Wrightington, Wigan and Leigh Teaching Hospitals
NHS Foundation Trust

STANDARD OPERATING PROCEDURE	**Use of Medical Oxygen in Adult Patients**
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AUTHOR(S) (JOB TITLE)	**Director of Pharmacy, Consultant Physician, Head of Nursing**
DIVISION/DIRECTORATE	**Medicine/Pharmacy**
ASSOCIATED TO WHICH POLICY?	**TW10/037 MEDICINES MANAGEMENT POLICY** **TW10/011 MOVING AND HANDLING POLICY** **TW10/042 INFECTION CONTROL POLICY** **TW17-014 STANDARDS FOR PERFORMING PHYSIOLOGICAL OBSERVATIONS FOR ADULTS**
CONSULTED WITH	**MMSG Membership**

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MANAGER RESPONSIBLE FOR REVIEW (Job Title)	**Director of Pharmacy**

The WWL Way

Version Control

Version	Date	Amendment
2	June 2021	• Change in trust title to reflect teaching hospital status • Changes in title – Director of Pharmacy • No other changes made – review date reached

Contents

This procedure received preliminary approval at Medical, Surgical and Specialist Services DQEC prior to submission to MMSB in January 2018

1 INTRODUCTION

1.1 This SOP should be used in conjunction with the overarching Medicines Management Policy TW10-037.

1.2 This procedure is for use in adult patients within general wards and departments. The administration of oxygen is an essential treatment for a wide range of clinical conditions. It is essential for oxygen to be prescribed in all but emergency situations. Failure to prescribe or administer oxygen appropriately can potentially result in serious harm to the patient.

2 AIMS

2.1 To apply best practice to all areas where oxygen is used within general wards and departments.

2.2 To ensure appropriate assessment of patients, considering their oxygen requirements and subsequent use of oxygen to manage their condition.

2.3 To ensure that all patients and carers receive information and explanation on the safe use of oxygen.

2.4 To recommend competencies needed by staff in the prescribing administration and monitoring of oxygen.

3 INCLUSION CRITERIA

3.1 Patients with a clinical requirement (hypoxia) for oxygen because of labour, injury, or illness.

3.2 Where a patient lacks capacity under the Mental Capacity Act (MCA) to take part in discussions or make decisions regarding medication, there is a duty to consult with the patient's family and those close to the patient. Where a patient who lacks capacity has no one close to them with whom health professionals can consult, and decisions are being made about treatment, a referral should be made to the local Independent Mental Capacity Advocacy service for an IMCA (Independent Mental Capacity Advocate) to be appointed for the patient. In such cases, the role of the IMCA is to check that the best interest's principle has been followed and to ensure that the person's wishes and feelings have been appropriately considered and to seek a second opinion if necessary. This does not apply in emergency situations where life may be compromised by non-administration.

4 EXCLUSION CRITERIA

Patients admitted to specialist areas e.g., theatres and recovery where a specialised oxygen prescribing is in place.

5 END OF LIFE CARE

Patients at the end of life should only receive oxygen if they are hypoxaemic.

6 CONTRA INDICATIONS

There are no absolute contraindications to the use of oxygen. However, guidelines have been published by the British Thoracic Society (BTS) on the safe therapeutic use of medical oxygen, which encourages proper assessment of the patient before use.

7 CAUTIONS

7.1 Oxygen should be administered with caution in patients suffering from paraquat poisoning, with acid inhalation or previous bleomycin lung damage.

7.2 Patients with chronic obstructive pulmonary disease (COPD) can develop oxygen induced hypercapnia. Other at-risk groups include those with neuromuscular disorders, morbid obesity, and chest wall deformities. Other than in emergency situations, these high-risk patients must be administered with controlled oxygen and regular blood gases should be performed.

8 PRESCRIBING IN ROUTINE SITUATIONS

8.1 Oxygen must be prescribed on the HIS system or medicine chart if HIS is unavailable.

8.2 Oxygen should be prescribed to achieve a target saturation of >92% for most acutely unwell patients and 88-92% for those at risk of hypercapnic respiratory e.g., COPD

8.3 Routine prescribing of oxygen in non-emergency situations should always be undertaken by a prescriber with appropriate knowledge of the patient and the condition being treated.

8.4 The goal of oxygen therapy is to achieve adequate tissue oxygenation using the lowest possible oxygen flow rate.

8.5 Best practice is to prescribe for all hospital patients at the time of admission using the Medical Admission Document on HIS so that appropriate oxygen therapy can be commenced in the event of unexpected clinical deterioration with hypoxaemia and to ensure that the pulse oximetry section of the early warning score can be scored appropriately.

