NHS Improvement - Lung: National Improvement Projects

Improving Home Oxygen: Testing the Case for Change
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Introduction

Case for change: the current position for home oxygen services in England

Home oxygen therapy is provided to about 85,000 people in England, costing approximately £110 million a year. Home oxygen service – assessment and review (HOS-AR) is variable as patients in many Primary Care Trusts (PCTs) do not receive a quality assured clinical assessment and a review of their ongoing need for long term home oxygen.

The variation in provision of HOS-AR increases the potential for poor quality care and waste and it has been estimated that 24% to 43% of home oxygen prescribed in England is not used or provides no clinical benefit.

Gross savings of up to 40% - equivalent nationally to £45 million a year or £300,000 per PCT can potentially be achieved through the establishment of home oxygen services, oxygen register review and formal clinical assessment.

Reducing variation in service provision can help tackle health inequalities and ensure consistency in the safety and efficacy of services. These are among the goals of The Outcomes Strategy for COPD and Asthma in England as outlined in objective 2 and objective 5 of the six shared objectives set out in the strategy.

The first year of project work focussed on continuous patient list review and the systematic utilisation of oxygen usage supplier data to support clinical decision making around therapy alteration (or withdrawal) and to drive more coordinated prescribing and improved multi-disciplinary care.

The project work was undertaken against the backdrop of the national re-procurement of oxygen supply contracts, which was just gathering pace. The re-procurement together with the NHS Quality, Innovation, Productivity and Prevention agenda gave additional context to the work and provided an opportunity for clinical teams to engage local commissioners, finance and medicines management in new and different thinking about Home oxygen service – assessment and review.

This publication is aimed at healthcare professionals, commissioners and other key stakeholders involved in respiratory health services. It draws together the evidence and learning from the work undertaken by the national COPD projects constituting the initial 12 months of the Improving Home Oxygen Services workstream.

NHS Improvement - Lung worked with clinical teams across England supporting them in identifying, testing and implementing the changes needed to achieve good practice in HOS-AR and seeking to understand the key components that have the greatest impact on the patient pathway.

References

2. An Outcomes Strategy for Chronic Obstructive Pulmonary Disease (COPD) and Asthma in England, Department of Health, July 2011
**Improvement approach**

NHS Improvement – Lung invited NHS organisations to work in partnership on projects dedicated to improving the COPD patient pathway and to help address the geographical variation in care that patients receive. Projects plans were submitted from a number of sites including acute trusts, primary care trusts (PCTs) and community organisations.

The primary aims of the project work were to

- Locally define and implement the patient’s home oxygen care pathway in alignment with the standards enshrined within the Good Practice Guide national publication
- Identify and reduce variation in the delivery of care
- Test the components of care that led to an effective HOS-AR model
- Identify the success principles that other organisations and teams could learn from and adopt
- Inform future ‘prototyping’ work.

However, focus was also given to improving the patients experience and outcomes, and to the removal of duplication and waste from the pathway and from specific processes through different ways of working and service redesign.

Through patient list cleansing, rationalising individual patient’s oxygen usage (in terms of flow rate, supply duration and supply devices) in line with their clinical need, supported withdrawal of inappropriate therapy and healthcare provider education to avoid inappropriate prescribing, 9 out of the 12 oxygen workstream project teams delivered collective prescribing cost efficiencies totalling approximately £640,000.

During this ‘testing’ phase of the national programme the project teams have explored the reality of making local service improvements by taking stock of current practice and understanding the implementation process necessary for the delivery of optimal patient care in a challenging environment.

The project sites adopted a systematic approach to quality improvement to ensure that any changes implemented were thoroughly tested and measured. Prior to commencing the work the project sites were required to establish their service baseline through analysis of local data and to understand the variation in services.

Upon the establishment of individual project teams, a period of ‘diagnosis’ followed in order to allow teams to understand the patient pathway and dispel a number of assumptions about the processes, its challenges and the solutions. Potential solutions were tested using the model for improvement and Plan-Do-Study-Act (PDSA) cycles with ongoing measurement to evaluate the impact of the interventions and refine where appropriate.
Common challenges and solutions

Clinical teams at all sites have been focussed on specific aims which have included:

- Develop accurate registers of patients in receipt of home oxygen therapy
- Utilise the home oxygen service data around initiating prescriber, oxygen consumption, flow rates, patient concordance and therapy modality more effectively and in combination with clinical data about individual patients
- Ensuring all existing and future patients in receipt of home oxygen receive clinical assessment and ongoing review in line with best practice
- Improve care for non-respiratory patients in receipt of oxygen by better collaborative working with non-respiratory specialists
- Rationalise prescribing of home oxygen to reflect the clinical need of the local population
- Control home oxygen therapy costs
- Develop and implement effective risk assessment and health and safety procedures
- Achieve greater integration of assessment and review services within wider care pathway.

