

## Bates' Guide to Physical Examination and History Taking, 12th Edition

### Chapter 17: The Nervous System

#### Multiple Choice

1. A 28-year-old book editor comes to your clinic, complaining of strange episodes. He states that about once a week for the last 3 months his left hand and arm will stiffen and then start jerking. He says that after a few seconds his whole left arm and then his left leg will also start to jerk. He denies any loss of consciousness or loss of bowel or bladder control. When the symptoms resolve, his arm and leg feel tired but otherwise he feels fine. His past medical history is significant for a cyst in his brain that was removed 6 months ago. He is married and has two children. His parents are both healthy. On examination you see a scar over the right side of his head but otherwise his neurologic examination is unremarkable.

What type of seizure disorder is he most likely to have?

- A) Generalized tonic-clonic seizure
- B) Generalized absence seizure [NURSINGTB.COM](http://NURSINGTB.COM)
- C) Simple partial seizure (Jacksonian)
- D) Complex partial seizure

Ans: C

Chapter: 17

Feedback: Simple partial seizures start with a unilateral symptom, involve no loss of consciousness, and have a normal postictal state. In a Jacksonian seizure the symptoms start with one body part and “march” along the same side of the body.

2. A 7-year-old child is brought to your clinic by her mother. The mother states that her daughter is doing poorly in school because she has some kind of “ADD” (attention deficit disorder). You ask the mother what makes her think the child has ADD. The mother tells you that both at home and at school her daughter will just zone out for several seconds and lick her lips. She states it happens at least four to six times an hour. She says this has been happening for about a year. After several seconds of lip-licking her daughter seems normal again. She states her daughter has been generally healthy with just normal childhood colds and ear infections. The patient's parents are both healthy and no other family members have had these symptoms.

What type of seizure disorder is she most likely to have?

- A) Generalized tonic–clonic seizure
- B) Generalized absence seizure
- C) Simple partial seizure (Jacksonian)
- D) Complex partial seizure

Ans: B

Chapter: 17

Feedback: In an absence seizure there is no tonic–clonic activity. There is a sudden, brief lapse of consciousness with blinking, staring, lip-smacking, or hand movements that resolve quickly to full consciousness. It is easily mistaken for daydreaming or ADD. Some will try to induce these episodes with hyperventilation.

3. A 37-year-old insurance agent comes to your office, complaining of trembling hands. She says that for the past 3 months when she tries to use her hands to fix her hair or cook they shake badly. She says she doesn't feel particularly nervous when this occurs but she worries that other people will think she has an anxiety disorder or that she's a drinker. She admits to having some recent fatigue, trouble with vision, and difficulty maintaining bladder control. Her past medical history is remarkable for hypothyroidism. Her mother has lupus and her father is healthy. She has an older brother with type 1 diabetes. She is married and has three children. She denies tobacco, alcohol, or drug use. On examination, when she tries to reach for a pencil to fill out the health form she has obvious tremors in her dominant hand.

What type of tremor is she most likely to have?

- A) Resting tremor
- B) Postural tremor
- C) Intention tremor

Ans: C

Chapter: 17

Feedback: Intention tremors are absent at rest or in a postural position and occur only with intentional movement of the hands. This is seen in cerebellar disease (stroke or alcohol use) or in multiple sclerosis. This patient's tremor, fatigue, bladder problems, and visual problems are suggestive of multiple sclerosis.

4. A 77-year-old retired school superintendent comes to your office, complaining of unsteady hands. He says that for the past 6 months, when his hands are resting in his lap they shake uncontrollably. He says when he holds them out in front of his body the shaking diminishes, and when he uses his hands the shaking is also better. He also complains of some difficulty getting up out of his chair and walking around. He denies any recent illnesses or injuries. His past

medical history is significant for high blood pressure and coronary artery disease, requiring a stent in the past. He has been married for over 50 years and has five children and 12 grandchildren. He denies any tobacco, alcohol, or drug use. His mother died of a stroke in her 70s and his father died of a heart attack in his 60s. He has a younger sister who has arthritis problems. His children are all essentially healthy. On examination you see a fine, pill-rolling tremor of his left hand. His right shows less movement. His cranial nerve examination is normal. He has some difficulty rising from his chair, his gait is slow, and it takes him time to turn around to walk back toward you. He has almost no “arm swing” with his gait.

What type of tremor is he most likely to have?

