

**Consultation response to Eddie Hughes MP
Consultation on changing the law to save lives from
the 'silent killer': carbon monoxide poisoning**



8 Dec 2017

Consultation questions and proposed responses:

1. *Do you agree with the general aims of the proposed bill, that is, to make carbon monoxide detectors mandatory and improve awareness about carbon monoxide safety?*

[X] Fully supportive

Please explain the reasons for your response.

Headway is the UK-wide charity working to improve life after acquired brain injury (ABI). Frontline UK-wide services include a nurse-led helpline, which answers over 10,000 enquiries each year; an Emergency Fund to assist people in coping with the financial impact of sudden catastrophic brain injury; acute trauma support nurses; and a range of award-winning publications. Over 120 Headway groups and branches across the UK provide local services to ABI survivors including support, information and advice, drop-in and day centres, respite, rehabilitation, carer support and so on.

Carbon monoxide exposure causes brain injury by interrupting the oxygen supply to the brain (cerebral anoxia). Typically, when the oxygen supply is cut off, consciousness will be lost within 15 seconds and anoxic brain injury begins to occur after about four minutes without oxygen.

Effects of cerebral anoxia:

- In mild cases, there will be problems with concentration, attention, co-ordination and short-term memory, which may be relatively subtle to begin with. There may be headache, light-headedness, dizziness, an increase in breathing rate and sweating. There can be a restriction in the field of vision, a sensation of numbness or tingling and feelings of euphoria.
- As the degree of anoxia becomes more pronounced, confusion, agitation or drowsiness appear, along with cyanosis. There may be brief jerks of the limbs and seizures. If the anoxia is severe, it will result in loss of consciousness and coma.
- Although anoxia may produce damage to cells throughout the brain, some areas are more vulnerable than others.

- Severe anoxic brain injury may occasionally cause damage to the hypothalamus and pituitary gland, which can lead to insufficient or increased release of one or more hormones. This causes disruption of the body's ability to maintain a stable internal environment.
- Cerebral anoxia may also produce brain swelling and this can add to the damage, by squeezing off smaller blood vessels and interrupting the local blood supply.
- If there has been very severe anoxic damage to the brain, there may be a transition from coma into a persistent vegetative state (PVS). In PVS the basic brain functions of breathing spontaneously, maintaining the heartbeat and blood pressure, digesting food and producing urine all continue. However, even though there may still be a cycle of sleeping and waking and the eyes may open spontaneously, there is no real evidence of consciousness in any meaningful sense and no response to what is going on in the environment.
- More recently, the possibility of a minimally conscious state has been recognised. This is distinct from PVS, because although it is still a state of profoundly altered consciousness, there is minimal but definite evidence of some limited self-awareness or awareness of the surroundings.
- Severe anoxic brain injury is often fatal. In cases where the injury is so severe that there is no chance of recovery doctors may put in place orders that the patient is not resuscitated in the event of further complications, such as cardiac arrest.

The long-term consequences will depend on the severity of the cerebral anoxia and on how much irreversible damage has occurred in the brain. If there has only been mild or short-lived anoxia, there may well be recovery back to a normal or near normal level of functioning.

However, if the anoxic injury has been more marked, the outcome is less certain and there are likely to be long-term effects. The nature of these problems will vary from person to person, depending on the severity of the injury and the brain areas affected.

There is considerable overlap with the effects of other kinds of acquired brain injury. However, the selective vulnerability of particular regions of the brain to anoxia also gives some distinctive features to this type of injury. A wide range of difficulties can occur, although not all are necessarily seen in every individual:

- Damage to the cerebral cortex, the cerebellum and the basal ganglia may lead to limb weakness and disturbances of movement, balance and co-ordination. There may be spasticity or rigidity, with

increased muscle tone. Anoxic injury to the basal ganglia may lead to abnormal movements, including tremor, involuntary writhing movements and brief, jerky movements.

- The occipital lobe is particularly susceptible to anoxia, which may cause a loss of visual function. Damage to the occipital lobe may also lead to cortical blindness, where people may show no awareness of the loss of vision and deny any problem, despite walking into things and showing obvious evidence of an inability to see normally. Conversely, patients may experience blindsight, in which they may respond to visual stimuli without being consciously aware of being able to see.
- Memory problems are very common following cerebral anoxia and they may be quite severe.
- Disturbances of speech and language function may occur including the production and articulation of speech, finding the right words and understanding language. Spoken and written communication may both be affected.
- Disturbances in executive function - the ability to think and reason, to synthesize and integrate complex information and make considered judgements and decisions about what to do in a particular situation – also occur.
- Changes in personality include irritability, poor tolerance of frustration, impulsiveness and impairments in social perception and conduct. There may be apathy and lack of insight, as well as intermittent agitation and mood swings, or more sustained periods of depression. These changes may slow the progress of rehabilitation and make it difficult to achieve a successful return home.
- Occasionally, severe anoxic injury can lead to a variety of hormonal problems, with symptoms including excessive tiredness, muscle weakness, decreased sex drive, inability to regulate body temperature, weight gain, low blood pressure, dry skin and headaches.

