

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF INDUSTRIAL ACCIDENTS

Carpal Tunnel Syndrome (CTS) Treatment Guideline

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I. **Introduction:**

The attached clinical guideline has been created to consistently improve health care services provided to injured workers by outlining the appropriate information gathering and decision making processes involved in the management of CTS in adults, that is determined to be work related. The guideline is a consensus document, and should be used as a tool to guide various multi-disciplinary health care practitioners to provide quality care to injured workers. The guideline is not intended to substitute for appropriate medical judgement, and is therefore written to be broad enough to allow for a wide range of diagnostic and treatment modalities and to purposely allow for philosophical and practice differences between various licensed, multi-disciplinary health care practitioners that provide care to injured workers with CTS. In order to address the varying clinical differences that may arise in the treatment of CTS within this guideline, the following statement is included: It is expected that approximately ten percent (10%) of cases may fall outside of this guideline and may be reviewed and outcomes determined on a case by case basis. If objective clinical improvement is delayed or slower than expected, the treating provider must justify the necessity of continued care with a valid clinical rationale, with supporting, objective clinical findings.

II. **Background:**

Carpal Tunnel Syndrome (CTS) is a common disorder with symptoms involving the median nerve. The median nerve is vulnerable to compression and injury in the palm and at the wrist, where it is bounded by the wrist (carpal) bones and the transverse carpal ligament. CTS is believed to be caused by local impairment of the median nerve at the carpal canal in the wrist secondary to narrowing or crowding of the nerve in the carpal tunnel. The median nerve is extremely vulnerable to compression and injury in the region of the wrist and palm. The condition may have multiple, both work and non-work related, etiologies including, but not limited to: 1) space-occupying lesions such as the residual of a wrist fracture, infections, local edema, tumors, flexor tenosynovitis (non-specific as well as that associated with rheumatoid arthritis), foreign bodies, or aberrant muscles; 2) systemic conditions such as pregnancy, obesity, diabetes mellitus, thyroid dysfunction, arthritis, or amyloidosis; 3) overuse of hand and wrist, trauma and repetitive movements, constricting bandages around wrist, or improper postural habits regarding the wrist joint; or 4) it may have a spontaneous or idiopathic onset. The condition can occur at any age, but occurs three to five times more frequently in women than men.

III. **History:**

- A. A detailed history considering work and non-work activities is essential and should include documentation of duration, evolution, precise anatomic location and intensity of all symptoms.
- B. Occupational Relationship: activities requiring continual use of the hands or repetitive motions using force may result in an occupation carpal tunnel syndrome. Prolonged flexion or extension, gripping, pressure over the palm, unusual hand postures (prolonged flexion), trauma and fractures of the wrist and hand are associated with the syndrome, vibration may also contribute.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

Carpal Tunnel Syndrome (CTS) Treatment Guideline

PAGE TWO

- C. A history of CTS may elicit any or all of the following:
1. Character of symptoms: tingling, numbness, pain along the sensory distribution of the median nerve (dull, aching discomfort), hand weakness.
 2. Frequency: episodic or constant.
 3. Duration: days, weeks, or years.
 4. Location: anatomic involvement, unilateral or bilateral.
 5. Association with hand position or activity: repetitive, sustained or forceful wrist/finger motions; vibrating/oscillating tools.
 6. Onset: relation to specific work or non-work activities, association with other medical conditions (see review of symptoms).
 7. Relief: shaking the hand, vacation (time away from work and/or aggravating non-work activities).
 8. Thenar atrophy may progress to marked muscle wasting with corresponding functional impairment. Vasomotor and skin trophic changes may include dryness, coldness, discoloration, and even ulceration within the median nerve distribution.
 9. Similar symptoms may be seen in conditions such as more proximal syndrome should be ruled out.

IV. Physical Examination:

- A. Both upper extremities must be evaluated. Any objective findings should correlate with the patient's history and symptoms. At least one of the following is required:
1. Absence of proximal syndrome (e.g., no nerve injury above the wrist).
 2. Sensory loss or hyperesthesia to pinprick and light touch in the distal median nerve distribution.
 3. Phalen's sign: maximum flexion of wrist to produce paresthesia in median nerve distribution, within 30 seconds, with elbow not greater than 90 degrees of flexion.
 4. Tinel's sign: gentle tapping at the volar wrist crease (midline) to produce paresthesia in the median nerve distribution.
 5. Inspection and palpation: atrophy of the thenar muscles.
 6. Weakness or loss of active thumb opposition.