Whilst each project site has worked on a different part of the home oxygen pathway, a number of key themes have emerged across all oxygen project sites which have enabled the development of six top tips for improving home oxygen services:

1. Provide oxygen assessment and review staff with access to supplier data and support in its effective use
2. Use clinical and supplier data systematically to support appropriate prescribing, clinical assessment with ongoing review and tight cost control
3. Integrate your oxygen service within the wider respiratory pathway and coordinate activities with non-respiratory specialties
4. Promote the message that ‘home oxygen is a treatment for chronic hypoxaemia and NOT a treatment for breathlessness’
5. Work collaboratively to formalise policies and procedures around the safe use of home oxygen
6. Establish ongoing and effective communication between the oxygen team, primary and secondary care to ensure appropriate prescribing, appropriate referrals and continuous education for patients and professionals.
Project outcomes: Emerging success principles and project learning

NHS Improvement - Lung provides structured support to project teams enabling them to solve problems by addressing root causes and by undertaking a systematic approach to service improvement. Teams across the different workstreams of the national programme worked through a number of different challenges in order to achieve their project aims. However some common principles have emerged as critical success factors in all national COPD projects:

1. **Defining and gaining a good understanding of the whole pathway of care** - having a complete understanding of the care pathway supported by robust data to demonstrate the effectiveness of current processes, quantifying performance and variation is essential when embarking on improvement work. This allowed organisations to identify priorities for change and also to benchmark themselves with others locally and nationally.

   Home oxygen project teams used supplier and clinical data on patients’ condition, therapy consumption and compliance together with an improved understanding of the sources of prescribing and sources of referral to local services in order to rationalise therapy in alignment with clinical need.

2. **Taking an integrated approach to service development** - issues and challenges viewed in isolation without due consideration to the whole patient pathway were less likely to lead to sustainable improvements in care provision.

   Oxygen services need to be viewed within the wider respiratory care pathway to maximise the opportunities for integrating with services such pulmonary rehabilitation and to ensure patients receive optimal and coordinated management of their overall respiratory condition.

3. **Clinical collaboration across the care pathway** - effective working relied on the commitment of teams in primary, secondary and community care to improve communication across the patient pathway. Integrated working helped to build positive relationships with health care professionals, departments and organisations, and improve the critical interface between these organisations.

   Home oxygen teams often had to consider patients with a range of conditions not just COPD and as such had to collaborate with non-respiratory specialists in order to ensure coordinated management of patients requiring oxygen for neurological and cardiac conditions as well as patients requiring oxygen for palliative care.
Next action steps for NHS teams seeking to improve home oxygen services

The learning from this first year of project work indicates that other NHS teams considering improving home oxygen services should focus activity in three areas:

1. **Review oxygen usage data and improve data management** – ensure the clinical team has routine access to supplier data and is collaborating with non-clinical colleagues around patient list cleansing, identifying candidates for therapy rationalisation. The clinical team should provide clinical insight to managers and administrators undertaking monthly invoice reconciliation and collaborate in the review of patient compliance using the quarterly concordance reports.

2. **Establish clinical assessment and ongoing review** – identify all patients currently in receipt of home oxygen in order to address any assessment/review backlog, utilise local booking systems to capture referrals for initial assessment and to establish the review cycle. Undertake appropriate therapy modifications, the supported withdrawal of inappropriate therapy, patient safety risk assessment and ongoing patient education.

3. **Clinicians and managers reviewing data together** – access to and effective use of data through collaboration between clinical and managerial staff enabled the project teams to better understand the patient pathway and demonstrate the impact of any change. The routine collection and review of data was important in implementing sustainable improvements and understanding outcomes of any service improvements.

Oxygen teams worked with non-clinical colleagues to understand sources of inappropriate prescribing and inappropriate referrals for clinical assessment. This enabled targeted education to be undertaken within both the community and within hospital settings accompanied by ongoing data review to assess changes in healthcare professional behaviour.