- A) Resting tremor
- B) Postural tremor
- C) Intention tremor

Ans: A

Chapter: 17

Feedback: Resting tremors occur when the hands are literally at rest, such as sitting in the lap. These are slow, fine tremors, such as the pill-rolling seen in Parkinson's disease, which this patient most likely has. Decreased arm swing with ambulation is one of the earliest objective findings of Parkinson's disease.

NURSINGTB.COM

5. A 48-year-old grocery store manager comes to your clinic, complaining of her head being “stuck” to one side. She says that today she was doing her normal routine when it suddenly felt like her head was being moved to her left and then it just stuck that way. She says it is somewhat painful because she cannot get it moved back to normal. She denies any recent neck trauma. Her past medical history consists of type 2 diabetes and gastroparesis (slow-moving peristalsis in the digestive tract, seen in diabetes). She is on oral medication for each. She is married and has three children. She denies tobacco, alcohol, or drug use. Her father has diabetes and her mother passed away from breast cancer. Her children are healthy. On examination you see a slightly overweight Hispanic woman appearing her stated age. Her head is twisted grotesquely to her left but otherwise her examination is normal.

What form of involuntary movement does she have?

- A) Chorea
- B) Asbestosis
- C) Tic
- D) Dystonia

Ans: D

Chapter: 17

Feedback: Dystonia involves large movements of the body, such as with the head or trunk, leading to grotesque twisted postures. Some medications (such as one commonly used for gastroparesis) often cause dystonia.

6. A 41-year-old real estate agent comes to your office, complaining that he feels like his face is paralyzed on the left. He states that last week he felt his left eyelid was droopy and as the day progressed he was unable to close his eyelid all the way. Later he felt like his smile became affected also. He denies any recent injuries but had an upper respiratory viral infection last month. His past medical history is unremarkable. He is divorced and has one child. He smokes one pack of cigarettes a day, occasionally drinks alcohol, and denies any illegal drug use. His mother has high blood pressure and his father has sarcoidosis. On examination you ask him to close his eyes. He is unable to close his left eye. You ask him to open his eyes and raise his eyebrows. His right forehead furrows but his left remains flat. You then ask him to give you a big smile. The right corner of his mouth raises but the left side of his mouth remains the same. What type of facial paralysis does he have?

- A) Peripheral CN VII paralysis
- B) Central CN VII paralysis

Ans: A

Chapter: 17

=

Feedback: In a peripheral lesion the entire side of the face will be involved. This causes the inability to close the eye, raise the eyebrow, wrinkle the forehead, and smile on the affected side. Bell's palsy is an example of this type of paralysis and is probably what is affecting this patient.

7. A 60-year-old retired seamstress comes to your office, complaining of decreased sensation in her hands and feet. She states that she began to have the problems in her feet a year ago but now it has started in her hands also. She also complains of some weakness in her grip. She has had no recent illnesses or injuries. Her past medical history consists of having type 2 diabetes for 20 years. She now takes insulin and oral medications for her diabetes. She has been married for 40 years. She has two healthy children. Her mother has Alzheimer's disease and coronary artery disease. Her father died of a stroke and also had diabetes. She denies any tobacco, alcohol, or drug use. On examination she has decreased deep tendon reflexes in the patellar and Achilles tendons. She has decreased sensation of fine touch, pressure, and vibration on both feet. She has decreased two-point discrimination on her hands. Her grip strength is decreased and her plantar and dorsiflexion strength is decreased.

Where is the disorder of the peripheral nervous system in this patient?

- A) Anterior horn cell
- B) Spinal root and nerve
- C) Peripheral polyneuropathy
- D) Neuromuscular junction

Ans: C

Chapter: 17

Feedback: With peripheral polyneuropathy there will be distal extremity symptoms before proximal symptoms. There will be weakness and atrophy and decreased sensory sensations. There is often the classic glove-stocking distribution pattern of the lower legs and hands. Causes include diabetic neuropathy, as in this case, alcoholism, and vitamin deficiencies.

8. A 21-year-old engineering student comes to your office, complaining of leg and back pain and of tripping when he walks. He states this started 3 months ago with back and buttock pain but has since progressed to feeling weak in his left leg. He denies any bowel or bladder symptoms. He can think of no specific traumatic incidences but he was a defensive lineman in high school and junior college. His past medical history is unremarkable. He denies tobacco use or alcohol or drug abuse. His parents are both healthy. On examination he is tender over the lumbar spine and he has a positive straight-leg raise on the left. His Achilles tendon deep reflex is decreased on the left. While watching his gait you notice he has to pick his left foot up high in order not to trip.

What abnormality of gait does he most likely have?

