**Clinical**

**Administration of Oxygen: Standard Operating Procedure**

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1. Introduction
This SOP supersedes the previous policy on Administration of Oxygen. This may be used in conjunction with both the Resuscitation Policy and the Medical Emergency Policy.

This SOP gives guidance to staff regarding oxygen usage, transport and storage. This guidance is intended to ensure that the safety of patients, staff and the immediate environment are maintained at all times. It is based on the latest national guidance available.

2. Purpose
The need for oxygen therapy arises when oxygen transport to the tissues is insufficient due to a breakdown in either the respiratory or circulatory systems. The aim of oxygen therapy is to maintain tissue oxygenation at a functional level, to eliminate detrimental compensatory responses to hypoxaemia, which may cause serious or irreparable damage to vital organs and tissues.

Oxygen is considered a drug and must, therefore, be prescribed by an appropriate clinician. This would normally take the form of a formal prescription by a doctor, but may, in emergency life-saving situations be administered by nurses operating a PGD.

Oxygen is a very combustible material, so it is important that correct guidelines are followed when storing or transporting oxygen cylinders

2.1 Prescribing Oxygen
Oxygen is regarded as a drug, and prescription charts MUST detail flow rate or concentration, frequency and duration of therapy. It may be prescribed as a regular drug for long-term oxygen therapy or as an “as required” drug when used e.g. for short-burst oxygen therapy.

Emergency oxygen may be administered without a doctor's prescription, using the Trust’s Oxygen PGD, as long as the nurses meet the professional competencies stated therein.

2.2 Storage
Oxygen is a very combustible material so it is important that it is stored safely and correctly.
3. Scope
This document applies to all employees of South Staffordshire and Shropshire Healthcare NHS Foundation Trust. Though it will most likely and frequently be utilised by the Nursing staff on the inpatient areas of the Trust

4. Procedure
Assessment of the patient’s oxygen requirements must be carried out, which will take into account the following:

- Effectiveness of breathing is assessed by monitoring the patient’s chest movement, which should be equal, bi-lateral and symmetrical. Air entry may be assessed by auscultation with a stethoscope, breath sounds should be audible and equal in all lung zones. Arterial oxygen saturations should be monitored using a pulse oximeter
- Normal breathing should be spontaneous, with quiet breath sounds and minimal effort. Signs of increased effort or work to breathe may include: increased respiratory rate; noisy respirations; use of accessory muscles; paradoxical or see-saw breathing
- Other observations that may inform the need for supplemental oxygen include a change in skin colour, e.g. flushing, cyanosis or mottling, change in body temperature and changes to pulse rate and or blood pressure. All observations must be recorded using the AMEWS, ensuring that the score is added up accurately and acted upon accordingly.
- If changes to any of the above are witnessed but it is not considered an emergency, then medical staff must be requested to assess the patient with a view to prescribing oxygen therapy.
- If it is an emergency and the patient’s clinical condition is life-threatening, then the PGD should be utilised and emergency oxygen administered by the ward staff whilst awaiting either the medical staff or the ambulance, whichever is deemed most appropriate, or arrives first.

All ward staff must familiarise themselves with the types of oxygen cylinders and delivery systems that are available on their ward area. Before using an oxygen cylinder the valve must be fully opened, by either turning the knob or engaging the key and turning (depending on the type of cylinder), ensure that the knob or key is turned as far towards the open position as it will go. Before administering to patient, ensure the gas is flowing freely and
there is sufficient in the cylinder for what you require (see table below). Set the flow meter to the desired setting, attach to delivery system and prepare to administer to patient.

### CD Oxygen Cylinder Duration Chart

<table>
<thead>
<tr>
<th>Cylinder Size</th>
<th>Flow Rate</th>
<th>Duration Hours</th>
<th>Duration Minutes</th>
<th>Duration Hours</th>
<th>Duration Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD Oxygen (460Lts)</td>
<td>1</td>
<td>7hr 40</td>
<td>460</td>
<td>3hr 50</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3hr 50</td>
<td>230</td>
<td>1hr 55</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2hr 33</td>
<td>153</td>
<td>1hr 16</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1hr 55</td>
<td>115</td>
<td>0hr 57</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1hr 32</td>
<td>92</td>
<td>0hr 46</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1hr 17</td>
<td>77</td>
<td>0hr 38</td>
<td>38</td>
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<tr>
<td></td>
<td>9</td>
<td>0hr 51</td>
<td>51</td>
<td>0hr 25</td>
<td>25</td>
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<td></td>
<td>12</td>
<td>0hr 38</td>
<td>38</td>
<td>0hr 19</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>0hr31</td>
<td>31</td>
<td>0hr 15</td>
<td>15</td>
</tr>
</tbody>
</table>

When finished using the oxygen cylinder, you **must** follow the following process to ensure that it is safe to store away:

- Remove from patient
- Remove and dispose of used delivery device
- Turn off the valve using knob or key as appropriate
- Cylinder now needs venting to empty any remaining gas from inside the valve
- Switch the flow metre back on briefly on a high setting, you will hear a hissing noise denoting that gas is being expelled
- The gauge will now read empty and the cylinder is safe to be stored away

**Administration of Oxygen Therapy Guidelines**

Oxygen is a prescribed drug and as such, must be prescribed by an appropriately qualified medical practitioner. The amount of O2 to be administered must be prescribed clearly, with full instructions, including any variations allowed in the amount to be administered and under what circumstances these variations may be made.