5. **Identifying the key levers and drivers in the system** – by integrating local and national priorities into the work such as Quality, Innovation, Productivity and Prevention (QIPP) project teams raised the profile and priority of the project work with decision makers and helped to achieve improved engagement from senior management teams.

Both the QIPP agenda and the national re-procurement of oxygen supply contracts provided an opportunity for clinical teams to engage other clinical and non-clinical stakeholders in a new dialogue about issues such as home oxygen therapy usage, reporting arrangements, HOS-AR service specification and its integration within the wider care pathways, treatment goals, fire safety, risk assessment and the coordination of community and hospital care.

6. **Value for money** – there was a need to identify and understand the gaps, duplication and waste in the patient pathway in order to make best use of available resources. It was essential to work and communicate with colleagues, commissioners and other stakeholders in service provision in order to maximise these resources and to ensure a consistent and co-ordinated approach to care.

Commissioning, finance and medicines management colleagues worked closely with home oxygen clinical specialists to identify prescribing anomalies, to address waste, to improve the clinical governance in respect of the safe use of home oxygen and to manage the performance of the oxygen suppliers.
3. Service integration and sustainability – undertake process mapping with the multidisciplinary team to understand the current home oxygen patient pathway for the medical conditions being managed. This should be used together with detailed local contextual data about prescribing, usage, costs, home oxygen service activity, demand and capacity in order to ensure the service specification supports the development of a cost-effective pathway and aligns with local commissioning considerations.

Future ‘prototyping’ work

In the forthcoming year of project work sites will be building on the learning from the ‘testing’ phase of work. Sites will be refining the components attributed to the emerging care models and success principles that demonstrated the greatest impact on the patient pathway during the past year.

The prototyping work will define the efficient and high quality care model that reflects best practice, but also demonstrates examples of practical approaches towards sustainable implementation. This will include work that focuses on the delivery of a number of products:

- **Home oxygen services-assessment and review resource hub** - an online toolkit which will identify key data measures and clearly articulate the success principles for sustainable implementation of HOS-AR. This resource will provide case studies, examples of protocols, procedures and pathways together with Top-tips and ‘next steps’ action sheets.

- **Safe use of oxygen support package** - highlighting issues of patientsafety and risk management for the local development of patient education programmes and also the strengthening of local clinical governance arrangements through a partnership between patients, local NHS organisations, oxygen suppliers and fire services.

- **Spread Framework for Home Oxygen Service - assessment and review** – guidance to assist clinical leads, home oxygen service leads, clinical commissioning groups and clinical networks in their collaborative effort to drive the regional implementation of HOS-AR and the widespread adoption of good practice in home oxygen services.

The testing phase work demonstrated that the potential cost efficiencies identified by the Department of Health and attributable to therapy rationalisation through home oxygen service –assessment and review can be realised in practice. It is anticipated that the prototype phase of work will further demonstrate the importance of assessment and review in the maintenance of safe, high quality, equitable and cost efficient home oxygen services.

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Wirral Integrated Community Oxygen Service

What was the problem?
The challenge for this community based (but integrated with secondary care) team of nurses, physiotherapists and administrative staff providing COPD, Pulmonary Rehabilitation and Oxygen services was to work more effectively with the wider multidisciplinary team to manage patients on oxygen therapy who have a wide range of health problems (not just COPD). In addition, the team sought to maintain or even increase the cost efficiencies and improvements in patient care it had achieved through patient review and the use of oxygen budget and concordance data when the service was first established.

What was the aim?
By the end of July 2011, all existing adult patients registered with a Wirral GP and prescribed oxygen will have had a structured assessment. New patients will be formally assessed before oxygen is prescribed and all patients will have a scheduled review programme. Patients who are prescribed oxygen will have the most clinically and cost effective treatment.

- All adult patients on Wirral should have a structured assessment prior to commencing home oxygen in line with national guidance. This excludes patients for whom oxygen is palliative for terminal illness
- Oxygen will only be prescribed if clinically indicated
- All adult patients on oxygen should be reviewed at least every six months to ensure their prescription remains appropriate for their needs
- Unnecessary oxygen prescribing should be eliminated
- An on-going education programme for health professionals about the indications, prescribing and use of oxygen will be established.

