Level 2 Education for Clinicians prescribing Home oxygen
National Home Oxygen Service Guidance/Best Practice 2013 recommendations

- Link to Best guidance on HFS /knowledge network
- NHS Boards now pay for all oxygen prescribed
- Opportunity to review and improve oxygen prescribing and service delivery in Scotland
- Dolby/Vivisol are contracted to provide NHS Scotland home oxygen service.
Supporting Evidence Base for Home Oxygen Services

- COPD - NICE clinical guideline 101 (2010).
- BTS guidelines – Home Oxygen in Adults to be updated 2013-2014.
Key points

• Oxygen is a drug 1
• Oxygen requires a prescription 1
• Oxygen is a treatment for hypoxaemia, not breathlessness.
• Significant hypoxaemia in adults requiring treatment is defined as PaO2 < 8kPa (SPO2 <92% in room air), 2

Oxygen has no benefit on the sensation of breathlessness in non-hypoxaemic patients. 2

• Supports best practice for home oxygen provision in Scotland.

• http://www.hfs.scot.nhs.uk/
  http://www.knowledge.scot.nhs.uk/home.aspx

• Home oxygen for adults should only be prescribed following assessment by an appropriately trained Respiratory Clinician.2

• Home oxygen for children should only be prescribed following assessment by a Paediatrician, Neonatologist (or Cardiologist).3


Quick Guide: Adult Oxygen Prescription - Appendix 1,2,5,7,8,9

All patients should have their smoking status updated and documented at time of prescription. Patients who smoke should be referred to smoking cessation services. Do not prescribe/refer current smokers for oxygen therapy for health and safety reasons or as a means of incentivising smoking cessation. Hypoxaemia is defined as PaO2 < 8kPa (SPO2 <92% in room air).

Ambulatory O2
Criteria for LTOT in non smokers

- PaO2 is < 7.3 kPa when clinically stable.
- PaO2 between 7.3 and 8 kPa when stable and:
  - Secondary polycythaemia.
  - Nocturnal hypoxaemia (oxygen saturation of arterial blood [SaO2] < 90% for more than 30% of time).
- Peripheral oedema (cor pulmonale).
- Pulmonary hypertension.
Short burst oxygen Therapy

• There is no conclusive evidence to support SBOT.
• Widespread prescription of short-burst oxygen is not evidence-based.
• Existing users of SBOT should be assessed to see if this therapy is clinically indicated.
Since 1989 Dolby Vivisol have supported HFS in providing the Home Oxygen Service.

HFS receive and verify the Scottish Home Oxygen Order Form (SHOOF) from Oxygen Prescribers.

HFS staff instruct Dolby Vivisol of patient requirements.

Dolby Vivisol engineers carry out a risk assessment, install equipment and set prescribed oxygen flow rate.

Dolby Vivisol, based in Stirling have experienced staff throughout Scotland delivering, maintaining and servicing oxygen equipment.
DO’s of safety with Oxygen

• Oxygen is a fire accelerator and can cause rapid burning
• DO keep at least 3 metres from sparking objects, naked sources of flame and extreme heat.
• DO ensure oxygen supply is switched off when not in use.
• Do allow at least 30 minutes after turning off oxygen before it is safe to go near sources of heat for example when cooking as oxygen may build up in material and make it more flammable.
DO’s of safety with Oxygen

• DO ensure oxygen is used in a well ventilated room.
• DO ensure firebreak (where provided) remains in the oxygen tubing, (blue arrow should be pointing toward patient.) The firebreak will stop fire spreading up tubing if one end catches alight.
• DO take care to avoid trips and falls over oxygen tubing.
DO NOT’s to ensure safe use of oxygen

- DO NOT allow anyone to smoke around oxygen. (A risk assessment by a Dolby Engineer requires the patient to sign that they agree not to smoke).
- DO NOT apply oil or grease to equipment, this includes patients using face or hand creams that are oil based. Only creams that are water based should be used. Ensure hands are clean and dry when handling oxygen equipment.
DO NOT’s To Ensure Safe Use Of Oxygen

