

Patient information from BMJ

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Carbon monoxide poisoning

Carbon monoxide poisoning can be accidental or an act of self-harm. Common causes include vehicle exhaust fumes and poorly vented stoves or heaters.

If you suspect that you, or someone else, have been poisoned it's vital to get away from the source of the gas and get emergency treatment as quickly as possible.

What is carbon monoxide poisoning?

Carbon monoxide gas is colorless and odorless. That means that you can't see or smell it. It is usually produced as a by-product of combustion (burning), e.g., in engines and certain types of heaters.

Exposure to carbon monoxide can reduce the amount of oxygen in your blood (hypoxia). This can damage the cells in your body.

If someone is deprived of enough oxygen for too long, or if there is too much cell damage, it can cause death.

Causes of carbon monoxide poisoning include:

- Vehicle exhaust fumes in poorly ventilated areas (e.g., in a closed garage)
- Fires in buildings
- Poorly vented heaters and stoves. This is more common in the winter months, when heaters are used with windows closed
- Poorly vented boilers
- Barbecues that are not in open-air environments
- Portable heaters and generators
- Fumes from chemicals, including paint strippers and aerosol propellants.

Carbon monoxide poisoning is usually accidental, but it can be deliberate (i.e., as an act of self-harm).

What are the symptoms?

Symptoms of carbon monoxide poisoning include:

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- Headache
- Nausea and vomiting
- Drowsiness
- Dizziness
- Breathlessness
- Chest pain
- Confusion
- Fainting, and
- Irritability.

Symptoms of carbon monoxide poisoning can be similar to those of some common illnesses. But, unlike many illnesses that cause similar symptoms, carbon monoxide poisoning doesn't cause a fever.

if your doctor is unsure about what's caused your symptoms and thinks that you might have been poisoned, they will ask about things like:

- Where were you when the symptoms started?
- Was anyone else with you? Do they have symptoms?
- If you were in a building or enclosed space, did your symptoms get better when you went outside?
- Are there fuel-burning stoves in the building and are they properly vented?
- Does the building have a carbon monoxide detector or alarm?

It can be harder to diagnose poisoning that happens slowly over weeks or months: for example, where an appliance releases enough gas to make someone feel ill over a long time, but not enough to cause severe poisoning in the short term.

If this happens, your symptoms might come and go as you use the appliance, or when you are in or out of the building.

If a doctor suspects that you have carbon monoxide poisoning, they will recommend some tests to rule it out.

The most important test is a blood test; this will measure the amount of carbon monoxide in your blood. If you are confused or unconscious, you might have a CT scan of your head to rule out other causes. Some people might also have another test to check whether their heart has been affected by the carbon monoxide.

What treatments are available?

The main treatment for carbon monoxide poisoning is **oxygen**. You will need to wear a **mask** to breathe this in.

If you are **unconscious** or have **severe poisoning**, you might need to be **intubated**. This means having a tube placed in your windpipe so that oxygen can get to your lungs more easily.

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People with very severe poisoning might be given **hyperbaric oxygen therapy**. This is done in a special room or small chamber. The body is flooded with pure oxygen to quickly make up for the lack of oxygen caused by the poisoning.

But hyperbaric oxygen treatment can have side effects, such as long-term lung problems. So this treatment will only be given if it is available and if your doctor recommends.

What will happen?

Most people recover well from carbon monoxide poisoning, especially if it is not too severe. But older people and people with existing heart problems are less likely to make a good recovery. Severe poisoning can also cause serious problems like seizures, abnormal heart rhythms, and in some cases, death.

If you have been treated in the hospital for mild poisoning, you might be able to go home after a few hours. But you might suffer from delayed problems, including memory loss, personality changes and hallucinations. Your doctor will give you more information about what to look out for.

If you are a **pregnant woman** your doctor will probably want to keep you in the hospital and monitor you and your baby for longer.

If your poisoning was caused by an appliance such as a heater, your doctor will want to be sure that you are not going home and using the same appliance that caused the poisoning in the first place. They should discuss **safety and prevention** with you before you go.

Preventing carbon monoxide poisoning

There are several things you can do to help prevent carbon monoxide poisoning.

- Make sure that fuel-burning appliances and chimneys are in good condition.
- Keep the vent open to outside. Fuel-burning space heaters should have vents to the outside.
- Avoid running a car inside the garage. Fumes build up and increase carbon monoxide levels.
- Avoid using charcoal grills inside the house.
- Avoid using gasoline-powered engines (mowers, weed trimmers) in a closed space.
- Consider putting carbon monoxide alarms in your home.

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