Emergency Oxygen Use in Adult Patients
Appendix 4

Summary of Guideline and flow charts for emergency oxygen use in ambulances, community and pre-hospital settings

This Guideline suggests aiming to achieve a normal or near-normal oxygen saturation for all acutely ill patients apart from those at risk of hypercapnic respiratory failure.

The suggested target saturation range for most patients is 94-98%. Patients at risk of hypercapnic respiratory failure have a lower target saturation range, usually 88-92%

A sudden reduction of more than 3% in a patient's oxygen saturation within the target saturation range should prompt fuller assessment of the patient because this may be the first evidence of an acute illness. (The narrower target range in younger patients is to ensure prompt assessment if a patient falls outside the age-specific normal range, not due to greater vulnerability to hypoxia).

Pulse oximetry must be available in all locations where emergency oxygen is being used.

All documents which record oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental oxygen.

Clinical assessment of a breathless patient starts with ABC (Airway, Breathing, Circulation)

A brief history should be taken from the patient or other informant.

Initial assessment should include pulse and respiratory rate in all cases.

Pulse oximetry should always be measured in patients with breathlessness or suspected hypoxia.

The initial oxygen therapy to be used in the various clinical situations are given in tables 1-4.

If there is a clear history of asthma or heart failure, or other treatable illness, then appropriate treatment should be instituted in accordance with guidelines or standard management plans for each disease.

The oxygen saturation should be monitored continuously until the patient is stable or arrives at hospital for a full assessment.

The oxygen flow should be adjusted upwards or downwards to maintain a saturation of 94-98% for most patients apart from those at risk of hypercapnic respiratory failure. Some people aged above 70 years may have saturation measurements in the range of 92-94% when clinically stable.These people do not require oxygen therapy unless the oxygen saturation falls below the level that is known to be normal for the individual patient.

In most emergency situations, oxygen is given to patients immediately without a formal prescription. However, a subsequent written record must be made of what oxygen therapy has been given to every patient (in a similar manner to the recording of all other emergency treatment).

Patients with COPD should initially be given oxygen via a Venturi 24% or 28% mask at a flow rate of 4 l/min and oxygen saturation should be 88-92% in most cases or else an individualised saturation range based on the patient's blood gas measurements during previous exacerbations.

Patients over 50 years of age who are long-term smokers with a history of exertional breathlessness and no other known cause of breathlessness should be treated as if having COPD.

During ambulance journeys, oxygen driven nebulisers may be used in the absence of an air-driven compressor system. If oxygen is used it should be limited to 6 minutes for patients with known COPD. This will deliver most of the nebulised drug dose but limit the risk of hypercapnic respiratory failure.

COPD patients and other patients who have had an episode of hypercapnic respiratory failure should be issued with an Oxygen Alert warning card with a 24% or 28% Venturi mask and instructed to show the Alert Card to the ambulance crew and Emergency Department staff in the event of an exacerbation.

Ambulance control should also be informed by a responsible clinician that the patient has had an episode of hypercapnic respiratory failure and carries an Oxygen Alert Card. These patients addresses and ideal oxygen dose or target saturation ranges can be flagged in the ambulance control systems and disseminated to ambulance crews when required.

Out of hours services providing emergency Primary Care services should be informed by a responsible clinician that the patient has had an episode of hypercapnic respiratory failure and carries an Oxygen Alert card. Use of oxygen in these patients will be guided by the instructions on the Alert Card.

It is recommended that the following delivery devices should be available in pre-hospital settings where oxygen is administered.

1. High concentration reservoir mask (non-rebreathe mask) for high-dose oxygen therapy.
2. Nasal cannulae (preferably) or simple face mask for medium dose oxygen therapy.
3. 28% Venturi mask for patients with known previous hypercapnic respiratory failure with inappropriately high arterial blood oxygen values (patients who have an oxygen alert card may have their own 24% or 28% Venturi mask).
4. Tracheostomy masks for patients with tracheostomy or previous laryngectomy.

Emergency oxygen should be available in primary care medical centres; preferably using oxygen cylinders with integral high-flow regulators. Alternatively, oxygen cylinders fitted with high-flow regulators (delivering over 6 L/min) must be used.

Refer to tables 1-4 and chart 1 at: www.brit-thoracic.org.uk/emergencyoxygen/

Example of oxygen alert card.

OXYGEN ALERT CARD

Name: _____

I am at risk of type II respiratory failure with a raised CO_2 level.

Please use my % Venturi mask to achieve an

oxygen saturation of ___ % ___ % during exacerbations

Use compressed air to drive nebulisers (with nasal oxygen at 2 l/min).
If compressed air not available, limit oxygen-driven nebulisers to 6 minutes.