• DO NOT lay mask or nasal cannulae down for any length of time when oxygen in use.
• DO NOT tamper with oxygen equipment or change flow rate.
• DO NOT let oxygen tubing get trapped which may result in reducing or stopping the flow of oxygen.
What To Do If Equipment Develops A Fault

• In cases of a fault or concerns regarding oxygen equipment please contact Dolby Vivisol on 0800 833531 immediately.
• Please do not wait until the backup cylinder is nearly empty before calling.
• DO NOT change the oxygen flow rate without consulting the Oxygen Prescriber.
• DO NOT attempt to dismantle, repair or otherwise interfere with the equipment.
Planning Holidays UK and Abroad
For Oxygen Users

• For UK holidays please write or email Health Facilities Scotland or for initial enquiries please call 0131 275 6860.

• 3-4 weeks notice should be given. Please provide full holiday address including dates, contact telephone number and any other relevant information.

• If there has been a recent change to your oxygen prescription then contact your Oxygen Prescriber.

• Please note HomeFill is not available for holiday use.

• Liquid oxygen maybe available but requires considerable planning.
Planning Holidays UK and Abroad
For Oxygen Users

• Confirm that permission has been granted from the holiday property owner to allow access.
• Oxygen equipment that is used at home should not be taken out of the UK or left at temporary address.
• Sufficient supplies should be arranged for return journey. Empty cylinders should be returned to original supplier.
• Travelling abroad with oxygen may not be a free service, contact HFS for advice on 0131 275 6860.
Concentrators

- A standard concentrator delivers 1 to 5 litres/min.
- A high flow concentrator delivers up to 9 litres/min.
- A low flow concentrator delivers 0.1 to 2 litres/min.
- A low low flow concentrator delivers 0.1 to 0.8 litres/min.
- A back up cylinder (on 2 litres/min provides 20 hours use) will provide oxygen for power failure and equipment faults.
Concentrators

- A humidifier can be provided for flow rates of 4 litres or more (humidifier requires to be requested by the Oxygen Prescriber).
- A fixed install can be done if required to reduce trip hazard, tubing can be fixed.
- In larger properties a second concentrator may be required.
A Typical Static Concentrator

- Oxygen
- tubing
- connector

- Flow meter

- Indicator
- lights

- On/off
- switch
The Air Filter should be cleaned weekly.

To clean:

• Remove filter and wash in a solution of warm water and washing up liquid.
• Rinse thoroughly with warm tap water.
• Allow to dry naturally.
• Make sure filter is dry before reinstalling.
• Do not use concentrator without a filter or while filter is still damp as this may affect operation.
Common faults and solutions

• If concentrator sounds or shows an alarm (red or orange light) the patient should switch to back up supply and call Dolby Vivisol immediately.
• Check following: Is electricity connector plugged in and the concentrator switched on?
• Is the air intake filter obstructed or clogged?
• Is the mains supply connected to the machine?
• Is the oxygen tubing kinked, clogged or trapped?
Service Delivery and Replenishment

• Concentrators will be installed within 4 working days for standard requests.
• 2 day and same day requests should only be requested after careful consideration and when absolutely necessary. Additional charges will apply for these services.
• 10 working days should be allowed for new liquid oxygen requests.
• Patients should contact Dolby Vivisol and allow 4 working days for replenishment of cylinders.
• Masks and nasal cannulae will be provided as per SHOOF and replenished by Dolby Vivisol.
Static Cylinders

• The static cylinder may be the main source of oxygen supply or as a back up to static concentrator in case of power failure or emergency.
• Cluster headaches (normally high flow 10-15 litres/min).
• Orders of less than 2 hours per day.
• Paediatrics-low flow regulators can be attached to reduce flow rate and enable weaning off oxygen.
Static Oxygen Cylinder/Back Up Cylinder

- The static cylinder may be the main source of oxygen supply or as a back up to the concentrator in case of power failure or emergency.
DO’s and DON’T’s When Using A Static Cylinder

• DO wash and dry hands prior to using cylinder and avoid use of hand creams etc.
• Do store in a vertical secure position or laid down as long as not able to roll around.
• Avoid contamination from external agents.
• Check weekly cylinder is working and ready for use on a weekly basis.