What has been achieved?
- All existing patients on home oxygen therapy have been reviewed
- Maintenance of tight cost control with continued reduction in non specialist oxygen prescribing
- Acceptance of the service by other community based teams and other non-respiratory specialist teams
- Development of a pathway for supported withdrawal of short burst oxygen therapy (SBOT)
- Formalisation of (safety) risk assessment with adoption of documented procedures and escalation process
- Positive feedback from patients via an external patient evaluation of the service
- Development of a shared care treatment pathway with heart specialist nurses has reduced their referrals for SBOT.

What are the key learning points?
- It is important to establish communication networks with local primary and secondary care stakeholders. By attending (or presenting at) local professional forums opportunities to build trust and educate other healthcare professionals can be realised. The education process is reinforced through individual discussion of non-specialist prescriptions and by giving feedback to referrers post patient assessment
- Using a model that integrates oxygen assessment and review with COPD and PR services and is supported by secondary care has contributed to the success of this community based service. Control of the prescribing of oxygen taking place within the acute trust via hospital based respiratory nurses reduces inappropriately prescribed oxygen and improves communication about patients who need further assessment and review

Graph title required??

Number of Patients

0 5 10 15 20 25 30 35 40 45

Sept Oct Nov Dec Jan Feb Mar Apr May Jun Jul

New
New patients prescribed by specialists
New patients prescribed by non-specialists
New patients prescribed by us - palliative
Linear (new patients prescribed by non-specialists)
Linear (new patients prescribed by us - palliative)
Linear (new patients prescribed by specialists)
Linear (new)
• Autonomy in setting up and developing the service coupled with strong leadership and clinical and managerial support is vital.

• The importance of obtaining and maintaining accurate data about patients, review cycles and cost analysis should not be underestimated, neither should the time and skill taken to do this consistently.

• Consistent, high quality assessment and review by expert practitioners is vital in gaining and maintaining the trust of the patient, carers and clinical colleagues. Cost effective prescribing should follow on from this and not be the prime motivation.

• Developing positive relationships with other specialist teams and clinical colleagues is vital to be accepted as part of the patient’s clinical management team. This can only be achieved by sustained effort and networking.

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**What was the problem?**

Final procurement of local Home Oxygen Service – Assessment and Review (HOS-AR) coincided with the start of the NHS Improvement-Lung project. The project had a split focus, one area being the successful commencement of HOS-AR with the associated challenges of establishing a new referral pathway, accessing, interpreting and using data and also the clinical review of 876 existing patients currently receiving home oxygen. The second area of focus was to establish robust procedures around risk, health and safety and smoking as this had been identified as a local priority.

**What was the aim?**

To contribute to a reduction in unscheduled hospital admissions and optimise chronic obstructive pulmonary disease (COPD) patient care through the delivery of appropriate and cost-effective oxygen therapy to COPD patients identified as being in clinical need determined through assessment by trained healthcare professionals.

- Remove inappropriate oxygen provision, ensuring correct equipment and therapy is delivered to new and existing patients on oxygen
- Reduce unnecessary costs of oxygen and equipment
- Risk assess patients/carers prior to and during their use of oxygen therapy
- Work with the local fire brigade to produce and develop a workable local policy on smoking and oxygen provision
- Educate patients on health and safety issues surrounding smoking and oxygen therapy
- Develop a written (signed) contract between patient and health care professional (HCP) with clauses to remove provision on grounds of health and safety or no clinical need/benefit.

**What has been achieved?**

- Patients at risk have been identified by the HOS-AR team and joint visits have been undertaken with the Fire Brigade together with the development of a joint risk assessment pathway and arrangements for future joint training between both teams
- A policy for the delivery of HOS-AR has been developed and approved by City Health Care Partnership with regular education for local primary, community and secondary care (on best practice, referral criteria and optimising treatment) built into the team’s service specification
- A draft health and safety oxygen use policy has been developed and it is hoped that all stakeholders will be signing up to its use shortly
- Prior to the service commencing the number of patients in Hull in receipt of oxygen was 876, the current caseload, as of 3rd October 2011, is 579
- Home oxygen monthly invoices have reduced by £15k since the service commenced a reduction in annual forecast spend of £0.204m
- Patient experience as obtained using the Long Term Conditions LTC6 questionnaire was overwhelming positive and scored highly in respect of patient involvement in decision-making, information provision, joined-up care and team support.

