E-Z QME CONTINUING EDUCATION

FOR DOCTORS

In this Program:

6.0 hours of Home Study CEU's approved by DWC. Topics include:

- **Upper Extremity Impairments due to Peripheral Neuropathies:**
  - **Neurology 101 – Development of Dermatomes and Myotomes**
  - **Cervical Plexus, Brachial Plexus, and Spinal Nerves**
  - **Entrapment Neuropathies of the Radial, Ulnar, and Median Nerves**
  - **QME Neurologic Examination Procedures of the Upper Extremities**

○ Carpal Tunnel Syndrome – Special Examination

Presented by:
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EZQMECEU.COM

This program is approved for 6.0 hours of Continuing Education credit through the Division of Worker's Compensation – Medical Unit

Instructions: Listen to the audios or watch the PowerPoint presentation in its entirety. Supplement your learning with the written materials provided with the course – including Notes and References included here. Then, complete the 20 Question Examination. Upon successful completion, your Certificate of Completion will be faxed or emailed back to you.

UPPER EXTREMITY IMPAIRMENTS – PERIPHERAL NEUROPATHIES
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DWC Continuing Education Provider #1280

QME REPORT TEMPLATES

Below is a Sample Template used to guide your Physical Examination and to report your findings within the body of your QME Report. You may or may not require the use of all elements depending on the needs of your particular examinee.

CERVICAL SPINE & UPPER EXTREMITY NEUROLOGIC EXAM

GIRTH MEASUREMENTS

Extremity	Measurement	Difference
Right upper arm	cm.	

Left upper arm	cm.	
Right forearm	cm.	
Left forearm	cm.	

REFLEX EXAMINATION

Reflexes of the upper extremities demonstrated:

REFLEX	LEFT	RIGHT
Biceps (C5/Musculocutaneous nerve):	+2 (normal)	+2 (normal)
Extensor Digitorum (C6/Radial nerve):	+2 (normal)	+2 (normal)
Triceps (C7/Radial nerve):	+2 (normal)	+2 (normal)

SIGNIFICANCE OF NORMAL UPPER EXTREMITY REFLEXES

The upper extremity reflexes were symmetric bilaterally. This indicates preserved and intact function of:

1. Left and right biceps muscle spindles (stretch receptors)
2. Left and right extensor digitorum muscle spindles (stretch receptors)
3. Left and right triceps muscle spindles (stretch receptors)
4. Left and right C5 sensory nerve root function
5. Left and right musculocutaneous (C5, C6, and C7) nerve sensory function
6. Left and right C6 sensory nerve root function
7. Left and right radial (C5, C6, C7, C8, T1) nerve sensory function
8. C5 level of spinal cord function
9. C6 level of spinal cord function
10. C7 level of spinal cord function
11. Left and right C5 motor nerve root function
12. Left and right musculocutaneous (C5, C6, C7) nerve motor function
13. Left and right C6 motor nerve root function
14. Left and right C7 motor nerve root function
15. Left and right radial (C5, C6, C7, C8, T1) motor nerve function
16. Left and right biceps muscle function
17. Left and right extensor digitorum muscle function
18. Left and right triceps muscle function.

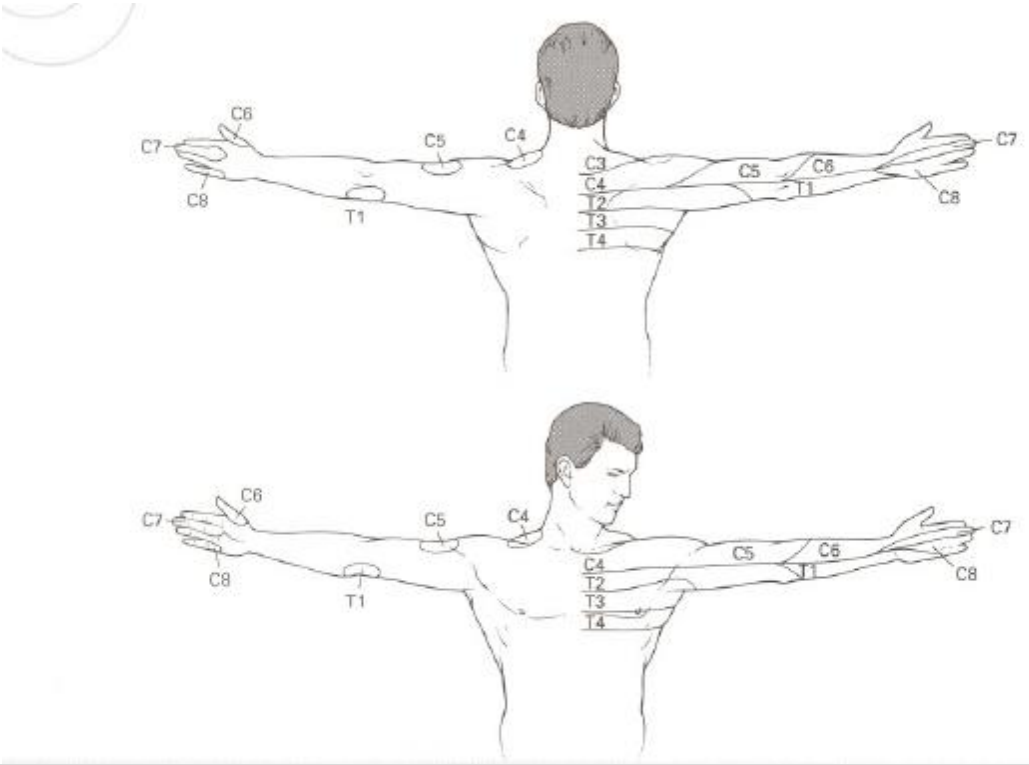
This indicates preserved and intact function of cervical spine nerve roots and upper extremity peripheral nerves.

