EVEREST

Loss Control Alert

Preventing Carpal Tunnel Syndrome

WHAT IS CARPAL TUNNEL SYNDROME

There are nine bones in the wrist, called the carpal bones, which form an arch. A tunnel is formed by this arch and the carpal ligament, which crosses over them. Through this tunnel run nine flexor tendons, which control movement in the fingers, and the median nerve. 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 pinched and numbness, pain, tingling sensations and loss of touch occur in the thumb, index finger, middle finger, 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 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 for some period of 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, which often appear first at night.

WORK RELATED CAUSES

The work related risk factors that are known to be 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 is not well understood, and may vary from individual to individual.

Some jobs or tasks that often present the above mentioned risk factors include typewriter or keyboard operators, tellers, data processing clerks, encoders, and computers operators. CTS, however, is not restricted to any population, occupation or group, but to a pattern of usage that can occur anywhere.

HAZARD IDENTIFICATION

There are two ways to identify possible CTS hazards. One is to conduct an analysis of tools, workstation layout, and work procedures. 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 that halt the progression of CTS, and will allow attention to be given to the jobs that may need to be modified. In order to foster early detection, employees should be trained 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 to those jobs for which risks are identified, whether or not cumulative trauma disorder cases have yet 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-flammatory 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, the

condition can reoccur. Surgery should be the last resort, and only after more conservative treatments have failed.

PREVENTION - ERGONOMIC DESIGN

Ergonomics is a science that recognizes that each individual's body is different. It tries to design 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. Individuals conducting these analyses should be 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 should be developed, reviewed and selected. Once the changes are implemented, the jobs should be re-evaluated to determine the need to make additions design changes or 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 Design

- 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.

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

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

Remember, Everest National Insurance Company offers loss control services to help you in your loss prevention efforts. If you would like more information about these services, visit our web site at www.everestnational.com.