

# Diagnosing poisoning: Carbon monoxide (CO)

Public Health England guidance produced in association with the Public Health Agency

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## Patient presenting with:

Headache, nausea/vomiting, drowsiness, dizziness, dyspnoea, chest pain  
**Could this be a case of CO poisoning?**

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## Ask the patient:

- Do you feel better away from your house or place of work?
- Is anybody else in your family, house or place of work experiencing the same symptoms as you?
- Have you recently had a heating or cooking appliance installed?
- Have all gas, coke/coal, wood or oil fired appliances, eg cookers, fires, boilers at your home been serviced within the last year?
- Do you use your oven or gas stove for heating purposes as well as for cooking?
- Has there been any change in ventilation in your home recently, eg fitting double glazing?
- Have you noticed any sooty stains around appliances or an increase in condensation?
- Does your work involve possible exposure to smoke, fumes or motor vehicle exhaust?
- Is your home detached, semi-detached, terraced, or a flat, bedsit or hostel?

**You are suspicious:**

Could this be a case of CO poisoning?

**You are confident:**

This is **NOT** a case of CO poisoning

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## Action to take:

GP – General Practice ED – Emergency Department

### 1 Test for CO

GP – breath test for exhaled CO if device is available. (Note: Only indicates recent exposure; interpretation difficult in smokers. For interpretation of results see TOXBASE).

ED – heparinised venous blood sample for COHb estimation. For interpretation of results see TOXBASE and contact the National Poisons Information Service (NPIS **0344 892 0111**).

### 2 Management – Commence oxygen therapy

GP – follow advice on TOXBASE; refer to ED if required.

ED – follow advice on TOXBASE. Contact NPIS for severe poisoning (**0344 892 0111**).

### 3 Protect your patient and others

Contact the PHA Health Protection Duty Room (**0300 555 0119**) for further advice to ensure a coordinated response takes place.

### 4 DO NOT allow patient home without a warning NOT to use the suspect appliances.

### 5 Follow-up

GP – note that symptoms may persist or develop later.

ED – advise patient to see GP for follow-up. Note this advice in discharge letter.

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## If patient does not improve:

- Contact NPIS for advice.
- Reconsider diagnosis.

See over for notes on boxes 1–4

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## Notes

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### Box 1 Carbon monoxide (CO) is a mimic

Carbon monoxide poisoning is notorious for simulating other more common conditions, including flu-like illnesses, migraine, food-poisoning, tension headaches and depression.

Headache is the commonest symptom – think CO!

### Box 2 CO sources are multiple

The source of CO may be in the home, in the car due to a leaking exhaust system, or in the workplace. Gas, oil, coke and wood heating appliances are the commonest sources in the home. Malfunctioning heating appliances may be indicated by there being yellow rather than blue flames (if it is not a 'decorative flame' fire) and by deposits of soot on radiants or on the wall next to the fire. There may be more than one source of CO.

Poisoning is not limited to those from lower income groups. CO can leak into a semi-detached or terraced house/flat from neighbouring premises. It is unlikely that a patient will know about servicing of appliances at his/her workplace, but it is worth asking about the sort of heating appliances in use.

It is also worth asking: Have you recently started to re-use heating appliances/boilers after the summer break/during an unexpected cold spell?

### Box 3 Stopping further exposure is essential

Preventing further exposure is the most important thing you can do. Breath tests and blood samples may prove inconclusive some hours after exposure has ended: CO levels in the blood decline with a half-life of about six hours. Note that a normal concentration of carboxyhaemoglobin (COHb) does not disprove CO poisoning unless the sample has been taken soon after exposure ended. A heparinised venous blood sample should, however, always be taken and sent to the local Clinical Chemistry Lab for analysis. For interpretation of results and detailed advice on CO poisoning, see TOXBASE and call NPIS.

If you strongly suspect CO poisoning, do not wait for the result of the analysis before taking the other steps listed in Box 3. A Gas Safe Registered engineer can be located by calling **0800 408 5500** or visiting **www.gassaferegister.co.uk** The Health and Safety Executive Northern Ireland (HSENI) website has other helpful information on appliances. Its website is **www.hseni.gov.uk** Contact the PHA Health Protection Duty Room **0300 555 0119** for further advice to ensure a coordinated response takes place. Follow-up is important as further consequences of chronic exposure to CO may be delayed, or mild symptoms may persist, multiply or intensify. Recommend the purchase of an audible CO alarm for installation in the home.

### Box 4 Links and contact details for information on CO

- TOXBASE: **www.toxbase.org**
- National Poisons Information Service (NPIS) 24hr hotline: **0344 892 0111**
- Public Health England: **www.gov.uk/government/publications/carbon-monoxide-poisoning**
- Public Health Agency: **www.publichealth.hscni.net/publications/diagnosing-poisoning-carbon-monoxide-co**
- Department of Health: **www.health-ni.gov.uk**
- Health and Safety Executive Northern Ireland: **www.hseni.gov.uk**