9 PRESCRIBING IN EMERGENCY SITUATIONS

9.1 Peri-arrest and critically ill patients should be given 100% oxygen (15 litres per minute reservoir mask). A prescriber should be contacted as soon as possible after commencement of oxygen to conduct a review of the patient and make an ongoing clinical plan for the patient. Pending this review flow rates can be titrated at 30-minute intervals to keep oxygen saturations >92%.

9.2 Patients with COPD or other High-risk factors (morbid obesity, chest wall anomalies and neuromuscular disorders) for hypercapnia who develop critical illness should be given oxygen at a rate of 2 litres per minute, aiming to achieve oxygen saturations in the range of 88 to 92%. A prescriber should be contacted as soon as possible after commencement of oxygen to conduct a review of the patient and make an ongoing clinical plan for the patient. Pending this review flow rates can be titrated at 30-minute intervals in incremental stages e.g. (2, 4, 6 and 8 litres per minute). Patients with COPD will need urgent blood gas results after which these patients may need controlled oxygen therapy or supported ventilation e.g., NIV if there is severe hypoxaemia and/or hypercapnia with respiratory acidosis. The ongoing review of this should be undertaken by a prescriber with knowledge of managing such patients.

9.3 All patients who have had a cardiac or respiratory arrest should have 100% Oxygen provided along with basic/advanced life support until return of spontaneous circulation and reliable oximeter readings are achieved. (See latest Resuscitation Council UK Guideline).

9.4 Normal escalation processes still apply and if there is concern about the patient despite oxygen being administered then a doctor or outreach team should be contacted to provide support to the nursing staff in charge of the patient.

10 ADMINISTERING OXYGEN

10.1 Ensure airway is patent.

10.2 Select appropriate delivery device e.g., mask or nasal cannulae.

10.3 Ensure oxygen is prescribed on HIS or medicine chart (NB does not apply to emergency situations - see section 9).

10.4 Ensure that the flow rate is clearly understood from the prescription.

10.5 Inform patient and or carer about the treatment being offered and the risk of fire.

10.6 Show the patient and or carer about how the delivery system works.

10.7 Assemble the delivery system.

10.8 Attach delivery system to oxygen source (pipe or cylinder).

10.9 Attach delivery system to patient following manufacturers guidelines.

10.10 Turn on flow rate in accordance with prescription (in emergency situations see section 9).

10.11 Ensure patient has access to hydration to prevent oral drying.

10.12 Ensure appropriate monitoring is undertaken and titrate the flow rate to maintain the appropriate saturation. Escalation to a prescriber should occur if there is a significant increase in oxygen requirement. Nurses should also monitor skin colour for peripheral cyanosis.

10.13 Discard oxygen mask and tubing once therapy is completed

11 NEBULISED THERAPY AND OXYGEN

11.1 When nebulised therapy is administered to patients at risk of hypercapnic respiratory failure e.g., COPD it should be driven by compressed air.

11.2 If necessary supplementary oxygen should be given concurrently by nasal prongs starting at 2 litres per minute to maintain an oxygen saturation of 88 - 92%.

11.3 All patients requiring 35% or greater oxygen therapy should have their nebulised therapy driven by oxygen at a flow rate of >6 litres/minute.

12 HUMIDIFICATION

Humidification may be required for some patient groups but is not essential, even for patients on prolonged therapy.

13 MONITORING

The frequency of monitoring appropriate to clinical need will be determined by medical staff in consultation with nursing staff. This monitoring will be based on clinical need or set departmental standard, being a minimum of 8 hourly frequency and will be changed in accordance with patient’s clinical condition.

14 PATIENT MANAGEMENT AND ADVERSE EFFECTS

14.1 Closely observe the patient throughout oxygen therapy to determine:

14.1.1 The impact of oxygen on their clinical condition.
14.1.2 The presence of any adverse effects.
14.1.3 Any specific measurements e.g., pulse oximetry.

14.2 If the patient experiences any significant oxygen related adverse effects they should be reassured, and the prescriber contacted for advice. Adverse effects include:

14.2.1 Dizziness or disorientation.
14.2.2 Over sedation.
14.2.3 Nausea.

14.3 Patients should not walk unaided until any dizziness or disorientation has receded.

15 TRANSFER AND TRANSPORTATION OF PATIENTS RECEIVING OXYGEN

15.1 Patients who are transferred from one area to another must have clear documentation of their on-going oxygen requirements and of their oxygen saturation. Their oxygen therapy should be reviewed prior to leaving the clinical area and on return by trained nursing staff.

