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# Carpal tunnel syndrome

- Symptoms & causes
- Diagnosis & treatment
- Doctors & departments
- Care at Mayo Clinic

## Overview



Carpal tunnel syndrome is caused by pressure on the median nerve. The carpal tunnel is a narrow passageway surrounded by bones and ligaments on the palm side of your hand. When the median nerve is compressed, the symptoms can include numbness, tingling and weakness in the hand and arm.

The anatomy of your wrist, health problems and possibly repetitive hand motions can contribute to carpal tunnel syndrome.

Proper treatment usually relieves the tingling and numbness and restores wrist and hand function.

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## Symptoms

Carpal tunnel syndrome symptoms usually start gradually and include:

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- **Tingling or numbness.** You may notice tingling and numbness in your fingers or hand. Usually the thumb and index, middle or ring fingers are affected, but not your little finger. You might feel a sensation like an electric shock in these fingers.

The sensation may travel from your wrist up your arm. These symptoms often occur while holding a steering wheel, phone or newspaper, or may wake you from sleep.

Many people "shake out" their hands to try to relieve their symptoms. The numb feeling may become constant over time.

- **Weakness.** You may experience weakness in your hand and drop objects. This may be due to the numbness in your hand or weakness of the thumb's pinching muscles, which are also controlled by the median nerve.

## When to see a doctor

See your doctor if you have signs and symptoms of carpal tunnel syndrome that interfere with your normal activities and sleep patterns. Permanent nerve and muscle damage can occur without treatment.



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## Causes

Carpal tunnel syndrome is caused by pressure on the median nerve.

The median nerve runs from your forearm through a passageway in your wrist (carpal tunnel) to your hand. It provides sensation to the palm side of your thumb and fingers, except the little finger. It also provides nerve signals to move the muscles around the base of your thumb (motor function).

Anything that squeezes or irritates the median nerve in the carpal tunnel space may lead to carpal tunnel syndrome. A wrist fracture can narrow the carpal tunnel and irritate the nerve, as can the swelling and inflammation caused by rheumatoid arthritis.

Many times, there is no single cause of carpal tunnel syndrome. It may be that a combination of risk factors contributes to the development of the condition.

## Risk factors

A number of factors have been associated with carpal tunnel syndrome. Although they may not directly cause carpal tunnel syndrome, they may increase the risk of irritation or damage to the median nerve. These include:

- **Anatomic factors.** A wrist fracture or dislocation, or arthritis that deforms the small bones in the wrist, can alter the space within the carpal tunnel and put pressure on the median nerve.

People who have smaller carpal tunnels may be more likely to have carpal tunnel syndrome.

- **Sex.** Carpal tunnel syndrome is generally more common in women. This may be because the carpal tunnel area is relatively smaller in women than in men.

Women who have carpal tunnel syndrome may also have smaller carpal tunnels than women who don't have the condition.

- **Nerve-damaging conditions.** Some chronic illnesses, such as diabetes, increase your risk of nerve damage, including damage to your median nerve.
- **Inflammatory conditions.** Rheumatoid arthritis and other conditions that have an inflammatory component can affect the lining around the tendons in your wrist and put pressure on your median nerve.
- **Medications.** Some studies have shown a link between carpal tunnel syndrome and the use of anastrozole (Arimidex), a drug used to treat breast cancer.
- **Obesity.** Being obese is a risk factor for carpal tunnel syndrome.
- **Body fluid changes.** Fluid retention may increase the pressure within your carpal tunnel, irritating the median nerve. This is common during pregnancy and menopause. Carpal tunnel syndrome associated with pregnancy generally gets better on its own after pregnancy.
- **Other medical conditions.** Certain conditions, such as menopause, thyroid disorders, kidney failure and lymphedema, may increase your chances of carpal tunnel syndrome.
- **Workplace factors.** Working with vibrating tools or on an assembly line that requires prolonged or repetitive flexing of the wrist may create harmful pressure on the median nerve or worsen existing nerve damage, especially if the work is done in a cold environment.

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However, the scientific evidence is conflicting and these factors haven't been established work as direct causes of carpal tunnel syndrome.

Several studies have evaluated whether there is an association between computer use and carpal tunnel syndrome. Some evidence suggests that it is mouse use, and not the use of a keyboard, that may be the problem. However, there has not been enough quality and consistent evidence to support extensive computer use as a risk factor for carpal tunnel syndrome, although it may cause a different form of hand pain.

## Prevention

There are no proven strategies to prevent carpal tunnel syndrome, but you can minimize stress on your hands and wrists with these methods:

- **Reduce your force and relax your grip.** If your work involves a cash register or keyboard, for instance, hit the keys softly. For prolonged handwriting, use a big pen with an oversized, soft grip adapter and free-flowing ink.
- **Take short, frequent breaks.** Gently stretch and bend hands and wrists periodically. Alternate tasks when possible. This is especially important if you use equipment that vibrates or that requires you to exert a great amount of force. Even a few minutes each hour can make a difference.
- **Watch your form.** Avoid bending your wrist all the way up or down. A relaxed middle position is best. Keep your keyboard at elbow height or slightly lower.
- **Improve your posture.** Incorrect posture rolls shoulders forward, shortening your neck and shoulder muscles and compressing nerves in your neck. This can affect your wrists, fingers and hands, and can cause neck pain.
- **Change your computer mouse.** Make sure that your computer mouse is comfortable and doesn't strain your wrist.
- **Keep your hands warm.** You're more likely to develop hand pain and stiffness if you work in a cold environment. If you can't control the temperature at work, put on fingerless gloves that keep your hands and wrists warm.

By Mayo Clinic Staff

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## Diagnosis & treatment

## Doctors & departments

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