



LOSS CONTROL ALERT

Preventing Carpal Tunnel Syndrome

WHAT IS CARPAL TUNNEL SYNDROME (CTS)

There are nine bones in the wrist, called the carpal bones, that form an arch. This arch and the carpal ligament form a tunnel – the carpal tunnel. The median nerve and nine flexor tendons, which control movement of the fingers, run through this tunnel. Repetitive flexing and extension of the wrist will cause these tendons to swell and increase the pressure in this tunnel. When this happens, the median nerve becomes compressed and numbness, pain, tingling sensations and loss of touch occur in the thumb, index, middle and ring fingers. Pressure on the median nerve can also be caused by swelling due to retention of the body fluids, damage to the muscles passing through the tunnel, or fractures of any of the bones surrounding it. All of these conditions are collectively known as Carpal Tunnel Syndrome (CTS).

CAUSES

There are many causes of CTS. The disorder may be the result of physiological disorders or diseases, acute injuries, or cumulative damage at work or at home. Other factors such as the presence of arthritis may make individuals susceptible. The swelling associated with pregnancy often causes CTS, usually in both hands (bilateral). A bone fracture or other acute trauma can contribute to or cause Carpal Tunnel Syndrome.

A common cause of CTS is cumulative trauma sustained during work or other physical activities, in which the tendons and ligaments are continually stressed and become inflamed. When exposures are sustained over time, usually weeks, months or years, inflamed tendons in the carpal tunnel swell and cause crowding. The result is compression of the median nerve and the onset of symptoms, often first appearing at night.

WORK RELATED CAUSES

The known work related risk factors that are contributors to CTS are repeated or sustained exertions, forceful exertions, contact stresses, certain hand and wrist postures, low temperatures, and vibration. The relative importance of each factor in the development of CTS may vary from individual to individual.

Some jobs and tasks that often present the above mentioned risk factors include repetition in keyboarding or computer keying and mousing, computer telemarketers and customer service operations, data processing/entry, computer coding, and other intensive computer operations. CTS, however, is not restricted to any population, occupation or group, but to a pattern of usage that can occur anywhere. Additionally, the majority of workers have computers accessible at home and these repetitive tasks continuing at home add to the cumulative work related stresses.

HAZARD IDENTIFICATION

There are two ways to identify possible CTS hazards. One is to conduct an analysis of tools, workstation layout, work procedures and human positioning. Awkward positions and potential hazards of excessive force and repetition can be identified and improvements made before serious problems develop. Secondly, CTS hazards are identified by workers themselves. After all, these workers know how their arms and hands feel as well as the forces and body posture required to perform the job. Symptoms that may indicate the on-set of CTS include:

- ◆ Pain, numbness, and tingling in the thumb, index, middle, and ring fingers
- ◆ Wrist and finger joint stiffness
- ◆ Weakness and swelling in the wrist and fingers

EARLY DETECTION

Early detection of symptoms will allow treatments to halt the progression of CTS, and focus attention to jobs that may need modifications. Employees should be trained in ergonomic best practices, on the nature of the disorder and symptoms, and encouraged to report them. Having jobs analyzed by trained ergonomic practitioners will allow permanent changes to be implemented for identified risks, whether or not cumulative trauma disorder cases have already developed.

TREATMENTS

Treatments for CTS should be immediate, conservative, and under the direction of a physician. Conservative treatment, such as rest, night splinting of the hands and wrists, and anti-inflammatory drugs may substantially improve symptoms if treated in the early stages of the disorder. In addition, the job or task should be reviewed and, if needed, modified to reduce the stress to the hands and wrists. For advanced and severe cases, release surgery can be performed. The surgeon cuts the transverse carpal ligament, hopefully allowing it to heal in a somewhat elongated fashion. Following the release surgery, patients feel immediate relief. However, if returned to the same job without an ergonomic assessment the symptoms and condition can recur. Surgery should be the last resort, after conservative treatments have failed.

EVEREST LOSS CONTROL ALERT

PREVENTION - ERGONOMIC DESIGN

Ergonomics is a science that recognizes that each individual's body is different. It designs tasks to fit the individual rather than forcing the body to adapt to the tasks. The focus of ergonomic design is job analysis. Jobs that have a frequency of CTS injuries or present a high potential for them, should be analyzed first. Professionals conducting or coordinating these analyses are trained in ergonomic task analysis and be provided with the proper analytical equipment. Tasks for each job should be analyzed and ranked according to the risk factors present. Recommended task design changes and equipment adjustability options should be developed, reviewed and selected. Once the changes are made, the jobs should be re-evaluated to determine the need to make additional design or equipment changes and to minimize the presence of any residual hazards.

VIDEO DISPLAY TERMINALS

Operators of video display terminals (VDT) are thought to be at risk for CTS due to a combination of improper workstation design and long hours of fairly static work performed. Below are a few parameters to help mitigate the CTS risk factors.

Workstation Positioning

- ◇ Adjust chair height so elbows are level with keyboard home row.
- ◇ Adjust monitor height so the top of the screen is at eye level and the distance from the screen to the eye is between 24 – 30 inches.
- ◇ Adjust the angle of the keyboard so that no angle exists between the operator's knuckles and forearm.
- ◇ Provide a footrest if needed.
- ◇ Secure document holder at eye level next to the monitor screen and place the mouse pad at the same distance and height as the keyboard home row.
- ◇ Use a wrist pad to round any sharp edges that the operators' wrists may contact or rest against while using the keyboard.
- ◇ Minimize screen glare by positioning the monitor 90 degrees from direct sunlight. Use a glare screen for any residual glare.



Recommended Workstation Set-up and Positioning

The tray should be positioned just below seated elbow height. Wrists should be straight, not resting on the palm rest while typing. Sit back fully in the chair, relaxed. Allow some space between the back of knee and the chair edge. The top 3rd of the monitor should be at eye level. Your head and back should be upright, ears over the shoulders, back supported.

Work Habits

- ◇ Encourage operators to:
- ◇ Use a light touch on keyboard
- ◇ Avoid stretching fingers while keying
- ◇ Use a document holder
- ◇ Vary their tasks throughout the day and take a break about every two hours
- ◇ Use a wrist pad during pauses in typing
- ◇ Do not cradle phone between shoulder and neck
- ◇ Avoid prolonged static positions

Preventing carpal tunnel syndrome injuries requires a dedicated team effort including management, workers, healthcare providers, and accident prevention specialists.

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