SENSORY EXAM

AMA Guides to the Evaluation of Permanent Impairment (5th ed.), page 377

Figure 15-2 Skin Area Innervated by the Cervical and Thoracic Nerve Roots Showing Autonomous Zones

Name		Soc. Sec. No.		Date	



The Sensory Examination consisted of procedures to test the sensory modalities of light touch, pain, two point discrimination, and joint position sense.

- <u>*Superficial Tactile Sensibility*</u> (Light Touch) – This Sensory Exam was performed using a Semmes Weinstein monofilament (2.83 gauge).
    - C5 sensory dermatome: Normal sensation to light touch testing on the lateral aspect of the left arm from the summit of the shoulder to the elbow.
    - C5 sensory dermatome: Normal sensation to light touch testing on the lateral aspect of the right arm from the summit of the shoulder to the elbow.
    - C6 sensory dermatome: Normal sensation to light touch testing on the left lateral forearm, the thumb, the index finger, and one half of the middle finger.

- C6 sensory dermatome: Normal sensation to light touch testing on the right lateral forearm, the thumb, the index finger, and one half of the middle finger.
- C7 sensory dermatome: Normal sensation to light touch testing on the left middle finger.
- C7 sensory dermatome: Normal sensation to light touch testing on the right middle finger.
- C8 sensory dermatome: Normal sensation to light touch testing on the medial aspect of the left forearm, ring and little finger.
- C8 sensory dermatome: Normal sensation to light touch testing on the medial aspect of the right forearm, ring and little finger.
- T1 sensory dermatome: Normal sensation to light touch testing on the upper half of the medial aspect of the left forearm and medial portion of the arm.
- T1 sensory dermatome: Normal sensation to light touch testing on the upper half of the medial aspect of the right forearm and medial portion of the arm.

- *Pain* - This Sensory Exam was performed using the Whartenburg pinwheel with sharp and dull sides.
  - C5 sensory dermatome: Normal sensation to pinwheel and dull testing on the lateral aspect of the left arm from the summit of the shoulder to the elbow.
  - C5 sensory dermatome: Normal sensation to pinwheel and dull testing on the lateral aspect of the right arm from the summit of the shoulder to the elbow.
  - C6 sensory dermatome: Normal sensation to pinwheel and dull testing on the left lateral forearm, the thumb, the index finger, and one half of the middle finger.
  - C6 sensory dermatome: Normal sensation to pinwheel and dull testing on the right lateral forearm, the thumb, the index finger, and one half of the middle finger.
  - C7 sensory dermatome: Normal sensation to pinwheel and dull testing on the left middle finger.
  - C7 sensory dermatome: Normal sensation to pinwheel and dull testing on the right middle finger.
  - C8 sensory dermatome: Normal sensation to pinwheel and dull testing on the medial aspect of the left forearm, ring and little finger.
  - C8 sensory dermatome: Normal sensation to pinwheel and dull testing on the medial aspect of the right forearm, ring and little finger.
  - T1 sensory dermatome: Normal sensation to pinwheel and dull testing on the upper half of the medial aspect of the left forearm and medial portion of the arm.
  - T1 sensory dermatome: Normal sensation to pinwheel and dull testing on the upper half of the medial aspect of the right forearm and medial portion of the arm.

The sensory exam for pain sensibility was normal with no reported alteration of sensitivity to either upper extremity - including numbness, hypoesthesia (reduced sensation) or hyperesthesia (increased sensation).