**During the period of April 2010 - September 2011:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>New referrals into the service for patients not in receipt of oxygen</td>
<td>341</td>
</tr>
<tr>
<td>Assessments and or follow ups undertaken</td>
<td>1630</td>
</tr>
<tr>
<td>Number of those new referrals which were inappropriate</td>
<td>109</td>
</tr>
<tr>
<td>Patients were discharged from the service, no longer requiring oxygen</td>
<td>168</td>
</tr>
<tr>
<td>Removals of modalities</td>
<td>435</td>
</tr>
<tr>
<td>Commencements on oxygen modalities</td>
<td>322</td>
</tr>
<tr>
<td>Increases in oxygen flow rates</td>
<td>234</td>
</tr>
</tbody>
</table>
What are the key learning points?

- Using cost and usage data from the oxygen supplier is the smartest way to determine a starting point for assessing and reviewing patients. A template is being developed to support integration of clinical system reporting with oxygen reporting systems. Quick financial wins came from the administration team working through the invoices and identifying discrepancies and reporting this back to the oxygen supplier.

- A lot of time was spent gaining an understanding of the data (with the suppliers help) and what it meant before the team were able to analyse the information and use it proactively.

- Working with the Fire Brigade has helped tackle the challenges experienced by the team in educating patients and carers of the risks around health and safety and on dangers of smoking to themselves and others, making such discussions more impactful.

- Locally, just as is the case nationally, there is no clinical consensus on the issue of therapy withdrawal in hypoxic patients who continue to smoke. However, the team work proactively to manage and minimise the risks to patients and their surroundings through education, working with stakeholders and by involving the COPD Smoking Cessation Specialists and the Fire Brigade in care pathway development. This has been really successful and has led to a number of reported ‘quitters’ among existing oxygen patients identified as continued smokers.

- Having the commissioners leading this multidisciplinary project has driven the work, but the project would have had a stronger voice in the wider health community if the project team had a consultant or GP among its membership.

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The feasibility and impact of withdrawal of Short Burst Oxygen Therapy (SBOT)

What was the problem?
There is considerable evidence from home oxygen service data and related surveys that the use of short burst oxygen (SBOT) or intermittent oxygen at home, for the relief of breathlessness in patients without chronic hypoxemia, is still being provided, despite considerable published data that it is not effective and is therefore costly to the NHS. This project was undertaken to address the issue of the prescription of short burst oxygen (SBOT) for patients with chronic obstructive pulmonary disease (COPD).

What was the aim?
To review all COPD SBOT prescriptions, of more than 3 months, in two PCT areas, in order to reduce SBOT prescription by 75% over the course of one year (July 2010 to July 2011). This target figure was deliberately aimed high as most SBOT patients (with the exclusion of palliative prescriptions) have no clinical indication for SBOT.

What has been achieved?
Twenty-five patients on SBOT in the borough of Waltham Forest with a primary diagnosis of COPD were identified. Appointments were sent and patients, who agreed to participate in the project, visited in their homes:

The results of 19 patients in terms of HAD, SGRQ, FEV1 (morbidity) and oxygen SaO2 at assessment on first visit are presented in the oxygen workstream emerging learning publication www.improvement.nhs.uk/lung

In the second PCT, the project team encountered considerable difficulty in accessing oxygen usage data. The project team developed a questionnaire exploring the issue of oxygen data access and it’s usefulness in managing care and circulated it to 17 teams within the NHS Improvement-Lung national programme. The 12 completed questionnaires indicated:

• Variation in ease of access to data across the respondents
• Clinicians do not have access to the full range of data
• Respondents all doing something slightly different depending on their location
• Access via commissioners and PCT but not available to secondary care
• Accuracy of data a problem
• Current and accurate tariffs not always available so hard to control and manage expenditure
• Issues over data protection resulting in challenges around wider access to data.

What are the key learning points?
The issues relating to withdrawal of SBOT are highly complex and multi-factorial. They relate not to sub-optimal management, but rather to the fact that this subgroup of patients have severe COPD, are unwell, are maintained at home and are too sick to consider removal of oxygen. The majority of patients in this study had SBOT prescribed for over 12 months (often following an exacerbation) which had also led to some psychological dependence over time. However, the project duration spanned an excessively cold period with a high incidence of acute exacerbations where patients genuinely needed their SBOT and which was felt to be justified by their clinician.

