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Rationalising oxygen use to improve patient safety and to reduce waste

The IMPRESS step-by-step guide

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The consultation for the Strategy for Services for Chronic Obstructive Pulmonary Disease (COPD) in England[1] contains 24 recommendations for improvements in the delivery of care for people with COPD and asthma. As it comes without additional funding, efficiencies will need to be made to balance the books. How should you get started in the current tough financial climate?

IMPRESS has produced a guide More for Less that recommends that one area of potential waste, and ineffective care that is crying out for change, is in the prescribing and ordering of oxygen. (See extract at Appendix 1). According to the national consultation document over 60% of home oxygen is used by people with COPD.

Here is our step-by-step improvement guide. If you follow these steps we would expect that you will improve care. You will also probably release savings that we hope you would negotiate with your local commissioner could be reinvested in implementing some of the other recommendations in the national strategy. You can start this now.

Note this guide refers to adult patients.

Step 1 – **To improve care for prospective patients**, set up a dedicated home oxygen service with a clear pathway, evidence-based protocol and rigorous data collection and analysis. Integrate the service with other COPD services, and share information with all clinicians who look after the patients receiving oxygen.

Step 2 - **Agree clear rules in hospital and with general practices** about who has authority to sign for and therefore initiate home oxygen using the home oxygen form (HOOF – for further information about the HOOF see Appendix 2). The rule should be that only the respiratory team in hospital or the home oxygen service can sign the forms and initiate it. It will be important to share this, and the evidence, with palliative care colleagues who may currently prescribe oxygen.

Step 3 – **Ensure practices have the appropriate equipment**, which is likely to need investment in finger pulse oximeters. These are cheap and easy to use, and a simple oxygen screen by the GP or practice nurse will save unnecessary referral. Only those with SATS at 92% and below need referral for oxygen assessment. Be guided by NICE Chronic Obstructive Pulmonary Disease update 2010.[2]

Step 4 – **Ensure there is well-written literature for clinicians and patients** so that everyone understands the different modalities and assessment: as examples see the British Thoracic Society information and the British Lung Foundation information and Department of Health. Please note that these may be subject to change, as a review of the provision of oxygen is soon to be completed at the time of writing.

- **Long Term Oxygen therapy (LTOT**): provision of oxygen therapy at home on a continuous and long-term basis, ideally for at least 15 hours daily to correct chronic hypoxaemia to prevent complications and so improve survival. Usually delivered by an oxygen concentrator.

[1] http://www.dh.gov.uk/en/Consultations/Liveconsultations/DH_112977
[2] http://guidance.nice.org.uk/CG101 downloaded September 2010

- **Ambulatory Oxygen** provision of oxygen outside the home and refers to the provision of oxygen therapy during exercise and activities of daily living. This is for people whose resting oxygen is normal but who desaturate on activity, and for those on LTOT to enable them to leave home.

- **IOT (intermittent oxygen therapy)** previously known as **Short Burst (SBOT) or *PRN* Oxygen Therapy**. The evidence is that it "Probably does not benefit the majority of patients with moderately severe COPD who exercise for more than a very short period of time."[3] And "Oxygen prescribed on the basis of breathlessness alone across a large population…. does ***not*** improve breathlessness for the majority of people."[4,5] Where possible IOT/SBOT should be avoided and alternatives such as maximising medication or using fan therapy[6] offered. If that is not possible it should be made clear to the patient that this is a *temporary* measure. Existing patients on IOT/SBOT for breathlessness should be offered support to stop using it. The Strategy for COPD in England Consultation Impact Assessment estimates that 75% of IOT/SBOT users could safely be removed from IOT/SBOT after a clinical assessment.[7] Note that IMPRESS guidance on this is intentionally stronger than that in the NICE quick reference guide 2010.[8]

- The guidelines on emergency oxygen state that pulse oximetry must be available in locations where (emergency) oxygen is being used.[9]

Step 5 – **Review existing oxygen provision**. Using real-life examples (eg South East Essex and Hartlepool that have quantified their savings and improvement, see Appendix 1 for more), develop the case for prioritising a review of oxygen services. For example, South East Essex started by reviewing patients on high cost tariffs of over £5 per day. Of the 22 patients on a high cost tariff, when reviewed by either the consultant in outpatients, or at home by a nurse specialist, or through an LTOT assessment they found:

- 3 no longer required home oxygen
- 14 were re-categorised to a lower tariff
- 4 had the correct order
- 1 was unwilling to change his order

This amounted to a cost saving of £76,993 in a year. Once rolled out across South East Essex, of 547 patients on oxygen, oxygen was removed from 43 patients and changed in 138 (25%). The savings across the PCT once all the provision was reviewed was nearly £290,000.[10] This does not include savings of clinical time gained through having fewer patients to review. See Appendix 3 for the South Essex

[3] Roberts CM Short burst O2 therapy for relief of breathlessness in COPD Thorax **2004**;59:638-40
[4] Currow DC, Agar M Palliative Medicine 2009:23:309-316

[5] Abernethy AP .Effect of palliative oxygen versus room air in relief of breathlessness in patients with refractory dyspnoea: a double-blind, randomised controlled trial.Lancet. 2010 Sep 4;376(9743):784-93.

