

SAMPLE QUESTION ANSWERS CERVICAL SPINE& TMJ

1. d. Correct. Pre-test probability for a patient with whiplash to develop chronic disability is 33%. NDI score of >15 raises that suspicion to 54%. A TSK score of >41 further raises the post-test probability to 83% (Nederhand, 2004)

2. b. Gentle AROM cervical spine within pain tolerance

ADDITIONAL EXPLANATION

- a. Incorrect. This is a matched intervention for the “mobility” classification
- b. Correct. This is a matched intervention for the “pain control” classification
- c. Incorrect. This is a matched intervention for the “centralization” classification
- d. Incorrect. This is a matched intervention for the “headache” classification

3. c. Interventions to promote centralization

ADDITIONAL EXPLANATION

- a. This is a matched intervention for the “mobility” classification
- b. This is a matched intervention for the “pain control” classification
- c. Correct. This is a matched intervention for the “centralization” classification. While the patient does not have signs of nerve root compromise he does have symptoms distal to the elbow and symptoms >30 days duration – two key elements to this classification.
- d. This is a matched intervention for the “headache” classification

4. a. Cervical and thoracic mobilizations/manipulations

ADDITIONAL EXPLANATION

- a. Correct. This is a matched intervention for the “mobility” classification. The patient’s age, symptom duration and lack of peripheralizing symptoms match him to this classification.
- b. Incorrect. This is a matched intervention for the “pain control” classification
- c. Incorrect. This is a matched intervention for the “centralization” classification
- d. Incorrect. This is a matched intervention for the “headache” classification

5. b. HVLA upper and middle thoracic spine (gapping technique)

ADDITIONAL EXPLANATION

b. Correct. This patient meets 3 of 4 clinical predictors for successful treatment of neck pain with cervical HVLA (Puentedura, 2012)

6. c. TMJ

ADDITIONAL EXPLANATION

- a. Incorrect. The tectorial membrane does originate on the occiput and becomes continuous with the posterior longitudinal ligament. However, if this were the source of pain, we would expect flexion to place a stress on this tissue and reproduce the patient’s pain.
- b. Incorrect. The levator scapulae typically refers pain along the superior and medial borders of the scapula
- c. Correct. The TMJ refers pain to the entire head and neck via the Trigemincervical Nucleus. This nucleus is comprised of the nucleus of CN V and the dorsal horns of C1-3. The key element to this patient’s presentation is the presence of tinnitus. The auriculotemporal nerve (which branches off of CN V) innervates the posterolateral TMJ region as well as the tympanic membrane, external auditory meatus, and the lateral surface of the superior auricle. Thus, any symptom affecting the auriculotemporal nerve can cause an earache or tinnitus.
- d. Incorrect. The teeth refer pain to the TMJ.

7. a. Anterior dislocation of the disc with relocation

ADDITIONAL EXPLANATION

- a. Correct. An S-curve with jaw opening is indicative of either a muscle imbalance or a displacement of the disc (the S-curve occurs because the condyle “walks around” the joint. To differentiate between a muscle imbalance vs. disc pathology, the patient was asked to bite down on a cotton roll at their molars. This decreased the patient’s pain because of the reduced pressure on the disc due to gapping the TMJ. If this test had increased the patient’s pain it would point to a muscular or ligamentous cause. Anterior dislocations with relocation are associated with a click with opening and closing the jaw.
- b. Incorrect. We would have expected to have seen a C-type curve with opening the jaw
- c. Incorrect. We would have expected pain to increase when biting the cotton roll
- d. Incorrect. We would have expected approximately 30mm of jaw opening and double clicks with jaw opening and closing.

8. b. Capsular (TMJ) restriction

ADDITIONAL EXPLANATION

- a. Incorrect. This would be associated with a decrease in pain with biting the cotton roll and a clicking during jaw opening.
- b. Correct. Straight-line deviations that occur late during the jaw opening phase are associated with capsulitis. This was confirmed when the patient’s pain increased with biting on the cotton roll (indicating muscle or ligamentous involvement)
- c. Incorrect. This would have been associated with a straight-line deviation early in the jaw opening phase.
- d. This would have been associated with double clicks on opening and closing the jaw.

9. d. Left TMJ hypomobile, right TMJ hypermobile

ADDITIONAL EXPLANATION

- d. Correct. Hypomobility occurs to the same side as the jaw deviation

10. d. Trigeminal

ADDITIONAL EXPLANATION

- a. Incorrect. The facial nerve (CN VII) innervates the muscles of facial expression, taste, and salivation.
- b. Incorrect. The glossopharyngeal nerve (CN IX) controls the gag reflex, swallowing, taste, and salivation
- c. Incorrect. The hypoglossal nerve (CN XII) controls the tongue
- d. Correct. The trigeminal nerve’s (CN V) mandibular division gives off three nerves that innervate the TMJ: auriculotemporal, deep temporal, and masseteric nerves.

11. B. Coordination, strengthening, and endurance training

ADDITIONAL EXPLANATION

- A. Incorrect. The CPG reported “weak” evidence in support of this intervention
- B. Correct
- C. Incorrect. The CPG reported “weak” evidence in support of this intervention
- D. Incorrect. The CPG reported “weak” evidence in support of this intervention

12. B. Send to the ER for xrays of her cervical spine

ADDITIONAL EXPLANATION

- A. Incorrect. The patient does not meet the CPR for HVLA. She meets the Ottawa rule for cervical xrays.
- B. Correct. The patient is unable to rotate her neck >45 degrees bilaterally – she needs XR
- C. Incorrect. No assessment of the deep neck flexors has been made.
- D. Incorrect. Her VAS is not >7 and her NDI score is too low therefore she does not meet algorithm for pain modalities.

13. A. Manipulation and exercise to the cervical spine

ADDITIONAL EXPLANATION

A. This patient meets 3 of 4 predictors for success with manipulation (Puentedura, JOSPT, 2012): symptoms <38 days, AROM rotation side/side difference >10 degrees, pain with PA mobs to middle cervical spine (positive expectations for HVLA is a predictor, but was not included in this study). The demographic data and special tests represent the averages for the subjects in this study. This patient also presents according to the Clinical Practice Guidelines for Neck Pain.