

## Diagnosing Carpal Tunnel Syndrome

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Carpal tunnel syndrome (CTS) is the most frequently encountered peripheral entrapment neuropathy and creates a large burden of illness in the American population. A recent survey, using very conservative criteria, found a lower limit for the prevalence rate for CTS of 3.72% in the general adult population of the U.S. (Papanicolaou, McCabe, & Firrell, 2001). There is evidence that the incidence rate had been increasing during the previous decade (Mondelli, Giannini, & Giacchi, 2002). There was a 55% increase in the relative frequency of worker's compensation claims for CTS from 1991 to 1994 (Kish & Dobrila, 1996). CTS is costly to society. These costs include medical care, lost productivity in the workplace, salary replacement and compensation for permanent impairment in the work attributed cases, reduced functional capacity, and suffering. Keller and colleagues estimated that 400,000 surgeries for relief of CTS are done in the U.S. annually (Keller, Largay, Soule, & Katz, 1998). In addition to this population treated by surgery, the most expensive treatment available for CTS, many more patients are managed nonsurgically (Katz, Keller, Simmons, Rogers, Bessette, Foy, Fossel, & Mooney, 1998).

As with any medical condition accurate diagnosis is crucial for successful treatment. Diagnosis of CTS should be fairly straightforward since the symptoms should be limited to the region innervated by the median nerve. To this end Katz and Stirrat (1990) developed their hand diagram. However, there are two problems with it. The first is that patients usually are asked to fill it out in the physician's office from memory. This can be simply remedied by having patients

keep copies of the form with them whenever they are likely to experience symptoms, such as when sleeping. The second is that it is difficult to subjectively tell exactly where the symptoms are occurring on the hand and where no symptoms are present. You can demonstrate this for yourself by performing a Phalen's maneuver on yourself until you experience paresthesias. You will find that it is difficult to localize the symptom area subjectively. However, by using an object such as a pen or pencil to stroke different areas, the areas affected can be easily determined.

The Katz and Stirrat hand diagram was designed to aid in the diagnosis of many hand problems besides CTS and therefore is more complex than necessary for diagnosing CTS. We designed a simpler hand diagram for the diagnosis of CTS. This is shown in Figure 1. Patients should be trained in the use of it. They are to keep a copy of the diagram along with a pencil nearby whenever they are likely to experience symptoms. When they experience symptoms, they are to stroke each side of their four fingers with the pencil to determine which are involved and to record this on the diagram by checking the appropriate boxes. Space is also provided for their name, the date, and the time.

All four fingers are to be tested to avoid giving the patient any indication of what is expected for CTS. It has been found in pilot work that a patient who is malingering is likely to check all boxes to attempt to indicate a severe case. Patients should not be instructed in the correct distribution of symptoms.

### Tingling and/or Numbness Symptom Report

Name \_\_\_\_\_  
Day \_\_\_\_\_  
Date \_\_\_\_\_  
Time \_\_\_\_\_

**LEFT HAND**  
Involved  Yes  No

**RIGHT HAND**  
Involved  Yes  No

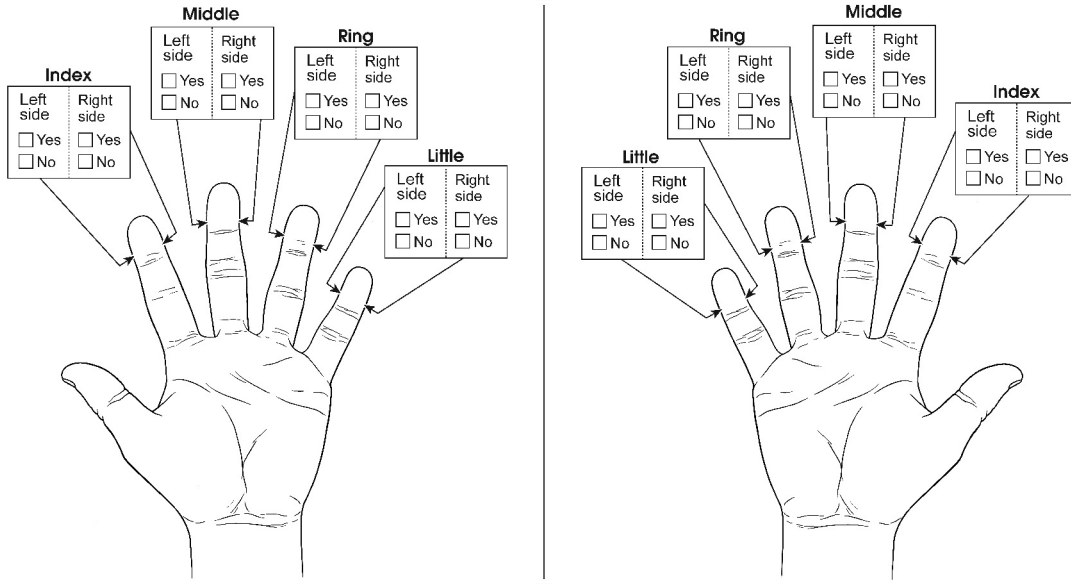


Figure 1. Hand diagram

## References

- Katz, J. N., & Stirrat, C. R. A self-administered hand diagram for the diagnosis of carpal tunnel syndrome. *J Hand Surg [Am]*, 1990, *15A*, 360-363.
- Katz, J. N., Keller, R. B., Simmons, B. P., Rogers, W. D., Bessette, L., Foy, S., Fossel, A. H., & Mooney, N. A. Maine carpal tunnel study: Outcomes of operative and nonoperative therapy for carpal tunnel syndrome in a community-based cohort. *J Hand Surg [Am]*, 1998, *23A*, 697-710.
- Keller, R.B., Largay, A.M., Soule, D.N., & Katz, J.N. Maine carpal tunnel study: Small area variations. *J Hand Surg [Am]*, 1998, *23A*, 692-696.
- Kish, J. & Dobrila, V. Carpal tunnel syndrome in workers compensation: Frequency, costs, and claim characteristics. National Council on Compensation Insurance, Inc., 1996, 3, Retrieved 4/8/02 from [http://www.goldtouch.com/about\\_rsi/high\\_cost.pdf](http://www.goldtouch.com/about_rsi/high_cost.pdf).
- Mondelli, M., Giannini, F., & Giacchi, M. Carpal tunnel syndrome incidence in a general population. *Neurology*, 2002, *58*, 289-294.
- Papanicolaou, G. D., McCabe, S. J., & Firrell, J. The prevalence and characteristics of nerve compression symptoms in the general population. *J Hand Surg[Am]*, 2001, *26A*, 460-466.
- Phalen, G. S. The carpal-tunnel syndrome: Seventeen years' experience in diagnosis and treatment of six hundred fifty-four hands. *J Bone Joint Surg Am*, 1966, *48A*, 211-228.