- Two Point Discrimination – This Sensory Examination was performed using the (Instrument) (Normal 2-4 mm. on the fingertips, 4-6 mm. on the dorsum of the fingers, 8-12 mm. on the palm, and 20-30 mm. on the dorsum of the hand).

- C5 sensory dermatome: Two point discrimination was millimeters on the lateral aspect of the left arm from the summit of the shoulder to the elbow.
- C5 sensory dermatome: Two point discrimination was millimeters on the lateral aspect of the right arm from the summit of the shoulder to the elbow.
- C6 sensory dermatome: Two point discrimination was millimeters on the left lateral forearm, the thumb, the index finger, and one half of the middle finger.
- C6 sensory dermatome: Two point discrimination was millimeters on the right lateral forearm, the thumb, the index finger, and one half of the middle finger.
- C7 sensory dermatome: Two point discrimination was millimeters on the left middle finger.
- C7 sensory dermatome: Two point discrimination was millimeters on the right middle finger.
- C8 sensory dermatome: Two point discrimination was millimeters on the medial aspect of the left forearm, ring and little finger.
- C8 sensory dermatome: Two point discrimination was millimeters on the medial aspect of the right forearm, ring and little finger.
- T1 sensory dermatome: Two point discrimination was millimeters on the upper half of the medial aspect of the left forearm and medial portion of the arm.
- T1 sensory dermatome: Two point discrimination was millimeters on the upper half of the medial aspect of the right forearm and medial portion of the arm.

MOTOR NERVE EXAMINATION

The Motor Nerve examination was conducted with resisted manual muscle testing of upper extremity muscles.

- C5 Nerve Root - resisted shoulder abduction using the supraspinatus and deltoid muscles were strong and symmetric bilaterally with no evidence of weakness or give way. This tests the C5 portion of the suprascapular and axillary nerves. The results of this test indicate normal function of these nerves.

- C6 Nerve Root - resisted wrist extension using the extensor carpi radialis longus and brevis were strong and symmetric bilaterally with no evidence of weakness or give way. This tests the C6 portion of the radial nerve. The results of this test indicate normal function of these nerves.

- C7 Nerve Root - resisted wrist flexion using the flexor carpi radialis and flexor carpi ulnaris muscles were strong and symmetric bilaterally with no evidence of weakness or give way. This tests the C7 portion of the median nerve as well as the C8 portion of the ulnar nerve. The results of this test indicate normal function of these nerves.

- C8 Nerve Root - resisted finger flexion using the flexor digitorum superficialis and flexor digitorum profundus muscles was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the C8 portion of the median nerve and the C8 portion of the ulnar nerve. The results of this test indicate normal function of these nerves.

- T1 Nerve Root - resisted finger abduction and adduction using the dorsal and palmar interossei muscles was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the T1 portion of the median and ulnar nerves. The results of this test indicate normal function of these nerves.

The motor examination was

UPPER EXTREMITY PERIPHERAL NERVE EXAMINATION

SENSORY EXAMINATION

The Sensory Examination consisted of procedures to test the sensory modalities of light touch, pain, two point discrimination, and joint position sense as follows:

- *Superficial Tactile Sensibility* (Light Touch) – This Sensory Exam was performed using a Semmes Weinstein monofilament.
- *Pain* - This Sensory Exam was performed using the Whartenburg pinwheel with sharp and dull sides.
- *Two Point Discrimination* – This Sensory Examination was performed using the Aesthesiometer (Instrument) (Normal 2-4 mm. on the fingertips, 4-6 mm. on the dorsum of the fingers, 8-12 mm. on the palm, and 20-30 mm. on the dorsum of the hand).

Radial Nerve: Sensory
- Normal sensation to light touch at the dorsal web space between thumb and index finger bilaterally.
- Normal sensation to pinwheel and dull testing at the dorsal web space between thumb and index finger bilaterally.
- Two point discrimination testing was XXX at the dorsal web space between thumb and index finger bilaterally.

Ulnar Nerve: Sensory
- Normal sensation to light touch at the distal ulnar aspect of the little finger bilaterally.
- Normal sensation to pinwheel and dull testing at the distal ulnar aspect of the little finger bilaterally.
- Two point discrimination testing was XXX at the distal ulnar aspect of the little finger bilaterally.

Median Nerve: Sensory
- Normal sensation to light touch at the distal radial aspect of the index finger bilaterally.
- Normal sensation to pinwheel and dull testing at the distal radial aspect of the index finger.
- Two point discrimination testing was XXX at the distal radial aspect of the index finger bilaterally.