- A) Sensory ataxia
- B) Parkinsonian gait
- C) Steppage gait
- D) Spastic hemiparesis

NURSINGTB.COM

Ans: C

Chapter: 17

Feedback: This gait is associated with foot drop, usually secondary to a lower motor neuron disease. This is often seen with a herniated disc, such as in this patient.

9. A 17-year-old high school student is brought in to your emergency room in a comatose state. His friends have accompanied him and tell you that they have been shooting up heroin tonight and they think their friend may have had too much. The patient is unconscious and cannot protect his airway, so he is intubated. His heart rate is 60 and he is breathing through the ventilator. He is not posturing and he does not respond to a sternal rub. Preparing to finish the neurologic examination, you get a penlight.

What size pupils do you expect to see in this comatose patient?

- A) Pinpoint pupils
- B) Large pupils
- C) Asymmetric pupils
- D) Irregularly shaped pupils

Ans: A

Chapter: 17

Feedback: Narcotics and cholinergics cause very small (1 mm) pupils. Reactions to light can be appreciated with a magnifying glass.

10. A 37-year-old woman is brought into your emergency room comatose. The paramedics say her husband found her unconscious in her home. Her past medical history consists of type 1 diabetes and she is on insulin. In the ambulance the paramedics obtained a glucose check and her sugar was 15 (normal is 70 to 105). They began a dextrose saline infusion and intubated her to protect her airway. Despite their efforts, she is posturing in the emergency room with her arms straight at her side and her jaw clenched. Her legs are also straight and her feet are plantar flexed. What type of posturing is she showing?

- A) Decorticate rigidity
- B) Decerebrate rigidity
- C) Hemiplegia
- D) Chorea

Ans: B

Chapter: 17

Feedback: In this type of rigidity the jaws are clenched and the neck is extended. The arms are adducted and stiffly extended at the elbows with forearms pronated and wrists and fingers flexed. The legs are stiffly extended at the knees with the feet plantar flexed. This posture occurs with lesions in the diencephalon, midbrain, or pons. It can also be seen with severe metabolic disorder such as hypoxia or hypoglycemia, as in this case.

11. A patient presents with a left-sided facial droop. On further testing, you note that he is unable to wrinkle his forehead on the left and has decreased taste. Which of the following is true?

- A) This represents a central lesion.
- B) This represents a CN IV lesion.
- C) This may be related to travel.
- D) This most likely represents a stroke.

Ans: C

Chapter: 17

Feedback: Because the forehead is also involved, this represents a peripheral nerve lesion of CN VII and does not represent a classic middle cerebral artery stroke. The latter would spare the upper face but include speech difficulties as well as upper extremity weakness on the

ipsilateral side. One cause of this type of lesion is Lyme disease and relates to travel to endemic areas, so a careful travel history should be sought.

12. Which is true of examination of the olfactory nerve?
- A) It is not tested for laterality.
  - B) The smell must be identified to declare a normal response.
  - C) Abnormal responses may be seen in otherwise normal elderly.
  - D) Allergies are unrelated to testing of this nerve.

Ans: C

Chapter: 17

Feedback: Abnormal olfactory nerve examination findings may be seen in otherwise normal elderly but may also be associated with other conditions such as Parkinson's disease. You should try to determine if only one side is abnormal by occluding the contralateral nostril. The smell must only be detected, not identified by name, to indicate a normal examination. If nasal occlusion occurs for other reasons, such as allergic rhinitis or anatomic abnormalities, the nerve cannot be tested and may seem to be abnormal for unrelated reasons.

NURSINGTB.COM

13. Steve has had a stroke and comes to you for follow-up today. On examination you find that he has increased muscle tone, some involuntary movements, an abnormal gait, and a slowness of response in movements. He most likely has involvement of which of the following?
- A) The corticospinal tract
  - B) The cerebellum
  - C) The cerebrum
  - D) The basal ganglia

Ans: D

Chapter: 17

Feedback: These findings are typical of disease in the basal ganglia.

14. You are conducting a mental status examination and note impairment of speech and judgement, but the rest of your examination is intact. Where is the most likely location of the problem?
- A) Cerebrum

- B) Cerebellum
- C) Brainstem
- D) Basal ganglia

Ans: A

Chapter: 17

Feedback: The cerebrum is responsible for higher cognitive functions such as speech and judgement.

15. A patient presents with a daily headache which has worsened over the past several months. On fundoscopic examination, you notice that the disk edge is indistinct and the veins do not pulsate. Which is most likely?
- A) Migraine
  - B) Glaucoma
  - C) Visual acuity problem
  - D) Increased intracranial pressure

Ans: D

Chapter: 17

NURSINGTB.COM

Feedback: This is a description of papilledema, which should make you think of increased intracranial pressure. This can be a critical finding. This patient may have a brain tumor or benign intracranial hypertension. These findings cannot be ignored and should be acted upon quickly.

