Standards for the non-emergency use of continuous oxygen for the relief of breathlessness at rest

- Continuous oxygen therapy will only be used for patients breathlessness at rest following a formal evaluation of its effects using the audit proforma. This will identify the flow rate of oxygen that corrects SaO₂ to ≥90%.
- 2. Oxygen must be prescribed by the admitting doctor. A verbal prescription is acceptable if undue delay is anticipated.
- 3. The correct prescription of oxygen will include on the drug card details of:
 - source (oxygen concentrator or cylinder, entered in 'GAS' section)
 - *delivery device* (nasal cannulae or face mask and mask type i.e. 'medium' concentration')
 - flow rate.

DATE	TIME	GAS	MASK TYPE or NASAL CANNULAE	%	FLOW RATE	CONTINUOUS or INTERMITTENT	DOCTOR'S SIGNATURE
2.09.04	15.00	Oxygen concentrator	Nasal cannulae		2L/min	Continuous	A.N.Other
29.09.04	11.00	Two oxygen concentrators	Mask, medium concentration		3L/min each	Continuous	A.N.Other

Example of correctly completed oxygen prescription

- 4. Any change in prescription will require amendment of the prescription chart.
- 5. Oxygen will be delivered by oxygen concentrators unless humidification is required. At lower flow rates (2–4L/min), one oxygen concentrator and nasal cannulae will be used. For higher flow rates (6–8L/min), two oxygen concentrators will be joined using a 'Y' connector along with a Lifecare 2000 *medium concentration* face mask (Table 1).
- 6. Humidification will be considered for patients with problems such as nasal crusting or viscid sputum. It requires the use of an oxygen cylinder and cold nebuliser (Table 2).

Notes

The oxygen concentration received by a patient is dependent on various factors, including their breathing pattern, the oxygen source and delivery device and cannot be accurately predicted. Every patient's oxygen therapy should be individually titrated according to response.

In patients with carbon dioxide (CO_2) retention who depend upon hypoxia for their respiratory drive, oxygen therapy can result in ventilatory depression. This is associated with increasing drowsiness $(CO_2 \text{ 'narcosis'})$ and other symptoms/signs, e.g. headache, peripheral vasodilatation (warm extremities, bounding pulse), sweating, muscle twitching and flapping tremor. If suspected clinically, do not exceed an oxygen concentration of 28% and consider blood gas measurements to guide oxygen therapy.

For more information, see also the Oxygen Audit background form.

Table 1 Use of oxygen concentrators to deliver a range of oxygen concentrations

Desired oxygen concentration	Oxygen source	Flow rate	Delivery device	
28% ^a	Concentrator	2L/min	Nasal cannulae	
36% ^a	Concentrator	4L/min		
50% ^b	2 concentrators joined with a 'Y' connector, each set at 3L/min ^c	6L/min	Lifecare 2000 medium	
70% ^b	2 concentrators joined with a 'Y' connector, each set at 4L/min ^c	8L/min	concentration face mask ^d	

a. manufacturer's data

b. Hayward House data using two Devilbiss 4L oxygen concentrators. Approximate concentration of oxygen inside the mask determined by Fisher-Packel oxygen analyser with a healthy volunteer breathing at a resting tidal volume and respiratory rate

- c. If insufficient concentrators are available, oxygen concentrations of 50 and 70% can be obtained by using cylinders with a flow rate of 6 and 8L/min respectively and a Lifecare 2000 medium concentration face mask
- d. higher oxygen concentrations were not seen with a high concentration face mask.

Table 2 Use of oxygen cylinders and a Kendall Respifio MN cold nebuliser

Oxygen concentration setting on cold nebuliser	Oxygen concentration delivered ^a	Oxygen cylinder flow rate	Delivery device	
28%	30%	5L/min	A converted Lifecare 2000	
35%	33%	8L/min	medium concentration face	
40%	40%	8L/min	 remove the swivel connector to allow the elephant tubing to attach 	
60%	56%	8L/min		
80%	65%	8L/min	• remove the plastic discs to enlarge the holes in	
98%	75%	8L/min	the side of the mask.	

a. Hayward House data using two Devilbiss 4L oxygen concentrators. Approximate concentration of oxygen inside the mask determined by Fisher-Packel oxygen analyser with a healthy volunteer breathing at a resting tidal volume and respiratory rate

b. higher oxygen concentrations were not seen with a high concentration face mask.