[6] Galbraith S, Fagan P, Perkins P, Lynch A, Booth S. Does the use of a handheld fan improve chronic dyspnea? A randomized, controlled, crossover trial. J Pain Symptom Manage. 2010 May;39(5):831-8.
[7] http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_113280.pdf
[8] http://guidance.nice.org.uk/CG101/QuickRefGuide/pdf/English
[9] BTS Guideline for Emergency Oxygen Use in Adult Patients 2008;63:Suppl VI
[10] Deeming C et al. Thorax 2008; 63:566

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checklist.

Step 6 Specifically identify patients with cluster headache who are provided with oxygen and review their HOOFs. Cluster headache is an excruciating headache that occurs in attacks. High flow short-burst oxygen (100% oxygen at 12 L/min for up to 15 minutes) aborts attacks in some patients with cluster headache.[11] This is the only evidence-based treatment for short-burst oxygen therapy in patients who do not have hypoxaemia, but HOOFs for these patients are often completed by health professionals not familiar with oxygen therapy; there are often delays in patients with cluster headache obtaining appropriate oxygen therapy; it is not ordered in a cost-effective way and health professionals and patients are not aware of the daily tariff independent of use or non-use. An example of patient information and health professional information on organising oxygen in a clinically and cost effective way are provided at Appendix 4. If patients with cluster headache have not found oxygen helpful the HOOF needs to be cancelled. There are currently no formal arrangements for education of patients starting oxygen for cluster headaches or for their review.

Step 7 - **Approach the payor (this could be the commissioner or the acute trust) with the case for a permanent team,** building in a review at three months. As an illustration, set up costs in Stockport were about £56,000 per year, including equipment and staff. Describe the return on investment. You will rationalise the use of oxygen across a defined population and set up a sustainable and effective process. In return, you can ask that any savings are reinvested in respiratory care. Note that savings in year 1 are likely to be highest as this is when you exclude inappropriate prescribing. Savings will then scale down.

It is important to note that the prescribing information from NHS Prescriptions Service is not available at individual practice level, but only at PCT level, therefore individual practices will not have practice-based information and are therefore unlikely to own the problem.

Step 8 Find out who holds the oxygen register. It ought to be held by the oxygen service provider, but it may be held by the commissioner and should be shared between both and discussed at the local Respiratory Network (strategy group or community of practice). This is provided monthly by the local oxygen supplier eg Air Liquide, BOC or Air Products. This should give you information about:

Type of therapy	No of patients and patient name and GP	Diagnosis (not always completed)	Prescriber, prescription	Annual unit cost	Usage	Total cost (by month)
Intermittent (Short burst)						
Ambulatory						
Long Term						
Long term and ambulatory						
Other combinations						
Total						

[11] Cohen AS, Burns B, Goadsby PJ. High-flow oxygen for treatment of cluster headache. JAMA 2009;302(22):2451-2457.

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See Appendix 5 for an example of a regional level quarterly report

Step 9 - **The next task is administrative**. This can either be done by a centralised oxygen team or devolved to practice level eg as part of a Prescribing Incentive Scheme or Local Enhanced Service (LES).

- **Clean the register** – removing people no longer living in the defined population because they have moved away or died.
- Review the register for obvious errors – eg duplicate prescriptions and multiple modalities
- Look at those patients who have never used it or are using more cylinders than you would expect

Some places eg Southend started with patients on an oxygen tariff of more than £5 per day and identified 22 patients in this category. At practice level assume one hour of GP time is sufficient to review the information on 15 patients on a PCT oxygen register (in one example this identified 3 patients who had died, 3 who had moved from the practice, 2 who were not coded for oxygen by practice and 7 who were coded correctly by supplier and practice).

Open Exeter – the primary care IT infrastructure across most of England, Wales and Northern Ireland, (formally known as NHAIS) currently offers a very useful tool for validating HOS invoices including checking if people for whom you are receiving invoices have died or moved away.
https://nww.openexeter.nhs.uk/nhsia/index.jsp is the home page for Open Exeter; you will need an account number to access further pages.

https://nww.openexeter.nhs.uk/nhsia/genhelp/HomeOxygenHelp.jsp The home page for oxygen - accessible to anyone on the NHS system

Speak to your PCT Pharmacist if you require further help.

Step 10 – Consider the particular case of oxygen provision in **intermediate care settings** and audit the type of oxygen used. For example – consider if concentrators could be installed for the patient stays of up to 6 weeks, which is what is provided in nursing homes.

Step 11 – **Use available, or develop new, education programmes**. The focus for health professionals should be on oxygen being a treatment for hypoxaemia not breathlessness, including in palliative care and cardiology; the practicalities of arranging oxygen, the daily tariff and importance of review. An example of information on oxygen prescribing for GPs is attached at Appendix 6. A particular focus for patients should be on those who have become psychologically dependent on IOT/SBOT and therefore considerable education will be required both for patients and healthcare professionals about other interventions for breathlessness.

