### Component 1: Examination

**History**
- Medical history
- Risk factor assessment
- Medical or diagnostic testing, including electrodiagnostics
- Social and work history
- Symptom assessment, including duration, frequency, intensity, and type
- Symptom onset (rapid or gradual)
- Presence of nocturnal symptoms
- Location of symptoms (is sensation over scaphoid tubercle spared?)
- Katz hand diagram (B)*
- Activities that increase/decrease symptoms
- Chief complaint(s), including impairments, activity limitations, and participation restrictions
- Prior treatment and its success
- CTQ-SSS (B)*
- CTQ-FS or DASH questionnaire (B)

**Medical Screening**
- Cardiovascular and pulmonary system (heart rate, blood pressure, etc)
- Integumentary system (trophic changes, scars, discoloration, swelling)
- Musculoskeletal system (cervical and upper-quarter movement analysis, postural assessment, presence of atrophy, especially thenar)
- Neuromuscular system (upper-quarter screening, including dermatomes and sensation in terminal branch distributions, myotomes, deep tendon reflexes, and pathological reflexes)
- Cognition and communication

### Component 2: Evaluation

Following the examination, therapists should choose 1 of the following actions

- **Patient/client is appropriate for therapy services and an evidence-based intervention is provided**
  - Examination data show findings consistent with mild to moderate CTS, and the patient/client agrees with a trial of nonsurgical management
  - Examination data show findings consistent with severe CTS, and (1) the patient/client has seen a surgeon, who has decided the individual is not a surgical candidate due to comorbidities; (2) the patient/client is awaiting surgery; or (3) the patient/client has refused surgery after counseling on the negative effects of long-standing nerve compression

- **Patient/client is appropriate for therapy but would also benefit from a referral to a physician**
  - Examination data suggest any severity of CTS, with concurrent signs and symptoms of another condition that warrant further medical testing. In these individuals, CTS treatment may commence as long as there would be no contraindications from the suspected concurrent condition
  - Examination data suggest signs and symptoms consistent with severe CTS and the patient/client chooses a trial of nonsurgical intervention while awaiting a physician visit

- **Patient is not appropriate for therapy and requires referral to another provider**
  - Examination data reveal suspected neuromuscular diagnosis other than CTS that is beyond the scope of physical therapy treatment

Figure continues on page CPG2.

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**FIGURE.** Decision tree model. *Letters in parentheses reflect the grade of evidence on which the recommendation for each item is based: (A) strong evidence, (B) moderate evidence, (C) weak evidence, (D) conflicting evidence, (E) theoretical/foundational evidence, and (F) expert opinion.
Component 3: Intervention Strategies

Orthoses
- Patients/clients should be instructed in the use of a neutral-positioned wrist orthosis for night wear. Treatment should also include counseling on pathology, risk identification, symptom self-management, and postures/activities that aggravate symptoms. Duration of orthosis use may be increased to include daytime wear, or the metacarpophalangeal joints may be included if nighttime wrist-neutral positioning alone does not provide sufficient relief.

Secondary Interventions (C)
- Assistive technology
  - May counsel patients/clients on limiting mouse use and finding a keyboard that limits key-strike force
- Thermotherapy
  - May consider a trial of superficial heat when patients/clients are able to understand the possibility of negative effects of superficial heat on sensory-impaired tissue and on acute inflammation
- Electrotherapy
  - May consider a trial of interferential current during supervised therapy sessions for short-term pain relief
- Phonophoresis
  - May consider a trial of phonophoresis during supervised therapy sessions
- Manual therapy
  - May implement based on patient data from the examination
- Stretching
  - May add lumbrical or general stretching to a program that includes an orthosis

Re-evaluate

- Patient goals met
- Discharge to self-management
- Adjust/modify interventions
  - Patient goals met
- Not improving/worsening occurs
  - Refer
    - Consultation with other providers

FIGURE (CONTINUED). Decision tree model. *Letters in parentheses reflect the grade of evidence on which the recommendation for each item is based: (A) strong evidence, (B) moderate evidence, (C) weak evidence, (D) conflicting evidence, (E) theoretical/foundational evidence, and (F) expert opinion.
**Decision Tree Model**
Carpal tunnel syndrome is a common problem, and it is important that clinicians arrive at an accurate diagnosis so interventions can be aimed appropriately. The proposed model provides an approach that includes information and test results that should be gleaned during the examination. Clinicians should recognize that data gathered can help in confirming the presence of the condition, aid in hypothesizing the severity, and provide baseline measures for treatment. Components include (1) examination, (2) evaluation, and (3) intervention strategies (FIGURE).

**Component 1**
The combination of the history and physical examination findings is crucial in determining the presence of CTS. Clinicians should also use the data gathered to help in determining the severity of the pathology if possible. Determining severity is a key component of patient care. The presence of severe pathology (indicated by thenar muscle atrophy) would indicate a need for referral to a hand surgeon. Clinicians may need to suggest NCS when the clinical examination is inconclusive.

**Component 2**
Evaluation of physical examination findings, as outlined in the FIGURE, should be consistent with the diagnosis of CTS and its severity suggesting either nonsurgical or surgical management is indicated. The diagnosis and management of the patient’s condition should be appropriately modified if the evaluation of clinical findings related to the musculoskeletal impairments of body functioning (ICF) and associated tissue pathology/disease (ICD) suggest other upper extremity conditions or systemic or medical disease.

**Component 3**
This component includes a list of the evidence-based interventions available. The highest level of evidence supports the use of the neutral wrist orthosis. Clinicians should consider all contraindications as well as costs associated with each intervention. This component also includes the outcomes assessment, or measurement of change over time. The only validated tool for assessing change in individuals undergoing nonsurgical management is the CTQ-SSS. Other tools can be used, such as the CTQ-FS or DASH, but clinically important change scores have not been identified in those undergoing nonsurgical management.
