FIRST GUIDANCE ON EMERGENCY OXYGEN SETS NEW STANDARDS

Landmark guidance on the use of emergency oxygen aims to ensure that this therapy is used consistently, carefully and appropriately. Nerys HAIRON finds out more.

The British Thoracic Society has published the first national guidance on emergency oxygen use in adults (O’Driscoll et al, 2008; NT News, 7 October, p7).

The landmark guidance recommends that oxygen should only be used to treat hypoxaemia or critically ill patients. It emphasises that oxygen is a treatment for hypoxaemia, not breathlessness, since it has not been shown to have any effect on breathlessness in non-hypoxaemic patients. Therefore, nurses should not assume that oxygen will benefit all breathless patients.

The guidance also stresses that oxygen should be prescribed according to a target saturation range. Practitioners should monitor patients and keep within the target saturation range. They should aim to achieve normal or near-normal oxygen saturation for all acutely ill patients, except those at risk of hypercapnic respiratory failure or receiving palliative care.

BACKGROUND
The full guideline (O’Driscoll et al, 2008) contains a useful summary of the guidance and outlines key recommendations for clinical practice. In addition, a range of appendices provide more information, including a summary of the guideline for use in a hospital setting, a patient information sheet, a summary of prescription information and a teaching aid for nurses (see www.brit-thoracic.org.uk for more information).

A teaching aid developed specifically for nurses (Ward et al, 2008) says published audits have revealed that nurses and doctors have a poor understanding of how oxygen should be used. It points out that the gas is often given without prescription and, on the occasions when prescriptions are used, it is unusual for patients to receive what has actually been specified on them. The following points are very important for healthcare professionals to consider:

- Oxygen is a life-saving drug;
- Giving too much oxygen is unnecessary as it cannot be stored in the body;
- Too much oxygen may be harmful – for example in patients with COPD too much oxygen is detrimental as it drives up CO₂ levels;
- Practitioners should give only as much oxygen as is needed.

ASSESSMENT AND PRESCRIPTION
For critically ill patients, high-concentration oxygen should be administered immediately, and this should be recorded in patients’ records afterwards.

Practitioners should check oxygen saturation (the fifth vital sign) in all breathless and acutely ill patients by pulse oximetry (supplemented by blood gases when necessary). The inspired oxygen concentration should be recorded on the observation chart with the oximetry result. The other vital signs to monitor are pulse, blood pressure, temperature and respiratory rate.

Pulse oximetry must be made available in all locations where emergency oxygen is being used, and all critically ill patients should be assessed and monitored using a recognised physiological track and trigger system.

The guideline recommends that oxygen should be prescribed by doctors in order to achieve a target saturation of 94–98% for most acutely ill patients or 88–92% for those at risk of hypercapnic respiratory failure. The target saturation should be written or ringed on the drug chart.
ADMINISTERING OXYGEN
The guideline recommends that oxygen is administered to patients whose oxygen saturation falls below the target ranges (see above). Oxygen should be administered by trained staff, and appropriate devices and flow rates should be used to achieve the target saturation range.

Oxygen saturation and the delivery system should be recorded on patients’ monitoring charts alongside the oximetry result. Practitioners should adjust delivery devices and flow rates to keep the oxygen saturation within the target range. In addition, oxygen should be signed for on the drug chart on each drug round. It should be reduced in stable patients with satisfactory saturation, and oxygen should be crossed off the drug chart once it is discontinued.

OXYGEN SATURATION TARGETS
The guideline outlines the recommended target saturation range for acutely ill patients not at risk of hypercapnic respiratory failure as 94–98%.

It points out that some people, especially those aged over 70, may have saturation measurements below 94% and do not require oxygen therapy when clinically stable. Most non-hypoxaemic breathless patients do not benefit from oxygen therapy but a sudden reduction of more than 3% in a patient’s oxygen saturation within the target range should prompt fuller assessment (of both the patient and the oximeter signal), since this may be the first sign of acute illness.

For most patients with known COPD or other risk factors for hypercapnic respiratory failure (for example morbid obesity, chest wall deformities or neuromuscular disorders), a target range of 88–92% is suggested, pending blood gas results.

Some patients with COPD and other conditions are vulnerable to repeated episodes of hypercapnic respiratory failure. In these cases, treatment should be based on the results of previous blood gas estimations during acute exacerbations because hypercapnic respiratory failure can occur even if the saturation is below 88%.

For patients with prior hypercapnic failure (requiring non-invasive ventilation or intermittent positive pressure ventilation) who do not have an alert card, treatment should be started using a 24% Venturi mask at 2–4L/min in hospital settings with an initial target saturation of 88–92%, pending urgent blood gas results. The oxygen dose should be reduced if saturation exceeds 92%. For details on starting treatment in this group in pre-hospital care, see the full guidance.

ASSESSING HYPOXÆMIA AND HYPERCAPNIA
Fully trained practitioners should assess all acutely ill patients by measuring pulse, blood pressure and respiratory rate and by assessing circulating blood volume and anaemia. If patients are thought to have life-threatening illness, expert assistance should be sought at an early stage.

Initial clinical assessment and subsequent monitoring of acutely unwell patients should include the use of a recognised physiological track and trigger system, such as the Modified Early Warning Scoring System (MEWS). A change in this score requires medical review even if there is no change in oxygen saturation. The guidance points out that the presence of a normal oxygen saturation (arterial oxygen saturation measured by pulse oximetry) does not always negate the need for blood gas measurements. Blood gas measurements and full blood counts are therefore necessary as early as possible in situations where these measurements may affect patient outcomes.

EMERGENCY USE OF OXYGEN
In most emergency situations, oxygen is given to patients immediately without a formal prescription or drug order being issued. The guidance emphasises that the lack of a prescription should never preclude oxygen being given when it is needed in an emergency situation. A written record must be made of the oxygen therapy given to the patient, as with all emergency treatment.

Patients with COPD and other relevant conditions who have had an episode of hypercapnic respiratory failure should be issued with an oxygen alert card and a 24% or 28% Venturi mask. They should be told to show the card to A&E staff in the event of an exacerbation.

CONCLUSION
The guidance contains a wealth of information on many aspects of oxygen, including: arterial blood gases; oxygen use in specific illnesses; oxygen therapy in pregnancy; equipment used; oxygen therapy during nebulised treatments; and prescription and administration. It also contains a variety of tables and figures relating to different severity of illness and levels of supplemental oxygen. The teaching aid for nurses outlines nurses’ and doctors’ responsibilities in oxygen administration (see box below).

Nurses have a vital part to play in emergency use of oxygen, and it is hoped this BTS guidance will help to standardise care in this area. ■

PRACTITIONERS’ RESPONSIBILITIES

Doctors
- Prescribe oxygen
- Circle the target saturation
- Sign the drug chart
- Record the device to be used
- Stop oxygen when the target SaO₂ is achieved on air and the patient is clinically stable


Nurses and healthcare assistants
- Start oxygen and achieve the target immediately
- Monitor oxygen four-hourly (minimum); record SaO₂ and delivery device
- Titrate and wean off oxygen
- Sign the drug chart every drug round
- Write and initial codes on the observation chart