

Diagnosing Poisoning: Carbon Monoxide (CO)



Patient presenting with:

Headache, nausea/vomiting, drowsiness, dizziness, dyspnoea, chest pain

COULD THIS BE A CASE OF CO POISONING?

1

Ask the patient:

- Do you feel better away from your house or place of work?
- Is anybody else in your family or house 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 ever 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, flat, bedsit or hostel?

2

You are suspicious: Could this be a case of CO poisoning?

You are confident: This is **NOT** a case of CO poisoning

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 - heparinized venous blood sample for COHb estimation. For interpretation of results see TOXBASE and contact the National Poisons Information Service (NPIS).

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. (See CMO/CNO letter November 2008: www.dh.gov.uk/cmo).

3 Protect your patient and others - Contact your local Health Protection Unit (HPU).

They will co-ordinate services for your patient and provide further CO guidance.

Telephone gas, oil or solid fuel helpline (see Notes).

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.

3

If patient does not improve

- Contact NPIS for advice.
- Contact local HPU for advice.
- Reconsider diagnosis.

4

Box 1 Carbon monoxide 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 Carbon monoxide 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, coal, 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 the deposition of soot on radiants or on the wall adjacent to the fire. There may be more than one source of carbon monoxide.

Poisoning is not limited to those from lower income groups. Carbon monoxide can leak into a semidetached 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 devices 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 6 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 heparinized venous blood sample should however, always be taken and sent to the local Clinical Chemistry Laboratory 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. Contacting the gas (**0800 111999**), oil (**0845 6585080**) or solid fuel (**0845 6014406**) safety services is essential. Contacting your local HPU is essential as they will co-ordinate Environmental Health, Safety, Social and other services to protect your patient and others. 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 carbon monoxide alarm for installation in the home.

Box 4 Links and contact details for information on carbon monoxide

- TOXBASE: www.toxbase.org.
- National Poisons Information Service (NPIS) 24 h hotline: **0844 892 0111**
- Health Protection Agency: www.hpa.org.uk/chemicals/compendium/carbon_monoxide/default.htm
- NHS Direct: www.nhsdirect.nhs.uk
- Department of Health: www.direct.gov.uk/keepwarmkeepwell
- Carbon monoxide – Are you at risk?: www.dh.gov.uk
- Information in joint CMO/CNO letter of November 2008: www.dh.gov.uk/cmo
- Local HPU contacts: www.hpa.org.uk/hpucontactdetails. 24 h Chemicals hotline: **0844 892 0555**

Copies can be downloaded from the HPA website at www.hpa.org.uk/carbonmonoxide.

Further hard copies can be obtained from
Department of Health Publications Orderline, PO Box 777, London SE1 6XH
Tel: 08701 555 455 Fax: 01623 724 524 email: dh@prolog.uk.com



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