Please refer to information leaflets provided to patients for further information

NHS National Services Scotland

Health Facilities Scotland
Portable Oxygen Cylinders

• For patients to use to enable them to remain independent and help keep them mobile.
• The prescribed flow rate and duration will determine the cylinders that are provided.
• A carry bag will be provided.
Using Your Cylinder

• Check cylinder is intact and not damaged.
• Attach your oxygen tubing to the outlet.
• Turn on the oxygen cylinder.
• Set the correct flow rate as per prescribed in the SHOOF.
• Fit nasal cannulae or facemask to patient.
• When the oxygen is not in use close the open/close dial by turning it clockwise and turn the flow rate to zero.
• Other flow probes maybe attached to provide lower flow rates, particularly in the cases of infants and children.
Oxygen Conserving Device

- A conserving device to be used in conjunction with usual portable oxygen supply and can only be used if prescribed.
- Delivers a precise amount of oxygen for a short period of time when patients breathe in and triggers oxygen release (pulse/demand).
- Gives patient pulses of oxygen when triggered by inspiratory effort.
- Patient has to be able to trigger device with sufficient inspiratory effort.
Oxygen Conserving Device

- Patients should be assessed prior to being prescribed device.
- Can be used with cylinders.
- Cylinder should be set at 4 litre/min flow rate when using conserving device and device set to prescribed rate.
- Cuts down on waste of oxygen that is not used.
- Not suitable for use with children under age of seven years.
- Not to be used when patients are sleeping.
HomeFill System

- HomeFill may not be suitable for everyone.
- It is particularly suitable for very active patients who use large amounts of portable cylinders.
- Works by taking oxygen from the concentrator, compressing it and filling it safely into the portable cylinders provided.
- HomeFill is most suitable for patients who can activate a pulsed delivery system.
- 2 portable cylinders and bags supplied, 1 litre (5 hours at 2 pulsed dose setting) and 1.7 litre (9 hours at 2 pulsed dose setting).
- Not provided for holiday use.
• Check equipment is clean, dry and free from oil/grease.
• Cylinder valve should be in the off position.
• The metal collar on the filling post on the compressor is pushed down to reveal green dots.
• Connect the cylinder to the compressor by pushing the cylinder until it clicks with the self-fill port.
Homefill...Cylinder Filling

• Switch on the concentrator and compressor.
• The cylinder is full when full indicator light is on.
• When filling is complete, disconnect and remove the full cylinder and replace the cap on the filling port.
• Oxygen cylinders can be filled overnight.

For further information please see the patients leaflet on HomeFill.
Liquid Oxygen (LOX)

- Safety (can not be installed above ground level).
- Flexible option.
- Higher flow rates for ambulatory option.
- Good dexterity required.
Liquid Oxygen (LOX)

- This system comprises of a reservoir unit called a dewar.
- A dewar or reservoir contains liquid oxygen (stored as a vapour at -183 degrees Celsius so will evaporate in time).
- The portable unit is called a flask and is filled from the dewar.
- LOX is a specialized modality which is prescribed by the Oxygen Prescriber and is suitable for high flow applications where patients are particularly mobile.
Liquid Oxygen DO’s and DON’Ts

• DO store liquid oxygen dewar upright.
• Ensure filling connections on flask and dewar are clean and dry, using a lint free cloth, before every attempt to refill flask. This will ensure the connectors do not freeze together.
• Leave flask to settle for approximately 20 minutes before using after filling.
• DO NOT attempt to move your liquid oxygen dewar without seek advice from staff at Dolby Vivisol.
Liquid Oxygen DO’s and DON’Ts

• DO NOT tamper with the equipment.
• DO NOT use force to remove flask from dewar after filling.
• If there is a leakage, stay away from dewar and ventilate area where safe to do so and call Dolby Vivisol immediately. DO NOT switch on any electrical item in the room until it has been well ventilated.
Basic Hygiene With Consumables

- **Nasal Cannulae:** Clean daily with warm soapy cloth. Never immerse cannula in water. Wipe dry.

- **Facemasks:** Clean daily in warm soapy water, rinse and leave to air dry.