The following points have become clear during the project:

• Communication between the community and hospital on discharge needs improving to ensure seamless care of home oxygen patients
• Patients were discharged with no information about the use of oxygen once at home and no support regarding their oxygen therapy
• Patients commenced on SBOT for an exacerbation need reviewing at six weeks for assessment, education and support with a view to removal to avoid psychological dependence
• Whilst there is an assumption that patients on SBOT have been given it erroneously, this study has demonstrated that in the majority of these cases, this has not been the case
• There needs to be clarity about the correct prescription of LTOT, given the complexity of removal of SBOT

<table>
<thead>
<tr>
<th>Results of home visits</th>
<th>Oct to Dec 2010</th>
<th>Jan to Jun 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBOT successfully withdrawn</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Exacerbating at time of assessment</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Withdrawn from study project</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>SBOT left in place on compassionate grounds</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Refused assessment</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SBOT replaced by LTOT or Ambulatory Oxygen</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Admitted to hospital</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>7</td>
</tr>
</tbody>
</table>
• Patients who are prescribed SBOT may not have been seen by a clinical specialist in oxygen therapy and may not have been told how long the prescribed oxygen should be used.

• Patients who are prescribed oxygen in nursing homes need to be reviewed and require clinical specialist support in their management, the management of nursing homes need to be informed that patients require regular assessment and that appropriate and cost effective arrangements can be put in place for emergency oxygen supplies.

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Home oxygen – improving quality of care

What was the problem?
The community COPD team, in collaboration with the local respiratory function department established a community based oxygen assessment service, co-located with an existing consultant led COPD clinic and a pulmonary rehabilitation service, with assessments being provided across two sites.

The service proved successful and highly regarded by patients but was not utilised by all prescribers of oxygen, resulting in a significant proportion of patients receiving home oxygen without clinical assessment. The service recommended to the PCT and to PBCs that prescribing without assessment should be barred but the advice was rejected thus alternative options to address the shortfall of assessments needed to be developed.

What was the aim?
The project aimed to increase the proportion of patients undergoing oxygen assessment and regular review in order to improve both patient management and cost containment by introducing a ‘direct access’ pathway for general practice, community nursing and other medical prescribers, thereby supporting areas with high rates of oxygen prescription (i.e. hospital discharge and general practice).

Objectives:
- Introduce GP direct access to the oxygen assessment service
- Quantify the work that would be associated with retrospective assessment (for patients with oxygen and no history of assessment)
- Develop a strategy for the identification and assessment of patients discharged with oxygen following a hospital admission
- Improve oxygen prescribing ensuring therapy matched clinical need and actual usage, and also to reduce supply costs.

What has been achieved?
Although audit and review of oxygen patient registers and oxygen usage data suggested the need for a significant increase in staff and staff availability (in order to undertake retrospective assessments), through service re-design the project team were able to:
- Increase the number of assessment sessions
- Identify areas where they could integrate with other community teams in order to streamline and increase service capacity
- Improve integration within the COPD community team i.e. integrating the services of oxygen assessment and pulmonary rehabilitation
- Develop the systems and protocols to introduce GP direct access and to target hospital discharge oxygen
- Re-categorise therapy modality or remove oxygen therapy for a large number of patients and consequently recover a projected £98,000 in annual costs attributable to inappropriate prescribing.

What are the key learning points?
- Integration of home oxygen services with pulmonary rehabilitation provides a seamless service for patients. It increases key worker understanding of both therapies and it also improves service efficiency. In addition, both patient knowledge and experience is improved which leads to informed patient choices and more appropriate prescribing.
- Pulmonary rehabilitation is the ideal platform to trial ambulatory oxygen therapy.
- Patient review provides the ideal opportunity to re-categorise the oxygen supply according to changing clinical and social needs.
- Liaison with data analysts is important in order to make effective use of available oxygen usage data.
- Access to monthly oxygen supply invoices is important to track what is happening to the oxygen supply.
- Encouraging dialogue between the home oxygen service and primary care together with improved accessibility to specialist HOS-AR team advice was important in ensuring improved oxygen prescribing.

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What was the problem?
NHS Sheffield as part of their Achieving Balanced Health Strategy (2010) identified that they had the highest projected forecast spend on home oxygen therapy. There was no local requirement for patients to have an oxygen assessment in advance of therapy being ordered/prescribed and patient’s ongoing need for oxygen therapy was not always reviewed.

What was the aim?
By July 2012, all NHS Sheffield chronic obstructive pulmonary disease (COPD) patients newly prescribed home oxygen have had an initial quality assured assessment and all COPD patients with home oxygen are systematically reviewed in line with British Thoracic Society/NICE guidelines resulting in the correct therapy (detailed on home oxygen order forms and equipment) and leading to improvements in patient quality of life, increased life expectancy, reduced (unscheduled) admissions and robust oxygen cost control.