The only circumstances under which it is appropriate to administer oxygen without a physician’s prescription, is in an emergency situation. Oxygen is a life-saving treatment that may be administered in an emergency as a life-saving measure, without a prescription. However, this must be assessed as soon as is practicable (certainly within 4 hours) by a suitably qualified healthcare professional, and a prescription obtained if its use is likely to be required beyond the immediate resuscitation period.
It is the responsibility of individual managers to ensure that all members of staff who are likely to be administering O2 therapy have received appropriate training, which would include PGD training, Anaphylaxis and Basic Life Support and Care of the Deteriorating Patient and are fully aware of the prescription and instructions for use of oxygen for that patient.

The patient’s O2 requirements should be assessed on a regular basis and the effectiveness of such therapy recorded. The frequency of reassessment will vary, dependent upon clinical need/situation/individual patient. Any variation of the patient’s condition and/or oxygen requirements must be communicated to the prescriber or a suitable colleague. When choosing a suitable delivery method, e.g. mask or nasal cannulae, as well as clinical indications, attention should be paid to patient choice, especially in respect to any fears/concerns regarding having their face covered or having something up their nose etc.

It is important to ascertain whether or not all users have a sufficient understanding of the English Language to fully understand all information and safety instructions. It may be necessary to use an interpreter or to have the information translated; however, it must not be presumed that a person who speaks a particular language will also necessarily be able to read the same.

If the person receiving the oxygen therapy is a child or has learning disabilities, extra attention must be paid to ensuring that they understand what is being given to them and why and any fears or concerns dealt with.

If oxygen is to be used in the patient’s home, consideration must be made to their ability to safely handle the equipment and understand all of the safety and storage issues and help must be provided to overcome any issues surrounding this.

**Equipment:**
- 1. Appropriate administration set; i.e. face mask, nasal specs, tubing and spares
- 2. Oxygen cylinder
- 3. Bactericidal alcohol hand rub
- 4. Sphygmomanometer (dependant on clinical need)
- 5. Oxygen saturation monitor (dependant on clinical need)
- 6. Thermometer (dependant on clinical need)

**Procedure:**

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>1. Explain and discuss procedure with patient</td>
<td>To ensure that the patient understands the procedure and gives his/her valid consent. This will also reduce patient’s anxiety</td>
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<tr>
<td>2. If possible, ensure patient is in a comfortable position, preferably sitting, supported by pillows if necessary</td>
<td>To promote comfort and compliance and to optimise lung expansion</td>
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<tr>
<td>3. Give further explanation to family/ next of kin – especially in the case of children, as to why O2 therapy is required</td>
<td>To relieve anxiety and enlist their help in obtaining/maintaining patient’s compliance</td>
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</table>
4. Wash hands according to Trust policy and apply alcohol hand rub  
   To minimise risks of cross infection/contamination

5. Check O2 prescription, administer according to prescription, using appropriate delivery device  
   To ensure that the O2 is administered correctly and safely, according to Trust policy

6. Continuously monitor respiratory function: skin colour, breathing pattern, effort, rate, depth etc. Monitor vital signs if appropriate, dependent upon patient’s condition. Report any changes/concerns to medical staff.  
   To assess effectiveness of treatment and to identify any deterioration/improvement in patient’s condition. To ensure that the patient is maintaining adequate respiratory function

7. Offer regular drinks if patient able, otherwise offer ice cubes to suck, mouth washes or oral toilet as appropriate to patient needs  
   To reduce the risk of dry mouth due to the very drying effects of O2, especially at high flow rates. Thereby reducing the risk of mouth ulcers etc. developing

8. Consider using humidified oxygen if therapy is to be used for any substantial length of time  
   To minimise the drying effects of the O2 on the respiratory passageways/mouth and nose

9. Ensure the O2 administration set is appropriate to the patient and well fitting  
   Inappropriate or poorly fitting devices may increase risk of soreness and intolerance

10. If patient is confined to bed/chair during treatment, encourage or assist them to change their position frequently  
    Patients requiring O2 therapy may have compromised skin integrity, increasing risk of pressure sores, particularly to extremities e.g. elbows, heels and sacrum

11. Offer continued reassurance and explanations to the patient and relatives. Keep them informed of the progress of the therapy and ensure that the patient is comfortable at all times  
    To reduce anxiety and maintain compliance with treatment

12. Observe patient and the O2 delivery system at all times, to ensure no equipment failure occurs and to ensure that the patient’s condition remains stable  
    To ensure maintenance of the equipment and consistency of treatment and to ensure patient safety at all times

N.B. If O2 is being administered in the Community, and there is a clear deterioration in respiratory function:

1. Follow prescriptive guidelines for the O2, giving emergency O2 if appropriate
2. Call 999 for a paramedic ambulance
3. Monitor patients colour and saturations until help arrives
4. Perform Basic Life Support if indicated
5. Inform significant family member and senior nursing/medical staff once emergency situation has been resolved and help is at hand
5. Process for Monitoring Compliance and Effectiveness
Medical gas Audits will be carried out as part of the Trust’s audit programme

6. References