16. A young woman comes in today, complaining of fatigue, irregular menses, and polyuria which have gradually increased over the past few months. Which eye findings would be consistent with her condition?
- A) An upper quadrantanopsia
  - B) A lower quadrantanopsia
  - C) A bitemporal hemianopsia
  - D) An increased cup-to-disc ratio

Ans: C

Chapter: 17

Feedback: These symptoms are consistent with a pituitary lesion. Enlargement of a tumor in this area would compress the fibers responsible for the lateral visual fields. A quadrantanopsia would usually be caused by a lesion in the optic radiations in the parietal lobe of the cerebrum.



Glaucoma would cause a narrowing of the entire visual field, not just the lateral aspects.

17. A patient with a history of seizure disorder and on several seizure medications says a friend noted “jumping eye movements.” The patient describes a sensation of movement at rest since his medications were adjusted upward following a breakthrough seizure several weeks ago. On examination you note that the eyes both slowly move to the right and then quickly jump to the left. Which of the following is true?

- A) This is called nystagmus to the left
- B) This is called saccadic eye movement
- C) This represents a subclinical seizure
- D) This most likely has an ominous cause

Ans: A

Chapter: 17

Feedback: Nystagmus is named for the fast component, in this case, toward the left. Nystagmus is common with several seizure medications and in this case is likely due to the recent increase in medications rather than a more ominous cause. Saccadic eye movements are similar to nystagmus but represent fixations on apparently moving objects, like watching roadside trees from a moving vehicle. A subclinical seizure with bilateral findings and no effect on consciousness would be unusual. [NURSINGTB.COM](http://NURSINGTB.COM)

18. You are testing the biceps strength in a young man following a spinal trauma from a motor vehicle accident. He cannot lift his hand upward, but if the arm is abducted to 90 degrees, he can then move his forearm side to side. This would represent which muscle strength grading?

- A) I
- B) II
- C) III
- D) IV

Ans: B

Chapter: 17

Feedback: The ability to move an extremity, but not against gravity, represents a strength of 2 out of 5. Zero represents no muscular contraction detected (not even a “flicker”); one represents a contraction but no movement of the extremity; three means that the extremity can move against gravity but not against resistance; four means perceived weakness but the patient can oppose some resistance; and five is normal.

19. You ask a patient to hold her arms up, with her palms up, and then to close her eyes. The right arm begins to move downward after a few seconds and her thumb rotates upward. This is most likely a problem with which part of the nervous system?

- A) Corticospinal tract
- B) Spinothalamic tract
- C) Thalamus
- D) Dorsal root ganglion

Ans: A

Chapter: 17

Feedback: This describes a pronator drift, which signifies decreased position sense involvement of the corticospinal tract. This tract does not travel through the thalamus. This is commonly tested as an early sign of stroke. This would not occur with a dorsal root ganglion problem.

20. You are examining a child with severe cerebral palsy. When you suddenly move his foot dorsally, a sustained “beating” of the foot against your hand ensues. What does this represent?

- A) A focal seizure [NURSINGTB.COM](http://NURSINGTB.COM)
- B) Clonus
- C) Extinction
- D) Reinforcement

Ans: B

Chapter: 17

Feedback: Clonus is a sustained rhythmic “beating” which correlates with CNS disease and hyperreflexia. A focal seizure could be virtually ruled out by stopping the stimulus and watching the phenomenon stop. Extinction is a term applied to sensory testing where one side of a simultaneous, bilateral stimulus is not felt because of damage to the cortex. Reinforcement applies to enhancing reflex examination by distracting the patient, for example, by pulling his hands against each other.

21. Jim is an HIV-positive patient who complains about back pain in addition to several other problems. On percussion, there is slight tenderness over the T7 vertebrae, and when you flex his thigh to 90 degrees and extend his lower legs, you meet strong resistance at about 45 degrees of extension. What are likely causes of this constellation of symptoms?

- A) Fractured vertebrae

- B) Malingering
- C) Infection
- D) Medication side effect

Ans: C

Chapter: 17

Feedback: This represents Kernig's sign. When present bilaterally it often indicates meningeal irritation. (Kernig was a physician in eastern Europe and treated many children with tuberculous meningitis.) It is useful in cases when there has been chronic inflammation of the meninges, as seen in TB and cryptococcal disease. There was no trauma reported, and these signs are too important to ascribe them to malingering. Such localized physical findings are unlikely to be caused by medication side effects.