What has been achieved?
The cost saving potential and improvements in care demonstrated by the project work have enabled a new service specification to be written and agreed with the provider of the new service, which includes the assessment and review of both respiratory and non respiratory patients. The start date for the new service is planned for Jan 2012 pending agreement of funding arrangements and mobilisation of the service.

Notable project achievements include:
- Validation of oxygen usage completed in 2010/11 and a further one is planned for November 2011.
- Register compilation with a system now in place to check Home Oxygen Order Forms (HOOFs) are completed properly
- Improved communication and understanding between PCT commissioners and service providers.
- Raised the profile and importance of pulse oximetry among local GP’s
- Improved use of data from oxygen supplier
- Reduction of between £120K to £150K in estimated annual oxygen prescribing costs
- Established ongoing systematic monitoring of HOOFs.

What are the key learning points?
Use of internal audit to develop systems, audit oxygen cost monitoring processes, clarify invoices and avoid errors ensured support from the finance and performance directorate and enabled detailed analysis of oxygen usage to be undertaken.

- Remain motivated in order to deliver eventual improvements
- Encourage cross functional working – PCT commissioner, medicines management, clinicians and provider
- Garner wider organisation support – the engagement of Clinical Commission Group (CCG) enabled the profile of home oxygen therapy patients and service issues to be raised within the CCG
- Undertake analysis of service demand and capacity with service provider staff to inform the service specification
- Set standards high and be prepared to negotiate around new ways of working
- Take time to understand and assess prescribing anomalies.

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What was the problem?
The PCT had a high proportion of patients using oxygen compared to other areas within the region and this was associated with higher than (regional) average prescribing costs. A preliminary audit undertaken in collaboration with secondary care in 2009 revealed that only 30% of patients on home oxygen had been assessed or reviewed by a clinical specialist.

This audit identified the risk that patients may be receiving oxygen inappropriately resulting in adverse clinical outcomes if prescribed not matching the patient’s clinical needs or patient in receipt of unnecessary oxygen.

What was the aim?
The objectives of the project were to:

- Develop an accurate home oxygen therapy register
- Identify number of patients receiving home oxygen who do not meet the guideline criteria
- Identify patients who could have their therapy changed or discontinued
- Conduct urgent review of individuals receiving high/low dose oxygen to ensure clinical risks are managed
- Develop a structured assessment/follow up service which meets NICE guidance
- Increase the proportion of patients receiving a structured assessment from the current level (30%) to (80%) within time frame of the project.

What has been achieved?
- £141k pa cost reduction to date
- Patients referred seen within a week
- 94% of patients have now been seen – in excess of target of 80% of patients outstanding at the start (approximately 270)
- Now that the team know the patients, and have established rapport with them, the consultation time is sometimes shorter, further increasing efficiency
- Access to information is now shared with the HOS-AR team informing their clinical decisions and improving quality
- Blackpool GPs are no longer routinely starting patients on oxygen themselves, but are using the service
- Pulmonary rehabilitation is now referring into the HOS-AR and vice versa
- Community matrons and the early supported discharge service linking with HOS-AR service and expertise

What are the key learning points?
- Identify the PCT oxygen lead in order to progress work utilising concordance reports and supplier invoices and engage the finance dept. in final analysis work
- Establish strong links and good personal working relationships between primary and secondary care for a consistent approach to service delivery
- Identify all stakeholders, and develop engagement and inclusion from the start, keeping everyone up-dated and acknowledge individual and team effort to drive project
- Consider what information you need locally, and why, when developing your own data resource to capture and collect clinic activity, cost savings and follow-ups
• Effective data collection systems were essential in order to calculate numbers for future capacity and demand and to record the cost savings being realised for future sustainability of the Home Oxygen Service through improved quality and productivity
• Ensure clinicians have access to all up-to-date relevant patient information in a timely fashion in order to make more informed clinical decisions at the time of contact
• Establishing a robust baseline supports realistic and effective planning within the resources available, it also helps focus and supports identification of quick win reductions in prescribing which help team motivation and provide momentum
• Process map early to identify gaps in service provision
• Make use of ‘protected time out’ to ensure full engagement from all members of the team with problem solving and action planning
• Highlight work that could be more cost effectively performed by administration staff and release clinical capacity
• Changing behaviour is both challenging and evolves gradually over time, pathways revisited regularly through stakeholder meetings, training and support
• Working with patients to reduce their prescription where appropriate is difficult and not always pleasant
• It is important to consistently promote the message to patients and professionals that oxygen is appropriate only when patients are hypoxic