Step 12 - **At this point, there needs to be a specialist team who can review patients individually.** There are guidelines for when this should occur. Some teams have appointed a nurse for 3 months to do the assessments, others have a community team. See examples of different models in the IMPRESS guide More for Less (extract in Appendix 1). Set up appointments with those patients to review their need for oxygen offering home or community clinic appointments. Even if no formal assessment is possible, visit all patients on oxygen for a safety/risk assessment visit eg to check there are no cylinders next to cookers or open fires. Flag those who would benefit from a fuller assessment when resources are available.

To assess how much capacity and demand:

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Number of people on oxygen x time taken for an assessment (about an hour per review) = demand

Amount of resource required (equipment) x staff time to run the tests = capacity

As a guide, in a population of 300,000 you might expect about 450-500 patients, needing a team costing about £27-30,000 per year.

Check if there are any rate limiting steps/bottlenecks and sort this process out first, to ensure a smooth flow of patients through the system.

Step 13 For those assessed as not needing oxygen, explain this to the patient and assess if they will need ongoing support to stop. For those who don't, discharge from the service and stop the prescription by completing the HOOF which is sent to the service provider, recognising that the patient's disease progression may mean that at some point they will need oxygen, so that they will still need to be included in any primary care screening programme. Allocate responsibility for checking that services that have been stopped do stop and communicate this to all involved in the patient's care.

Note that there need to be more strategies tested for helping people withdraw from oxygen use. One of the Lung Improvement pilots (July 2010) is looking at this led by the Royal Free Hospital on behalf of the North London and North East London Health Innovation and Education Cluster (HIEC) across NHS Camden and NHS Waltham Forest. The year-long pilot will look at patient characteristics and health status, maintained withdrawal at six months, impact on healthcare use and quality of life, and use of alternative therapies.

Step 14 - **For those assessed as likely to need LTOT** ideally they will need two appointments two weeks apart during a period of stability, but in practice, if the assessment is thorough, and done when the patient is truly stable, one appointment is probably sufficient.

Step 15 - **Conduct a specialist assessment**. Explain to the patient what oxygen they need. Order oxygen using the HOOF and also the home oxygen consent form (HOCF) (See Appendix 2)

Step 16 - **Review and monitor usage**. If the patient is in hospital, clinical teams should follow the BTS oxygen guidelines for adults and their recommendations for titration by target saturation.

Step 17 - **Create a list of those identified as at risk of oxygen poisoning and share** with the GP practice, the local Accident and Emergency department and the ambulance service, as well as providing an oxygen alert card that has been shown to be effective[12] and can be ordered from the British Thoracic Society**.** Alternatively, use a Patient Specific Protocol **(**PSP)[1] used effectively for respiratory patients by the London Ambulance Service.[13] (See Appendix 7 for this and a checklist from Southend NHS Trust).

[12] Gooptu B, Ward L, Ansari SO, Eraut CD, Law, Davison AG. Oxygen alert cards and controlled oxygen: preventing emergency admissions at risk of hypercapnic acidosis receiving high inspired oxygen concentrations in ambulances and A&E departments. Emergency Med Journal 2006; 23: 636-8.
[13] The role of Patient Specific Protocols (PSPs) to regulate oxygen delivery during acute ambulance transport in patients with chronic type II respiratory failure and COPD: efficacy of use and effect on length of stay (LOS). Stern M, Broomfield H, Kulnik T, Whitbread M, Restrick L. Thorax 2008: 63 (Suppl VII);A131

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Step 18 - **Review the service performance.** Measurements could include (aim should be 100% unless specified otherwise):

- Existing patients reviewed within [time]
- Percentage patients who have had a safety check
- Percentage of patients reviewed within [time] of initiation of oxygen therapy
- Percentage patients whose prescription/HOOF is managed by the oxygen service
- Cost of running the service per year

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APPENDIX 1

Extract taken from IMPRESS More for Less downloadable from www.impressresp.com

1. Rationalising oxygen prescribing (note, IMPRESS will be producing a separate fuller guide to this, to help commissioners)

As stated in the Consultation Impact Assessment of the National Strategy it is estimated 30% of patients on home oxygen therapy derive no clinical benefit from it, and 20% of people with COPD would benefit from long term oxygen therapy but do not get it. We also know from studies[14] 30% of admitted COPD patients are given high flow oxygen regardless of need and are compromised when admitted. This is unsafe and an inefficient use of oxygen. *The key message is that oxygen is not for breathlessness but for oxygen deficiency (hypoxia), but that is often not how it is used.* Therefore there are opportunities to rationalise its supply. This will require education of patients and health professionals as it is still a widely held (mis)belief that oxygen is an effective treatment for breathlessness. Currently there is no requirement to assess before prescribing. In some places there is inappropriate and costly prescribing of oxygen due to error in the use of HOOF forms, lack of knowledge, habit, or patient demand. In-hospital prescribing of oxygen also requires review across in-patient units including palliative care services[15]. At a national level we argue that the first step would be to change the regulation on oxygen prescription. Non-specialists should not be allowed to prescribe oxygen. This would remove immediately the source of most inappropriate prescriptions and require GPs and non-expert hospital specialists to seek appropriate assessment including pulse oximetry prior to prescription.

We strongly recommend that the national teams involved in improving efficient procurement are consulted on the renegotiation of the oxygen supplies contract which should be based on use not days prescribed (and maybe not used).