Patients are given replacements at each quarterly service visit by a Dolby Vivisol engineer. Replacements can also be ordered direct from Dolby Vivisol by calling 0800 833531
Consumables

- Nasal Cannulae
- Tubing
- Face masks
- Firebreaks
- Other: tender grip fixators (adult and paeds)
  - kink proof connectors
  - tracheostomy masks
  - water traps
  - E-Z wrap ear protectors

* Nasal cannulae and facemasks are prescribed on SHOOF dependant on flow rates.
Out Of Hours Oxygen

• No place for initiating long term home oxygen therapy in an Out of Hours setting?
• ? place for short term oxygen therapy for COPD exacerbations or other acute illnesses who are hypoxaemic and oxygen stopped after the acute episode.
• These patients require to be closely followed up.
Out Of Hours Oxygen

• Patients who are known to be oxygen sensitive should be given oxygen with extreme caution and an oxygen alert card supplied.

• Portable concentrators should be recovered by the Out of Hours service within a week as per the agreed local protocols.
iGo Portable Concentrator

- Typical example of a portable concentrator that may be provided for Out of Hours care.
Anticipatory Care Planning

• Should be considered for all patients who meet the criteria for long term oxygen therapy.
• Existing or locally derived anticipatory care plans can be used.
• Anticipatory care planning should be recorded in the Electronic Key Information Summary.
Withdrawal of home oxygen therapy

- Appendix 5 - guidelines
- Sample protocol for withdrawal of LTOT/ambulatory oxygen for adults (Newcastle PCT)
- Often very difficult to withdraw cylinders or move to concentrator
- Need MDT input in individualized cases
- May not be possible to withdraw oxygen in some cases
• Refer to The Gold Standards Framework. Prognostic Indicator Guidance.

• Sennick Lancet (2010) - compared with room air delivered via nasal cannula, oxygen provides no additional symptomatic benefit for relief of refractory breathlessness in patients with PaO2 more than 7.3 kPa.

• They suggest that less burdensome strategies should be considered after brief assessment of the effect of oxygen therapy the individual
  
  http://endolifecare.co.uk/journal/0101_oxygen.pdf

• http://www.patient.co.uk/doctor/Dyspnoea-in-Palliative-Care.htm
Discharge planning

• Where home oxygen is being considered for home oxygen refer to respiratory medicine services at the earliest opportunity.

• Non respiratory specialists should not prescribe home oxygen for adults unless palliative use or specialist use. (e.g., cluster headaches)
Patient Information

- Any patient who receives oxygen at home will be given written information. This information includes safety advice and advice on using the equipment that has been provided.
- Important contact numbers are also provided.
- Patient information is available for special groups including babies, children, and teenagers.
Oxygen Prescription

- The Scottish Home Oxygen Form (SHOOF) should be completed and emailed to Health Facilities Scotland.
- Changes to the oxygen prescription either flow rate or modality change require an updated SHOOF which will replace their current prescription.
- Each NHS Board should define who will prescribe LTOT in their Health Authority.
- Delegated prescribing individuals should also be identified.
## Modality Recommendation

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<td>Cylinder only</td>
<td>Cylinder Only</td>
<td>Homefill</td>
<td>Homefill</td>
<td>Homefill/lox</td>
</tr>
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<td>Cylinder Only</td>
<td>Cylinder + Conserver</td>
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<td>Homefill</td>
<td>Homefill/lox</td>
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<td>Homefill</td>
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<td>Homefill/lox</td>
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<td>Homefill/Lox</td>
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For Lox/ Homefill/Transportable concentrator may also be appropriate if available
## Useful Contacts

<table>
<thead>
<tr>
<th>Home Oxygen Service, Health Facilities Scotland</th>
<th>Dolby Vivisol</th>
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<tbody>
<tr>
<td>Gyle Square, 1 South Gyle Crescent EDINBURGH</td>
<td>North Suite</td>
</tr>
<tr>
<td>EH12 3EB</td>
<td>Lomond Court</td>
</tr>
<tr>
<td>0131 275 6860</td>
<td>Castle Business Park</td>
</tr>
<tr>
<td><a href="mailto:nss.oxycon@nhs.net">nss.oxycon@nhs.net</a></td>
<td>STIRLING</td>
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<tr>
<td></td>
<td>FK9 4TU</td>
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<td>0800 833 531</td>
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Questions