• Maintaining service efficiency provides capacity to ensure DNAs are followed up by home visits if necessary
• Phone call reminders helps to reduce DNA rate and follow-up phone calls following a DNA can also help in future attendance rates
• Home oxygen service – Assessment and review within the community setting has had both advantages (staff can focus exclusively on assessment and review without interruptions arising from other issues within the acute setting) and disadvantages (community clinic computers not currently linked to the appointment system)
• Access to expertise with ability to cost various service delivery options enabled a range of evidence-based scenarios to be presented to Clinical Commissioning Groups.

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Improving home oxygen services through pathway redesign

What was the problem?
A gap in service provision had been identified within the Cannock Chase locality of South Staffordshire PCT due to the absence of Home Oxygen Service – Assessment and Review (HOS-AR) despite the fact that 537 patients were known to be in receipt of home oxygen within Cannock Chase locality, of which only 149 were known to the local community respiratory team.

In addition, the majority of costs associated with oxygen prescribing were attributed to the use of intermittent oxygen or short burst oxygen a therapy modality for which there is currently no supporting evidence.

What was the aim?
Cannock Chase respiratory service reviewed local oxygen treatment in order to:
- Rationalise and evaluate home oxygen prescribing
- Establish treatment appropriate to clinical need
- Rectify invoice anomalies and
- Liberate efficiency gains for investment in permanent HOS-AR provision.

What has been achieved?
- 257 oxygen therapy reviews took place and all 257 patients also received a fire service safety check
- 194 patients had their therapy rationalised as a result of specialist review
- 30 patients with no clinical indication for oxygen had their therapy withdrawn resulting in a saving of £23,442
- Duplicate orders to multiple addresses were eliminated as were erroneous multiple charges levied against individual patient therapy orders
- Established that 64% of the patient register had never been previously assessed and had normal oxygen levels measured by pulse oximetry
- Supply orders relating to patients who have moved were cancelled
- Payment for equipment never received was stopped.

In total, the improvements undertaken over a six month period achieved cost savings of £130,512

What are the key learning points?
- Existing home oxygen data collection and administration systems are complex
- Invoicing processes are remote from clinicians ordering home oxygen and require administrative support to work effectively
- Clinicians in GP surgeries have limited knowledge of the type oxygen to order and in some cases prescribe inappropriately
- Oxygen assessment and review can improve care by ensuring appropriate therapy and ensure costs are reflective of the true clinical need of the population.

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Sustaining the efficiency and effectiveness of the Milton Keynes Home Oxygen Service – Assessment and Review

What was the problem?
Milton Keynes undertook a service redesign initiative through a ‘spend-to-save’ programme and successfully reduced inequalities in oxygen service provision and also reduced the costs of home oxygen prescribing. However, they were aware that further improvements could still be made, especially in respect of ambulatory oxygen assessments, and were keen to both sustain and enhance service quality and efficiency by participation in the NHS Improvement-Lung national COPD project.

What was the aim?
The project team identified three principle objectives:

- Enhancement of existing care pathway by the production of a HOS-AR (best practice) adoption ladder
- Improve ambulatory oxygen provision and care by carrying out an evaluation pre and post the setting-up of an ambulatory oxygen assessment clinic
- Assess the impact of patient literature on patient experience through the development and use of a quality patient questionnaire pre and post the use of a patient information leaflet.

What has been achieved?
The service is on target towards ensuring that all existing home oxygen patients have been assessed before the transition to a new supply contract. Therapy alterations continue to be undertaken after clinical review and the service has been able to sustain monthly cost savings in the order of £1,000 - £2,000 per month. However, the cost saving trajectory is on the decline as improvements in ambulatory oxygen assessment are uncovering the clinical need for higher flow rates among many patients and so the cost per patient is rising.

What are the key learning points?

- Clearing the backlog of un-assessed patients has enabled the service to reach a steady state in terms of matching demand and capacity
- Process mapping exercises uncovered a gap in service provision in respect of guideline required home visits and the review of house bound patients. The service is confident it can address this gap before the transition to a new supply contract
- Sustainable improvements to this service were achieved by building progressively on service changes and by ensuring ongoing, coordinated use and monitoring of oxygen supply data.

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