Locally, there are a number of services that have been set up successfully to significantly improve the service and reduce the waste. These work across primary and secondary care, involve inter-disciplinary education, and assessment of new patients as well as review of existing. They all involve a specialist assessment service.

Note: there are three types of oxygen:

- **Long Term Oxygen therapy (LTOT**): provision of oxygen therapy at home on a continuous and long-term basis, ideally for at least 15 hours daily to correct chronic hypoxaemia to prevent complications and so improve survival. Usually delivered by an oxygen concentrator
- **Ambulatory Oxygen** provision of LTOT outside the home and refers to the provision of oxygen therapy during exercise and activities of daily living
- **Short Burst or *PRN* Oxygen Therapy**. The evidence is that it "Probably does not benefit the majority of patients with moderately severe COPD who exercise for more than a very short period of time.'"[16] And "Oxygen prescribed on the basis of breathlessness alone across a large population…. does ***not*** improve breathlessness for the majority of people'.[17] The guidelines on emergency oxygen state that pulse oximetry must be available in locations where (emergency) oxygen is being used.[18]

[14] National COPD Audit 2008: Report of the National Chronic Obstructive Pulmonary Disease Audit 2008: Resources and Organisation of care in Acute NHS units across the UK http://www.rcplondon.ac.uk/clinical-standards/ceeu/Current-work/ncrop/Documents/Report-of-The-National-COPD-Audit-2008-resources-and-organisation-of-care-in-acute-NHS-units-across-the-UK.pdf accessed 21 May 2010

[15] Does palliative home oxygen improve dyspnoea? A consecutive cohort study Currow et al. Palliat Med. 2009 Jun;23(4):309-16. Epub 2009 Mar 20.

[16] Roberts CM Short burst O2 therapy for relief of breathlessness in COPD Thorax **2004**;59:638-40

[17] Currow DC, Agar M Palliative Medicine 2009:23:309-316

[18] BTS Guideline for Emergency Oxygen Use in Adult Patients 2008;63:Suppl VI

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Existing patients on short burst oxygen therapy for breathlessness should be offered support to stop using it.

The opportunities to improve its use are numerous:

	Cost saving	**Impact on Quality**
Overuse	Oxygen for breathlessness including palliative use - oxygen paid for by a daily tariff based on litres whether used or not	
Misuse	Oxygen for breathlessness including palliative use	
Underuse	Oximetry: assess need for long term oxygen therapy (LTOT) and identify breathlessness without hypoxaemia	LTOT is to improve survival so important to give to patients who would benefit. Also offer quit smoking support Pulmonary rehabilitation Other treatments for breathlessness
Under co-ordination	Oxygen assessment Oxygen reviews	Develop shared agendas with patients

Source: Dr Louise Restrick, Whittington Hospital

2. Models of service delivery

There are a number of options for providing assessment and review services. Some are specialist nurse led and run, others involve physiotherapists (eg Nottinghamshire) and others, technicians.

NHS Lincolnshire Community oxygen assessment service

Review and reassessment: Specialist nurse-run service receives data monthly from oxygen supply company: includes prescription and concordance information.
Referral of new patients: Patients referred to service, assessed at home or at community clinic. If patient needs oxygen, referred to secondary care for assessment. If not, discharged, some with ongoing support. Costs of service: includes equipment and 3 WTE and HCP education.
Source: Wendy Walmsley, Respiratory Nurse Specialist, Lincolnshire PCT

CHEST service, Newcastle PCT

Two nurses were trained to review the indication for and funding of patients being treated with home oxygen and assess patients under consideration for home and ambulatory oxygen therapy. Savings were made through avoiding initiating or withdrawal of inappropriate therapy and identifying inaccuracies in the PCT database. Click here for the NHS Evidence entry.

South East Essex

As part of a system-wide move to more community-based care that integrates primary and secondary care and includes a hospital at home team, a choice of spirometry services, community-based clinics and pulmonary rehabilitation, there is also an oxygen assessment team modelled on the CHEST team. Now almost all oxygen assessments are done in the community. In the first year this resulted in a cost saving of £130,000 in oxygen[19]. Click here for more information.

Hartlepool

Its CRAMS service provides domiciliary management of exacerbations of COPD; assessment of new patients' needs for long term oxygen therapy (LTOT) and review

[19] Thorax 2008;63:566 doi:10.1136/thx.2008.098913

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and re-assessment of existing patients receiving LTOT. During the initial review of the register, LTOT was removed with patients' agreement from 27%; five were supported in withdrawing from oxygen. For new referrals, ten needed LTOT but in 86% it was not indicated. Full year savings were £21,850 for discontinuing LTOT. New referrals notionally saved £48,895 – a combined total of £83,876. Significant additional savings can be attributed to community management of exacerbations preventing hospital admissions.
Source – and for more detail: Ms Dorothy Wood and Dr. Niall Keaney, Hartlepool Primary Care Trust

