What can I do to prevent it?

- Review the suggestions on Carnegie Mellon's Environmental Health and Safety website. These suggestions will help you create an ergonomically safe worksite. If the recommendations fail to produce the desired results, then contact the Environmental Health and Safety department for further information.
  

- Talk to your doctor
  Your doctor may be able to suggest things you can do to prevent CTS and may also warn you if you have a greater chance of developing CTS.

- Take ten minute breaks every hour when completing tasks that could lead to CTS.
  These tasks include typing or operating machinery with heavy vibrations.

- Complete exercises during these breaks
  Ask your doctor what exercises you should complete each hour. Some include squeezing your hand into a fist 10 times over 10 seconds an hour, while others involve stretching the ligaments and tendons in your hand.

Where can I get more information?

- National Institute for Occupational Safety and Health (NIOSH)
  Mail Stop C-13
  4676 Columbia Parkway
  Cincinnati, OH 45226-1998
  Phone: 800-356-4674
  www.cdc.gov/niosh/homepage.html

- National Institute of Arthritis and Musculoskeletal and Skin Diseases
  National Institutes of Health
  1 AMS Circle
  Bethesda, MD 20892-3675
  Phone: 301-565-2966
  www.niams.nih.gov

- American Academy of Orthopaedic Surgeons
  P.O. Box 2058
  Des Plaines, IL 60017
  Phone: 800-824-2663
  www.aaos.org

- Carnegie Mellon's Department of Environmental Health and Safety
  5000 Forbes Avenue
  Facilities Management Building, 3rd Floor
  Pittsburgh, PA 15213-3890
  Phone: 412-268-8882
  www.cmu.edu/ehs
What is Carpal Tunnel Syndrome?

Carpal Tunnel Syndrome (CTS) is an injury that affects the median nerve in your wrist. This nerve travels from your forearm into your wrist and helps move the hand and certain fingers. The median nerve is located inside a ‘tunnel’ of which the sides are the wrist bones and the top is a band of connective tissue. Inside the tunnel, along with the median nerve, are nine tendons that help bend your fingers and thumb. If these tendons become swollen they will push the median nerve up against the top of the ‘tunnel’ and trap it, thus causing CTS.

CTS is often caused by forcefully gripping items, repeating a specific motion with the hand or wrist, or using vibrating tools. People with arthritis, thyroid gland imbalance, and diabetes are at a higher risk for developing CTS, as are women going through menopause or pregnancy.

What are the signs?

In the first three fingers and the outside of the fourth finger:

- Aching
- Burning
- Tingling
- Numbness

Overall:

- Weakness of grip
- Clumsiness
- Pain that may shoot up to the shoulder

Some of these above signs may be seen in people with CTS. Regardless, of which ones are present, it is recommended that you talk to your doctor immediately, since permanent nerve damage is possible if you do not take steps to treat or correct CTS.

How can I find out if I have it?

Your doctor, or a specialist recommended by your doctor, can examine you for CTS and may use the following methods:

- **Physical Examination**
  Your doctor may first ask about the signs of CTS are that you are experiencing and may inquire about your work tasks so that he/she can determine if there is a work-based reason for the injury. He/she may also have you perform certain stretches and tests to reproduce your signs of CTS. Two of the more common are Phalen’s test and Tinel’s Sign.

- **Electroneurography**
  If it is apparent that you have CTS, your doctor may wish to study the extent to which electrical stimulation travels across your nerves. This will help determine how much of the median nerve is functional and therefore what treatments will work best.

- **Electromyography**
  Along with the above test, your doctor may order this additional test to determine if there is any nerve damage or damage not consistent with CTS (such as nerve entrapment or cervical root disease). This test is highly recommended prior to any surgery for CTS.

- **MRI (Magnetic Resonance Imaging)**
  As a final option, your doctor may order an MRI. The MRI images can help determine if you have CTS or something more serious. Because it is more expensive and less accessible, an MRI is often reserved for when there is a disagreement between the findings of the physical exam and the electroneurography or electromyography tests.

How is it treated?

Non-Surgical treatments are used first and include:

- **Workplace Ergonomic Changes**
  For CTS treatments to be successful, the cause of your injury must be found and stopped. Often the cause is work related, so Carnegie Mellon has an ergonomics program available to their employees to evaluate worksites and reduce their potential to contribute to CTS injury.

- **Splinting**
  For mild cases of CTS, splints or braces may be used to prevent nerve stretching and ease pain. Usually results from splinting are seen within eight weeks.

- **Non-Steroidal Anti-Inflammatory Drugs**
  In addition to splinting, your doctor may advise that you take an over-the-counter drug such as aspirin, ibuprofen, or naproxen to reduce the swelling of the tissues and ease pain.

- **Steroid Injection**
  For moderate cases of CTS, a steroid injection may be given to reduce tissue swelling and ease pain. If the first two shots (over a year) do not create a lasting positive response, then surgery may be considered.

Because surgical treatments may not be successful, they may be considered only after the above treatments fail or in the case of severe carpal tunnel injury. They include:

- **Open Carpal Tunnel Release**
- **Endoscopic Carpal Tunnel Release**

In both types of surgery the carpal ligament is cut and extended so that the ‘tunnel’ becomes wider and relieves the pressure on the median nerve. This effectively ends carpal tunnel syndrome since the median nerve is no longer pressed up against the top of the ‘tunnel.’