15.2 Clear verbal instructions must be provided for personnel involved in the transfer of the patient, which must include delivery device and flow rate.

16 DECONTAMINTION, STORAGE AND USE OF OXYGEN CYLINDERS

16.1 Check the following before use.

16.1.1 Ensure your hands are clean and free from grease and if you have use hand gel it has completely dried.
16.1.2 Ensure you have the correct medical gas and expiry date by checking the cylinder label.
16.1.3 Take the cylinder in the appropriate cradle to the patient's bed side.
16.1.4 Ensure the appropriate tubing and mask are fitted to deliver required concentration of oxygen.
16.1.5 Check for leaks by listening closely.
16.1.6 Check the contents of the cylinder and store in the designated storage area.
16.1.7 Ensure any dust or debris is removed by blowing a small amount of oxygen through the system.

16.2 If the cylinder becomes contaminated with body fluid(s), the porters should be contacted, and the cylinder should be returned to the manufacturer as 'faulty' in the provided bags.

16.3 Oxygen in cylinders which must be stored in accordance with data sheet information from the manufacturer

16.4 Care must be taken when lifting and carrying smaller cylinders. Larger cylinders must be transported to and from storage using trolleys designed for that purpose. Small cylinders are transported in trolleys and stored in an appropriate holder. Care must be taken when moving cylinders on and off trolleys and between store and clinical area.

16.5 No lubrication, oil, grease, or other contaminants may be used on the oxygen system or cylinders to reduce fire risk.

16.6 Oxygen cylinders must be stored under cover, kept dry and clean and not subjected to extremes of temperature.

16.7 Oxygen supports combustion and must be stored away from other combustible materials and heat sources. Notices must prohibit smoking and naked flames.

16.8 Cylinders must not be repainted, have markings obscured or labels removed.

16.9 Used cylinders should be returned immediately to appropriate store for replenishment.

16.10 Numbers and type of cylinders stored in clinical areas should be kept to a minimum compatible with clinical need.

17 MALFUNCTION

17.1 All staff should be alert for any signs of damage, corrosion, or malfunction. If any of the following technical problems occur they should be reported to porters immediately:

17.1.1 Equipment not delivering oxygen.
17.1.2 Leak at joint between regulator and cylinder valve.
17.1.3 Signs of corrosion
17.1.4 Inability to clean properly

18 AUDIT

18.1 Audit of oxygen cylinder movement to and from trust will be undertaken by supplier and details sent to Chief Pharmacist and Head of Portering.

18.2 The Trust will take part in the National BTS audit to benchmark our practice against the rest of the country.

19 INFECTION CONTROL

19.1 All respiratory equipment should be used and disposed of or decontaminated if appropriate in accordance with the manufacturer's guidelines.

19.2 Administration devices, tubing, masks and mouthpieces are usually single use only and will have the symbol ② on the packaging (see the 'Single Use Medical Devices' SOP).

20 CONSENT

Patients should be verbally consented to use oxygen wherever possible and that should be documented in the case notes or electronic equivalent.

21 TRAINING AND COMPETENCIES

21.1 Healthcare professionals are accountable for their individual practice and have a professional responsibility to ensure they have the relevant knowledge and skills required for using medical oxygen safely. All staff should seek out additional support via their managers should they have any training issues or concerns.

21.2 All medical students and doctors should be taught about the oxygen policy. This will be facilitated through induction, regular junior doctor teaching, departmental meetings, and Grand Rounds.

21.3 The British Thoracic Society has appointed oxygen champions in all Trusts to help introduce the procedure.

22 HEALTH AND SAFETY

22.1 Inform patients and carers about the combustibility of oxygen.

22.2 Oxygen should always be stored in designated no smoking areas.

22.3 Always transport cylinders with the appropriate cradle.

22.4 Avoid grease or oils coming into contact with cylinders or regulators.

22.5 Store cylinders in a dry well-ventilated area.

23 HUMAN RIGHTS ACT

Implications of the Human Rights Act 1998 have been considered in the formulation of this policy and they have, where appropriate, been fully reflected in its wording.

24 ACCESSIBILITY STATEMENT

This document can be made available in a range of alternative formats e.g., large print, Braille, and audio cd.

For more details, please contact the HR Department on 01942 77(3766) or email equalityanddiversity@wwl.nhs.uk