Stockport
OASiS (oxygen assessment service in Stockport) was set up to review the register. Most patients had either never had a guideline compliant assessment, or never had a review after their initial assessment. There was a mix of initiators of the original HOOF from primary, secondary and tertiary care; there was a wide range of diagnoses and many with no diagnosis stated. The team comprises 1.5 nurses, and 0.5 admin support. Equipment was purchased with set up costs of £30,000. All 500 adult patients on oxygen therapy were given the opportunity to have an assessment and safety checks. Oxygen prescription was altered in most patients with over 200 found to have no requirement for oxygen therapy. In addition, ambulatory oxygen was provided as a new service. Savings, net of the set-up and running costs, amounted to £150,273 between April 09 – Feb 10. The monthly oxygen invoice has been reduced by £8000 - £10,000 per month. The next step in the service development plan is for OASiS to be the single portal of referral for new Oxygen prescriptions. Based on last year's numbers, the team estimates 300 new oxygen therapy patients per year, with the same number coming off oxygen therapy each year.
Source: Dr Stephen Gaduzo, GPwSI, Stockport

NHS Somerset
The Community COPD specification for tender required providers to reduce the annual spend on the long term oxygen contract from £1.6m to the budgeted figure of £1.3m (prior to the new contract let in April 2008). It incentivised providers with a 50% share of underspend against the £1.3m budget in year 1; 25% in years 2 and 3.
Source: IMPRESS case study

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Home Oxygen Order Form – notes from Department of Health to accompany the Home Oxygen Order Form and the Home Oxygen Consent Form, downloaded from http://www.pcc.nhs.uk/homeoxygen?_pid=118 and http://www.pcc.nhs.uk/hoof August 2010, dated February 2010 update.

PLEASE NOTE, THE FORMS ON THE PCC WEBSITE ARE NOT UP-TO-DATE, AND NEW ONES ARE DUE. WE EXPECT THEM TO BE LOADED ONTO THE SAME SITE. WE WILL UPDATE REFRENCES IN THIS DOCUMENT WHEN AVAILABLE. WE HAVE ENCOURAGED THE AUTHORS TO MAKE THESE AVAILABLE ELECTRONICALLY.

"The Home Oxygen order form (HOOF) can be downloaded here. This should be used in both England and Wales.

Any other forms in use prior to 31st October should now be destroyed (although older forms will not necessarily be rejected, orders may be severely delayed).

Currently 24% of forms are rejected, resulting in a delay in the delivery of supplies to patients and increased administration. NHS Connecting for Health have therefore been working on an electronic version of the form which is available via Open Exeter here . This displays the fields of information that suppliers must have to be able to fulfil orders – so using this means that your order is less likely to be delayed.

It can be used now - although currently can only printed and faxed to your usual number. However later this year, in England, it will be possible to email the electronic form directly to suppliers. Not only will this speed up the ordering process, it will also help to streamline invoicing systems.

Home Oxygen Consent Form (HOCF)

Patients receiving oxygen for the first time will also need to complete a Home Oxygen Consent Form (HOCF). This is not providing consent to oxygen treatment but giving consent for the transfer of their personal details (eg name, address etc) to the Home Oxygen Service Supplier. Without this consent being given action could be brought under the Data Protection Act 1998 against both the healthcare professional and the Supplier."

Hints and tips for the HOOF to minimise errors recommended by one of the oxygen supply companies.

Note: A new form is due out shortly – we understand both in hard copy and electronically, so these points are not numbered, as box numbering is changing from the current HOOF. These hints and tips relate to the current form, but we expect most of them to remain valid for the new form.

Typical errors
Incomplete prescription details
Incompatibility of disposables with % flow rate
Specific hours/flow rate missing (do not put "as and when required or "PRN")
Unclear indication of a 4-hour response requirement

Tips

Downloadable from www.impressresp.com
Be specific about service delivery or requirement for patient eg machine to be left locked/unlocked/justification for lightweight cylinder service/more than one disposable type eg high flow cannula mask and cannulae.
Check what can be delivered on a first visit and what is normally provided on a second visit (eg conservers for the few people that may need them)
Make any signature needed clear with position and relevant contact details
Legible and accurate completion (note, the new form should be available electronically)
Prescription details must be numeric never “PRN” or “as required” or “night use”
Accurate delivery address details
Accurate contact details, including landline and backup mobile numbers to aid organisation of delivery
Access to patient’s home should be confirmed for patients being discharged from hospital

If a change is needed:
If the patient has died: instructions to remove the service can and will be accepted from next of kin or a clinician orally or in writing
If the patient no longer requires the service, instructions to remove equipment required written request from the prescribing clinician
If only part of the service required, instruction to remove equipment requires a HOOF;
If a patient moves house, a new HOOF and removal of service instruction is needed
If a patient moves to temporary respite care, a new HOOF is needed as existing services will remain in place and an additional service provided temporarily
Holidays – check with the supplier how much notice is required – probably about two weeks. If the oxygen is to be delivered to the destination the patient must ensure precise delivery instructions are given

Backup cylinders – check with the supplier.

Patient information from the supplier to a requesting clinician will normally require a formal (on official letterhead) written request.