Axillary Nerve: Sensory
- Normal sensation to light touch at the lateral arm and deltoid patch of upper arm bilaterally.

- Normal sensation to pinwheel and dull testing at the lateral arm and deltoid patch of upper arm bilaterally.
- Two point discrimination testing was XXX at the distal radial aspect of the index finger bilaterally.

Musculocutaneous Nerve: Sensory

- Normal sensation to light touch at the lateral forearm bilaterally.
- Normal sensation to pinwheel and dull testing at the lateral forearm bilaterally.
- Two point discrimination testing was XXX at the lateral forearm bilaterally.

The Upper Extremity Peripheral Nerve Motor Examination was

MOTOR EXAMINATION

The Motor Nerve Examination was completed with the use of resisted manual muscle testing of upper extremity muscles.

Radial Nerve: Motor

- Resisted wrist extension using the extensor carpi radialis longus and brevis was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral radial nerve.
- Resisted thumb extension using the extensor digitorum communis, indicis and minimi were strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral radial nerve.

Ulnar Nerve: Motor

- Resisted abduction of the little finger using the dorsal interossei and abductor digiti minimi was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral ulnar nerve.

Median Nerve: Motor

- Resisted thumb pinch using the lumbricales and interosseous muscles as well as the long flexors and extensors of the thumb and index finger was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral median nerve.
- Resisted thumb opposition using the opponens pollicis and opponens digiti minimi was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral median nerve.
- Resisted thumb adduction using the adductor pollicis (obliquus and transversus) was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral median nerve.

Axillary Nerve:

- Resisted arm abduction using the deltoid and supraspinatus muscles was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral axillary nerve.

Musculocutaneous Nerve.

- Resisted arm flexion using the biceps, brachialis and brachioradialis muscles was strong and symmetric bilaterally with no evidence of weakness or give way. This tests the motor portion of the peripheral musculocutaneous nerve.

The Upper Extremity Peripheral Nerve Motor Examination was

UPPER EXTREMITY VASCULAR EXAM

- The radial and ulnar pulses were equal and bounding bilaterally.
- There were no Physical signs (localized blanching of one or more of the fingers, cyanosis, and/or erythema) of Raynaud's disease of the hands or upper extremities .
- There was no edema in the forearms, wrist, hands, or fingers bilaterally.
- There were no signs (loss of subcutaneous tissue of the fingertips, dilation of veins or arteries, or ulcerations) of vascular damage of either upper extremity.
- Allen's vascular fill test was normal (less than 5 seconds) bilaterally.

EXAMINATION PROCEDURES FOR CARPAL TUNNEL SYNDROME

TESTS FOR CARPAL TUNNEL SYNDROME

- Observation: The right and left hands were symmetric bilaterally. There was no atrophy of the thenar pads of either hand. Ms. Jones was not observed to shake or wring out her hands at periodic intervals.
- Hand Pain Diagram (see above ACTIVITIES OF DAILY LIVING ASSESSMENTS & SYMPTOM QUESTIONNAIRES): On the Hand Pain Diagram, Ms. Jones indicated
- Phalen's Test: negative for wrist pain, or numbness/tingling/paresthesia in the hand. This test rules out carpal tunnel syndrome.
- Reverse Phalen's sign - negative for wrist pain, or numbness/tingling/paresthesia in the hand. This test rules out carpal tunnel syndrome.
- Tinel's Test: negative for distal pain or tingling sensation into the hand. This test rules out carpal tunnel syndrome.
- Durkan's Compression Test – negative for distal pain or tingling sensation into the thumb, index, middle, or lateral half of the ring finger. This test rules out carpal tunnel syndrome.
- Three-Jaw Chuck Test: negative for wrist pain or numbness/tingling/paraesthesia in the hand. This test rules out carpal tunnel syndrome.
- Square Wrist Sign: Thickness of the wrist was mm. Width of the wrist was mm. The ratio of the thickness of the wrist divided by the width (thickness/width) of the wrist was . According to the ACOEM Guides (page 261), this ratio should be less than .7. This finding rules out carpal tunnel syndrome.
- Thumb Abduction Strength: Ms. Jones had normal and full strength of thumb abduction to resisted manual muscle testing. This finding indicates preserved function of the median nerve at the wrist.

- Thumb Opposition Strength: Ms. Jones had normal and full strength of thumb abduction to resisted manual muscle testing. This finding indicates preserved function of the median nerve at the wrist.
- Median Nerve Sensory Examination:
    1. Normal sensation to light touch at the distal radial aspect of the index finger bilaterally.
    2. Two point discrimination testing was 6 mm. at the distal radial aspect of the index fingers bilaterally. This is a normal finding.