V. Diagnostic Testing Procedures:

- A. Laboratory Testing: must correlate with history and physical examination findings. Not allowed if signs and symptoms are indicative of disease other than carpal tunnel or related systemic disease.
- B. Plain X-rays indicated when history of direct injury or other abnormal process of the wrist and hand is documented. Up to 4 views are allowed.
- C. Electrodiagnostic testing, including electromyography (EMG) and nerve conduction studies (NCS) is allowed if clinically indicated.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF INDUSTRIAL ACCIDENTS

Carpal Tunnel Syndrome (CTS) Treatment Guideline

PAGE THREE

VI. Treatment and Therapeutic Procedures:

A. Outpatient-Non-Operative- Up to 8 Weeks:

1. The following office visits are Allowable in the initial 8 weeks of treatment:
 - a. Physician -up to four (4) visits
 - b. Physical Therapy -up to eight (8) visits
 - c. Occupational Therapy -up to eight (8) visits
 - d. Chiropractic -up to eight (8) visits
2. Immobilization with Splinting: should be done in the neutral position.
3. Patient education: the following shall be discussed with the patient at the initial physician visit and repeated thereafter as necessary:
 - a. Key points about signs and symptoms of CTS and postural body mechanic changes and behavior modification.
 - b. Causes of CTS and how to avoid them.
 - c. Instruction and demonstration in the purpose and correct use of treatment modalities and medications.
 - d. How medications work and their potential adverse effects.
4. Modalities: including cold, phonophoresis, iontophoresis is allowed if part of an overall treatment plan (Not Allowed if sole method of treatment).
5. Ergonomic assessment may be helpful if done by a qualified individual.
6. Medication: Non-steroidal, Anti-Inflammatory Drugs (NSAID) are probably the most useful medications in acute upper extremity pain. In mild cases, they may be the only drugs required for analgesia. Analgesics (acetaminophen and acetylsalicylic acid): are the common choices for non-narcotic analgesia. Steroid Injections: are allowed (not to exceed 3 injections in 16 weeks).
7. For cases that fail to show clinical improvement or deteriorate with treatment follow-up may be covered by Carpal Tunnel Release Surgical Treatment Guideline.

B. Acupuncture:

Acupuncture is commonly used when pain medication is reduced or not tolerated. It may be used as an adjunct to physical rehabilitation and/or surgical intervention for pain relief when there is delayed recovery.

Requirements:

1. Acupuncture may be authorized when it is ordered by a licensed MD, DC, DO, PA, NP or PT. The ordering practitioner cannot also be the provider of the service.
2. Acupuncture must be performed by a health care practitioner licensed to perform acupuncture in the state where the service will be provided.
3. Time to produce effect: eight (8) visits in first six (6) weeks.
4. After eight (8) visits the ordering practitioner may request additional visits if functional clinical progress is documented. Maximum visits are not to exceed sixteen (16) visits in twelve (12) weeks.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF INDUSTRIAL ACCIDENTS

Carpal Tunnel Syndrome (CTS) Treatment Guideline

PAGE FOUR

C. Outpatient-Non-Operative Treatment With Improvement: Weeks 9-16:

1. The following office visits are Allowed:
 - a. Physician -up to four (4) additional visits
 - b. Physical Therapy -up to eight (8) additional visits
 - c. Occupational Therapy -up to eight (8) additional visits
 - d. Chiropractic -up to eight (8) additional visits

VII. Special Considerations:

- A. For patients treated by more than one discipline (e.g. physical therapy, allopathic medicine, and chiropractic) similar services shall not be duplicated.
- B. The following treatments are Not Allowed when CTS is the only diagnosis:
 1. Ultrasound
 2. Electrical nerve (TENS) or muscle stimulators
 3. Paraffin baths
 4. Whirlpool baths
 5. Fluid-therapy

VIII. Return to Work Expectations:

- A. Ergonomic assessment may be indicated if done by a qualified individual.
- B. Patient education: the following shall be discussed with the patient at the initial physician visit and repeated thereafter as necessary:
 1. Key points about signs and symptoms of CTS and postural body mechanic changes and behavior modification.
 2. Causes of CTS and how to avoid them.
 3. Instruction and demonstration in the purpose and correct use of treatment modalities and medications.
 4. How medications work and their potential adverse effects.

Sources: Colorado, Department of Labor and Employment
California, Industrial Medical Council
National Guideline Clearinghouse
American Academy of Orthopedics
Maine Workers Compensation Board
State of Washington, Department of Labor and Industries
Massachusetts's Health Care Services Board