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APPENDIX 3

South Essex Home oxygen service checklist for nurse team

Existing patients - check:

- Patient is alive
- Patient is living within the PCT postal codes
- Tariffs of patients (start with high tariff users). Review notes/review clinic letters/phone calls to patients to check usage/home visits to check usage (tariff).
- Then check all other users.
- Put patients into various categories.
- Review notes/review clinic letters/phone calls to patients to check usage (tariff)/home visits to check usage. NB. With cluster headaches check number of hours being used.
- Check there are valid and correct oxygen assessments

New patients - check:

- Statement to make sure all new orders live in the PCT areas.
- Review tariff. Review notes/ review clinic letters/phone calls to patients to check usage/home visits to check usage.
- In questionable cases co-ordination between hospital clinic and oxygen team can resolve problems.
- Check there are valid and correct oxygen assessments

Example of this process in South East Essex: 547 patients on oxygen. Category changed in 138 (25%), usually category changed to lower tariff. Oxygen removed in 43 (8%).

Savings: approximately £290.000 per year

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Information for Patients in England and Wales: Arranging, trying and using Short-burst Oxygen Therapy to abort Cluster Headaches

High flow short-burst oxygen is effective at aborting attacks for some patients with cluster headache. You should be offered to try high flow short-burst oxygen as soon as you have been diagnosed with cluster headaches.

Oxygen can be ordered for you by your doctor, either GP or neurologist, provided the order forms are completed appropriately. If your doctor needs information on how to do this a leaflet with details 'Information for GPs and Neurologists: Arranging Short-burst Oxygen Therapy for patients in England and Wales with Cluster Headaches' is attached.

You will also need to sign a form yourself giving your consent for information to be shared so that the company providing oxygen has the details they need to provide you with oxygen at home.

You should be provided with:

- Two free-standing cylinders to use at home (or work) so you can easily switch to the second cylinder when the first cylinder is empty and order a replacement. Each cylinder can treat between 8-30 attacks depending on the speed of response.
- Ambulatory cylinders so you can use oxygen easily when outside the home (carried in your car and/or in a storage backpack) if needed. These cylinders are much smaller so only contain enough oxygen to treat a small number of attacks (again depending on the speed of response).
- A mask called a non-rebreathe mask which has a reservoir bag and is used with the two holes covered.

You should use the oxygen at a setting of 12 litres/minute. If successful, an individual attack should be aborted within 15-20 minutes. If the attack is successfully aborted, you should stay on the oxygen for 5-10 minutes after the pain has gone to "mop up" the attack and prevent possible rebound, which some patients find is a problem.

If the attack is not aborted within 20 minutes you are unlikely to get relief for that attack by continued use and you should turn off the oxygen. This does not mean that further attacks will not respond to oxygen and it is worth trying oxygen again at the start of the next attack.

You may find if helpful to keep a diary of attacks and how well they respond to oxygen.

If you do not find oxygen helpful, or do not want to continue to use it, you should let the doctor who ordered the oxygen know so that the oxygen can be cancelled. Oxygen is paid for on a daily basis whether you use it or not.

More information is available from the oxygen company who will provide your oxygen or OUCH (Organisation for the Understanding of Cluster Headache) at www.**ouch**uk.org; the UK Charity whose aim is to raise awareness of cluster headache with the medical profession and the public and to offer support and guidance to sufferers and their families.

Information for GPs and Neurologists:

Downloadable from www.impressresp.com

Arranging Short-burst Oxygen Therapy for patients in England and Wales with Cluster Headaches

Although rare, cluster headache is an excruciating headache that occurs in 1 – 8 attacks a day or more. High flow short-burst oxygen aborts attacks in some patients with cluster headache (100% oxygen at 12 L/min for up to 15 minutes). This is the only evidence-based use for short-burst oxygen therapy in patients who do not have hypoxaemia.

It should be offered to patients to try as soon as the diagnosis has been made so that those who find it helpful can continue to use it (and those that don't stop using it). Cluster headache attacks mostly occur at unpredictable intervals; a patient can be at work, out shopping, walking the dog and within a few minutes be in excruciating pain. For patients who find that oxygen aborts their attacks, it needs to be provided both at home as free-standing cylinders and may be needed in a form that can be used when out and about ie ambulatory cylinders.

All patients starting oxygen need education and information so that they understand how to use oxygen safely and effectively.

All home oxygen cylinders are provided by one of a number of regional contractors according to a daily tariff irrespective of how many cylinders are used.

Oxygen can be ordered by any health professional provided the order forms are completed appropriately. It should therefore be ordered when the diagnosis of cluster headaches is made by the doctor, either GP or neurologist, seeing the patient.

To order oxygen:

1. Complete in full a Home Oxygen Order Form (HOOF), available from http://www.pcc.nhs.uk/hoof.
   - Record clinical code 20 (Cluster headache) in Section 1.17 and state 'cluster headache sufferer' in clinical information
   - Complete Section 7 Short Burst Oxygen Therapy:
     - 7.1 flow 12 Litres/minute
     - 7.2 duration 15 Minutes/day. Patients should be reassured they can use more than this but use is estimated as an average over a prolonged period.
     - 7.3 Services. Mask 100% oxygen.
   - If needed complete Section 6 Ambulatory Service.
     - 6.1 12 Litres/minute
     - 6.2 < 1 Hour/day. Patients should be reassured they can use more than this but use is estimated as an average over a prolonged period
     - 6.3 Services. Mask 100% oxygen
   - Delivery details section 8. Tick Standard.
2. Ensure the patient has completed a Home Oxygen Consent Form (HOCF) available from http://www.pcc.nhs.uk/uploads/HOS/December%20Uploads/DH%20APPROVED%20HOCF.pdf. Home oxygen will only be provided if this form has been completed. The HOCF should be filed in the patient's notes.
3. Fax the HOOF to the appropriate contractor listed on Page 2, Section 8 of the HOOF so that short-burst oxygen can be organised.