22. A patient with alcoholism is brought in with confusion. You ask him to “stop traffic” with his palms and notice that every few seconds his palms suddenly move toward the floor. What does this indicate?

- A) Stroke
- B) Metabolic problems
- C) Carpal tunnel syndrome
- D) Severe fatigue and weakness [NURSINGTB.COM](http://NURSINGTB.COM)

Ans: B

Chapter: 17

Feedback: This is asterixis and represents the inability to maintain a sustained contraction of the muscles. It is usually due to various metabolic diseases. A variant of this is called “milkmaid's grip” in which the patient is asked to grasp two fingers. A positive occurs if the patient is unable to sustain the grip and it feels as if the patient is trying to milk a cow. Most would consider checking an ammonia level in this patient. A stroke is less likely to produce bilateral symptoms. Carpal tunnel represents a sensory loss in the median nerve distribution.

23. You examine a “sleepy” patient. You note that she will open her eyes and look at you but responds slowly and is confused. She does not appear interested in her surroundings. How would you describe her level of consciousness?

- A) Lethargic
- B) Obtunded
- C) Stuporous
- D) Comatose

Ans: B

Chapter: 17

Feedback: An obtunded patient is responsive but slow speaking and is less interested in her surroundings. A patient with lethargy opens her eyes to verbal cues and may respond appropriately but promptly falls back to sleep. The stuporous patient responds only to painful stimuli, and when the stimulus is withdrawn lapses into unconsciousness again. Such patients have little awareness of self or the environment. The comatose patient has no obvious response to external stimuli.

24. A woman experiences syncope after hearing that her son was severely injured. She becomes pale and collapses to the ground without injuring herself. On waking, she states that she feels very warm. She denies any other symptoms. There are no findings on examination. What caused her loss of consciousness?

- A) Micturition syncope
- B) Postural hypotension
- C) Cardiac arrhythmia
- D) Vasovagal syncope

Ans: D

Chapter: 17

[NURSINGTB.COM](http://NURSINGTB.COM)

Feedback: This is a classic description of vasodepressor or vasovagal syncope with the feeling of warmth, while bystanders note paleness. The lack of injury is also helpful because she has maintained her protective reflexes. Injuring oneself can indicate that a cardiac origin for syncope may be present. Micturition syncope occurs with urination, and there are no postural changes mentioned, making postural hypotension unlikely.

25. A 7-year-old boy is performing poorly in school. His teacher is frustrated because he is frequently seen “staring off into space” and not paying attention. If this is a seizure, it most likely represents which type?

- A) Pseudoseizure
- B) Tonic-clonic seizure
- C) Absence
- D) Myoclonus

Ans: C

Chapter: 17

Feedback: This is a common description and scenario for absence seizures. These are

generally brief (less than 10 seconds, “petit mal”). These generally occur without warning and generally do not have a post-ictal confused state. Pseudoseizures are difficult to diagnose but generally involve dramatic-appearing movements, similar to tonic–clonic seizures. Myoclonus represents a single brief jerk of the trunk and limbs.

26. A patient comes to you because she is experiencing a tremor only when she reaches for things. This becomes worse as she nears the “target.” When you ask her to hold out her hands, no tremor is apparent. What type of tremor does this most likely represent?

- A) Intention tremor
- B) Postural tremor
- C) Resting tremor
- D) Nervous tremor

Ans: A

Chapter: 17

Feedback: Because this tremor worsens as the target is approached, this represents an “intention” tremor. In this patient, one may suspect cerebellar pathway disease, possibly from multiple sclerosis (one could also look for an intranuclear ophthalmoplegia). A postural tremor occurs when a certain position is maintained, and resting tremors can occur in diseases such as Parkinson's. These do not occur during sleep.

27. A young woman comes in with brief, rapid, jerky, irregular movements. They can occur at rest or during other intentional movements and involve mostly her face, head, lower arms, and hands. How would you describe these movements?

- A) Tics
- B) Dystonia
- C) Athetosis
- D) Chorea

Ans: D

Chapter: 17

Feedback: These represent chorea because they are brief, rapid, unpredictable, and irregular. Tics are irregular but tend to be stereotyped and can be vocal (throat-clearing), facial expressions, or shoulder shrugging. Athetosis is a slow, squirming motion usually affecting the face and distal extremities. Dystonia is similar to athetosis but the movements are more coarse and can involve twisted postural changes.

[NURSINGTB.COM](http://NURSINGTB.COM)