



NR603 Week 6 Assignment: Clinical Education Associated (CEA) Pre-Diagnostic Exam Case Study Part 2

Name: [REDACTED]

General Instructions

This assignment builds on the case study in this week's collaboration café. Carefully read the assignment guidelines and rubric and complete each case study section below. Use of this template is required.

Differential Diagnoses (*List three common differential diagnoses, including their pathophysiology and rationale for inclusion.*)

- Diagnosis 1: Carpal Tunnel Syndrome
 - Pathophysiology: Compressive neuropathy in the carpal tunnel caused by increased pressure, leading to pain and inflammation of the median nerve.
 - Rationale: Causes numbness and tingling in the thumb, index, and middle fingers, symptoms worsen at night or with repetitive hand motions.
- Diagnosis 2: Cervical Radiculopathy
 - Pathophysiology: Inflammation and compression of the nerve root, often caused by cervical spondylosis or disc herniation, causing radicular arm pain, numbness or weakness
 - Rationale: Weakness when gripping objects, may present without neck pain, numbness and tingling that radiates up the arm
- Diagnosis 3: Ulnar neuropathy
 - Pathophysiology: Compression or friction of the ulnar nerve, most often at the elbow or wrist. Myelin sheath damage or inflammation leads to numbness and tingling of the 4th and 5th fingers.
 - Rationale: Numbness and tingling to the 4th and 5th fingers, wrist pain, often associated with prolonged elbow flexion or repetitive wrist motions.

Differential Diagnoses Comparative and Contrastive Analysis (*Discuss how the three differential diagnoses are similar and different in occurrence, pathophysiology, and presentation.*)

- Comparison and contrast of occurrence: Carpal tunnel syndrome is the most common occurring upper extremity entrapment neuropathy, occurs most often in women with a BMI over 25 and



with repetitive wrist use. Ulnar neuropathy has fewer occurrences, and is often related to elbow flexion, low BMI or prior elbow trauma. Cervical radiculopathy is less common, occurs more often in men than women.

- Comparison and contrast of pathophysiology: Carpal tunnel syndrome, ulnar neuropathy and cervical radiculopathy all involve nerve dysfunction, but differ on where and how the nerve is injured. Carpal Tunnel Syndrome involves the median nerve and occurs when the nerve is compressed due to increased fluid and structural narrowing. Ulnar neuropathy occurs at the cubital tunnel of the elbow due to flexion that tightens the tunnel and causes compression and stretches the nerve. Cervical radiculopathy is caused by damage at the nerve root due to disc herniation or foraminal narrowing, causing compression and inflammation.
- Comparison and contrast of presentation: Carpal tunnel syndrome, ulnar neuropathy and cervical radiculopathy often have overlapping symptoms. Carpal tunnel syndrome usually causes numbness and tingling in the thumb, index, and middle finger, and the radial half of the ring finger. The symptoms often worsen at night and with activities that involve repetitive wrist motions. Ulnar neuropathy occurs at the elbow and causes numbness and tingling in the ring and little fingers and is often caused by elbow flexion. Cervical radiculopathy can cause neck pain that radiates to the arm and is accompanied by weakness and reduced reflexes.

Diagnostic Testing, Guidelines, and Expected Results *(Describe the necessary tests to diagnose and assess the severity of the three differential diagnoses. Discuss the relevant clinical practice guidelines (CPGs) for diagnosing and conducting diagnostic tests for each condition. Include expected diagnostic results consistent with the client's chief complaint, HPI, and physical exam findings.)*

- Diagnostic testing for diagnosis 1 (including relevant CPG): Diagnostic tests for carpal tunnel syndrome include a clinical history, a physical exam with Phalen's test, Tinel's sign, Carpal compression test, and hand elevation test. Nerve conduction studies are the gold standard when confirmation of diagnosis is needed prior to surgery (Wipperman & Penny, 2024).
 - Expected results: Nerve conduction studies would show slowed median nerve conduction across the carpal tunnel. Phalen's test, Tinel's sign, Carpal compression test and hand elevation would all elicit numbness and tingling.
- Diagnostic testing for diagnosis 2 (including relevant CPG): Cervical radiculopathy is diagnosed with a clinical history and physical exam that shows. Dermatomal sensory changes, myotomal weakness and diminished reflexes. Provocative tests include spurling's test, and upper limb tension test. An MRI of the cervical spine should be ordered if symptoms persist for more than 4-6 weeks or with progressive neurologic deficit (Thoomes et al., 2021).
 - Expected results: MRI would show disc herniation, foraminal stenosis and nerve root impingement, degenerative changes and edema or inflammation around the nerve