Useful information to offer to patients starting oxygen:

Patients should be advised to use oxygen for no more than 15-20 minutes at a time. If the oxygen has not worked by 20 minutes, the patient should turn off the oxygen and try again with the next attack. If the attack is successfully aborted, the patient should be advised to stay on the oxygen for 5-10 minutes after the pain has gone to "mop up" the attack and prevent possible rebound, which is described by some patients.

Downloadable from www.impressresp.com
When starting oxygen patients may find if helpful to keep a diary of attacks and response to oxygen.

Patients need to know that if they do not find oxygen helpful, or they do not want to continue to use it, they must let the health professional who ordered the oxygen know so that the HOOF can be cancelled by faxing the supplier.

Equipment details

Mask interface

Non-rebreathe mask with a reservoir bag used with the two holes covered (historical not evidence based).

Free-standing cylinders

Patients need two free-standing 2000 L cylinders so they can immediately switch to a second cylinder and order a replacement for an empty one ensuring continuity of supply and treatment. Each cylinder can treat between 8-30 attacks depending on the speed of response.

Ambulatory oxygen

Ambulatory cylinders enable oxygen use flexibly outside the home (carried in cars and in storage backpacks). However, as they are much smaller cylinders (typically 400 L) they only contain enough oxygen to treat a small number of attacks.

Liquid oxygen therapy (LOX)

A small number of patients with severe chronic cluster headache (3-6 attacks daily throughout the year) who find oxygen aborts their headaches may benefit from liquid oxygen because of their high total hours of high flow oxygen needed. One LOX cylinder can provide 1 hour of treatment.

Other sources of education and information:

- Hospital neurology team
- Hospital respiratory team (provide education and information to a large group of respiratory patients using oxygen).
- OUCH (Organisation for the Understanding of Cluster Headache) www.**ouch**uk.org; UK Charity whose aim is to raise awareness of cluster headache with the medical profession and the public and to offer support and guidance to sufferers and their families.

Downloadable from www.impressresp.com

APPENDIX 5 – example of report from supplier, SHA level, showing variation

Supplier:
Region:

PCT	HOS Patients	Quarterly Spend	No of Installs/Qtr	No of Removals /Qtr	No of Next Day Deliveries	Average charge bands for the Quarter 1st January - 31st March 10													
		£				CC1	CC1	CC2	CC2	CC3	CC3	CC4	CC4	CC5	CC5	CC6	CC6	CC7	CC7
	Avg number of patients for the quarter					CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average	CC % of PCT Population	% Over or Under Regional Average
a	275	75,469	103	113	283	0%	-20%	41%	3%	22%	25%	39%	9%	16%	-13%	3%	-45%	3%	-20%
b	369	93,449	176	168	434	0%	-1%	37%	-6%	22%	25%	36%	0%	17%	-8%	5%	-11%	3%	-26%
c	1,015	262,792	462	482	1108	0%	4%	37%	-6%	18%	4%	39%	10%	16%	-13%	5%	-2%	2%	-53%
d	477	112,934	255	271	461	0%	27%	26%	-34%	27%	52%	40%	11%	13%	-32%	3%	-46%	3%	-30%
e	872	205,935	418	405	1041	0%	-17%	35%	-13%	18%	0%	40%	10%	19%	3%	3%	-39%	3%	-30%
f	1,363	336,494	633	617	1652	0%	11%	47%	19%	14%	-17%	31%	-14%	20%	4%	5%	1%	7%	77%
g	1,260	333,699	407	444	1340	0%	-22%	43%	9%	13%	-28%	33%	-7%	27%	44%	6%	9%	5%	22%
h	455	125,348	180	155	489	0%	-9%	31%	-22%	22%	26%	39%	8%	12%	-37%	10%	83%	3%	-30%
I	1,079	293,632	501	515	1372	0%	19%	43%	7%	18%	2%	35%	-1%	17%	-10%	7%	23%	4%	-9%
TOTAL/AVERAGE	**7,165**	**1,839,752**	**3,135**	**3,170**	**8180**	**0%**		**40%**		**18%**		**36%**		**19%**		**5%**		**4%**	

Key to codes: CC1 Emergency ; CC2 i) On discharge pending formal assessment ii) IOT ; CC3 Long term oxygen therapy ; CC4 Long term oxygen therapy and standard ambulatory supply; CC5 Standard ambulatory supply only; CC6 Long term oxygen therapy and lightweight ambulatory supply; CC7 Lightweight ambulatory supply only

