigo: brief vertigo with head turns and a positive Dix-Hallpike. Treat with the Epley maneuver, not long-term meclizine.

Trap: Dizziness in an older adult with vascular risk factors and an abnormal neurologic exam is a stroke until proven otherwise; do not label it inner ear disease.

Key terms

Thrombolysis: Treatment with a drug that dissolves a blood clot.

Xanthochromia: A yellow color of spinal fluid caused by broken-down blood.

Papilledema: Swelling of the optic disc from high pressure inside the skull.

Status epilepticus: A seizure lasting more than 5 minutes, or repeated seizures without recovery between them.

Fatigable weakness: Weakness that gets worse the more a muscle is used.

Lucid interval: A period of normal alertness between a head injury and later decline.

Sensory level: A line on the body below which feeling is reduced, pointing to a spinal cord lesion.

Nystagmus: Fast, involuntary, back and forth movements of the eyes.

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