The effects of ABI can be devastating and last a lifetime. Effects can be hidden, often fluctuating, and generally misunderstood. The cognitive, emotional and behavioural, and psychological effects of ABI can be difficult to detect by those who are not neurological experts.

There is often an assumption that exposure to carbon monoxide is fatal, or there are no lasting effects. Headway wants to ensure that as well as saving lives, efforts to fight carbon monoxide poisoning also reduce the number of people each year who are left with life-changing disabilities after exposure to CO.

2. *Could the aims of this proposal be better delivered in another way (without a Bill in the UK Parliament)?*

[X] *Unsure*

Please explain the reasons for your response.

Headway has not carried out any research on alternative methods for delivery of these proposals.

3. *What do you think would be the main advantages, if any, of requiring fire and rescue authorities (sometimes known as the fire service) to have a duty to promote carbon monoxide safety in their area?*

This would ensure a baseline level of effort across England to share best practice and work with the public to increase awareness of the dangers. This could also help raise awareness among healthcare professionals about the importance of considering CO poisoning in many more cases. Because the symptoms of CO poisoning can be non-specific, varied and mimic other conditions/illnesses, it can be difficult to diagnose – if it is even suspected.

Headway wishes to draw attention to the recommendations of the All-Party Parliamentary Carbon Monoxide Group, published in *Carbon Monoxide Poisoning: Saving Lives, Advancing Treatment* (http://www.policyconnect.org.uk/appcog/sites/site_appcog/files/news/635/fiel_dnewsdownloads/comedappcog-copoisoning-savinglivesadvancingtreatment.pdf)

It would also be helpful, as part of the work of the fire and rescue services, to raise awareness about the recommendation to replace CO alarms every five years, and smoke alarms every eight years.

4. *What do you think would be the main disadvantages, if any, of requiring fire and rescue authorities (sometimes known as the fire service) to have a duty to promote carbon monoxide safety in their area?*

No comment.

5. *What do you think would be the main advantages, if any, of making audible carbon monoxide alarms mandatory in all private rented and social rented properties that contain a gas, liquid or solid fuel burning appliance?*

The main advantages would be:

- To reduce risk in private rented and social rented properties.

- To raise awareness of the risks of CO poisoning among landlords, tenants and others working in the housing sector.

Alarms need to be audible to ensure people notice when they are activated, particularly if they have a visual impairment.

For people with hearing loss, consideration should be given to additional ways of making them aware the alarm has been activated, such as vibrating pads, flashing strobe lights.

6. *What do you think would be the main disadvantages, if any, of making audible carbon monoxide alarms mandatory in all private rented and social rented properties that contain a gas, liquid or solid fuel burning appliance?*

No comment.

7. *What do you think would be the main advantages, if any, of making audible carbon monoxide alarms mandatory in all newly built dwellings that contain a gas, liquid or solid fuel burning appliance?*

The main advantages would be:

- To reduce risk in newly built properties.
- To raise awareness of the risks of CO poisoning among developers, builders and contractors, estate agents and home-owners, as well as others in the housing sector.

Alarms need to be audible to ensure people notice when they are activated, particularly if they have a visual impairment.

For people with hearing loss, consideration should be given to additional ways of making them aware the alarm has been activated, such as vibrating pads, flashing strobe lights.

8. *What do you think would be the main disadvantages, if any, of making audible carbon monoxide alarms mandatory in all newly built dwellings that contain a gas, liquid or solid fuel burning appliance?*

No comment.

9. *What do you think would be the main advantages, if any, of requiring licence holders of houses in multiple occupation or houses licensed under Part 3 of the Housing Act 2004 to install an audible carbon monoxide alarm in any room with a gas, liquid or solid fuel burning combustion appliance?*

The main advantages would be:

- To reduce risk in HMOs etc.
- To raise awareness of the risks of CO poisoning among license holders and tenants, as well as others in the housing sector.

Alarms need to be audible to ensure people notice when they are activated, particularly if they have a visual impairment.

For people with hearing loss, consideration should be given to additional ways of making them aware the alarm has been activated, such as vibrating pads, flashing strobe lights.

10. *What do you think would be the main disadvantages, if any, of requiring licence holders of houses in multiple occupation or houses licensed under Part 3 of the Housing Act 2004 to install an audible carbon monoxide alarm in any room with a gas, liquid or solid fuel burning combustion appliance?*

No comment.

11. *Do you have any further comments on the proposals in the draft bill?*

As well as leading to fatalities, carbon monoxide poisoning can and does leave people with life-long, permanent and severe disabilities. Even mild exposure to carbon monoxide can have a permanent effect on people. Headway welcomes efforts to reduce the incidence of carbon monoxide poisoning.