APPENDIX 6

Downloadable from www.impressresp.com

OXYGEN PRESCRIBING

Information for General Practitioners

Step 1	Step 2	Step 3	Step 4	Step 5
Who's recommended oxygen?	**What's the indication?**	**What else is being offered?**	**How much is needed?**	**When's the review date?**
If oxygen has been requested by a hospital team, they can complete the HOOF & HOCF themselves in liaison with the chest team. Patients commenced on oxygen should have an initial assessment by a specialist, ABG checked and other treatment optimised. Assessment should be when stable; $\geq$ 6 weeks after most recent exacerbation.	Oxygen is prescribed for hypoxaemia to improve survival - not for breathlessness. If the patient's oxygen saturations are above 92% on room air they are unlikely to need oxygen (unless they desaturate on activity or overnight). Complete the diagnosis on the HOOF, for example 01=COPD. A full list is on the Air Products website.	Make sure that for anyone receiving oxygen that other treatments have been offered, for example: Smoking cessation Pulmonary rehabilitation Palliative care (where appropriate).	Oxygen is charged at a daily rate whether it is used or not. Specify flow rate and how many hours per day for each type of oxygen. LTOT is given at home usually by oxygen concentrator for >=15 hours a day. Ambulatory oxygen is to enable those on LTOT to leave the home (or for those who desaturate on activity).	Patients starting oxygen should be reviewed at 4-6 weeks and all patients receiving oxygen should be reviewed regularly. Consider auditing your patients on oxygen and discussing their cases with the community respiratory consultant or respiratory nurse. If a patient no longer requires oxygen notify Air Products on 0800 373 580 for the equipment to be collected.

HOOF = Home Oxygen Order Form
HOCF = Home Oxygen Consent Form
ABG = Arterial Blood Gas
LTOT = Long Term Oxygen Therapy

Downloadable from www.impressresp.com

References

Copy of HOOF http://www.pcc.nhs.uk/hoof
British Thoracic Society Guidelines http://www.brit-thoracic.org.uk/clinical-information.aspx
BLF Oxygen Patient Leaflet http://www.lunguk.org/you-and-your-lungs/diagnosis-and-treatment/oxygen
NICE Guidance COPD (June 2010) http://guidance.nice.org.uk/CG101
Air Products http://www.airproducts.co.uk/homecare/health_authorities/homeOxygenService/SLA.htm

Downloadable from www.impressresp.com

APPENDIX 7

London Ambulance Service NHS Trust

Patient Specific Protocol

This protocol has been specifically prepared for the patient named below and details the treatment to be given in specified circumstances.

Patient's Name : **Date of Birth :**

Address :

Reason for protocol :
Severe COPD
Susceptible to developing type II respiratory failure and severe respiratory acidosis due to oxygen toxicity

Specific Treatment / Instructions :

In the event of ambulance transfer:

1. Patient should receive **low flow oxygen** ie. start at 1 litre/minute via nasal cannulae, aiming to achieve saturation 85 - 90%.

2. Do not nebulise on oxygen under any circumstance.

3. If SaO_2<85% on 1 litre / minute of oxygen via nasal cannulae, increase to 2 litres / minute via nasal cannulae. If necessary, i.e. saturation still less than 85% after 5 minutes, increase to 3 litres/minute, pre-alert hospital and blue light to A&E, with close observation for decreasing level of consciousness

Additional Treatment / Instructions
Please ensure that patient has used own air driven nebuliser before transporting to hospital.

All other aspects of clinical care remain unchanged.

Fionna Moore FRCS FFAEM
Medical Director
London Ambulance Service NHS Trust

M Stern FRCP and
L Restrick FRCP
Consultant Respiratory Physicians
Whittington Hospital NHS Trust

Downloadable from www.impressresp.com

Oxygen Alert Cards - Flagging process between Southend University Hospital Trust and East of England Ambulance NHS Trust

1. Respiratory CNS Southend University Hospital (Lisa Ward) receives the referral and reason for O_2 alert card.
2. The patient and family are educated and provided with a card, mask and copy of the alert protocol. The alert protocol is available on the BTS website www.brit-thoracic.org.uk in the guidelines on Emergency Oxygen – appendix 5b. The cards are available via the BTS.
3. The patient is told that it is an emergency mask only.
4. The patient is told to keep it close to them at all times.
5. The patients' details are recorded from the medical notes and checked with PAS (NHS number and hospital number).
6. The Respiratory CNS informs the PAS department who put an alert on the hospital system.
7. The Respiratory CNS keeps a database on the shared drive on the hospital system.
8. Patient list is shared with Paul Kattenhorn (East of England Ambulance Trust)

The Death Clerk at Southend University Hosital informs the Respiratory CNS know when any patient with the O_2 alert is deceased.

The Respiratory CNS then records the information on the database and forwards details to Paul Kattenhorn by secure email.

Paul Kattenhorn has a nominated manager in the Health and Emergency Operations Centre (HEOC) who is contacted and the details of flags are inputted by the HEOC Manager (or nominated person if he is away from work).

The patient's name, address and special instructions are recorded and they are marked for review in one year (unless the HEOC Manager receives instruction before then from Paul Kattenhorn).

If an ambulance is called to one of these addresses a "Special Situation" warning box will appear where the information can be accessed by the dispatcher and passed on to the attending crew.

Paul Kattenhorn, Clinical Operations Manager (Essex)
Lisa Ward, Clinical Nurse Specialist
Tony Davison, Consultant Chest Physician

August 2010