

Respiratory Medicines Optimisation in Primary Care - how to create an effective cost saving programme

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Abstract

Title

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Summary

Respiratory disease is estimated to cost the UK health economy approximately £9.9million each year and yet a significant number of patients with asthma and COPD continue to experience symptoms, exacerbations and hospitalisations. When appropriately treated however, many of these costs can be avoided. One of the key factors identified has been the quality of diagnosis, which has resulted in inappropriate escalation of treatments or a lack of evidence-based treatment being prescribed. The NHS Long Term Plan has identified early detection and diagnosis of respiratory disease as a priority area.

This paper illustrates the local issues that have been identified in City and Hackney, and some of the solutions in tackling these problems. The employment of a specialist respiratory pharmacist as part of a wider team, has facilitated an improvement in the quality of care received by patients but there still remains a lot of work to do in ensuring that all patients with respiratory disease are appropriately managed.

Introduction

Respiratory disease, including lung cancer, is estimated to cost the UK health economy approximately £9.9 billion each year, with a significant amount attributed to the management of asthma and COPD.¹

Asthma is defined as a chronic inflammatory disorder of the airways associated with an increase in airway hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing (particularly at night). These episodes are usually associated with widespread but variable airflow obstruction, which fluctuate in frequency and severity, from intermittent and mild, to frequent and severe.^{2,3} Symptoms are often reversible, either spontaneously or with treatment.^{2,3} When treated correctly, the majority of patients with asthma should remain asymptomatic and without exacerbations but, unfortunately, this is not the case in the UK.

Asthma is the most common lung disease in the UK, with up to 5.4 million people receiving active treatment. Asthma poses a significant burden on healthcare resources and society as a whole.⁴ While some countries have seen improvements in asthma care, the UK continues to experience a high prevalence of poor asthma control, resulting in the need for both

controller and rescue medication, an increased likelihood of exacerbations, high rates of emergency healthcare use, hospitalisation and death.⁴ With 60,000 hospitalisations each year involving 200,000 bed days, asthma accounts for £1.1 billion in direct costs in the UK.^{5,6} Of this, £666 million is spent on prescription costs each year, £160m on GP consultations, £143m on disability claims and £137m on hospital care.⁶ When appropriately treated, many of these costs can be avoided.

Similarly, expenditure associated with Chronic Obstructive Pulmonary Disease (COPD) is equally as significant. COPD is an umbrella term that describes airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases, such as cigarette smoke.⁷ COPD is a leading cause of morbidity and mortality and the second most common lung disease in the UK after asthma, affecting an estimated 1.2 million people (2% of the UK population).⁸ Though COPD is not reversible, appropriate treatments, both pharmacological and non-pharmacological, can reduce disease progression, improve symptom burden, quality of life and reduce the risk of exacerbations.

The UK is among the top 20 countries for COPD mortality in the world.⁹ In 2012, almost 30,000 people in the UK died as a result

of COPD, accounting for 5.3% of the total number of UK deaths.⁹ Furthermore, it is the second most common cause of emergency admissions to hospital, the fifth largest cause of readmissions in the UK and accounts for over one million hospital bed days in England.⁹

The problems affecting medicines optimisation in respiratory care

The National COPD Audit Programme's Welsh primary care audit, published in 2017, concluded that there were several inconsistencies with the diagnosis of COPD. 280 practices were included and provided information about the care of 48,029 patients living with COPD.¹⁰ They found that only 20% of people on the COPD registers had an electronic record of the post-bronchodilator FEV1/FVC ratio, which is necessary for diagnosing COPD. 63% of patients on the COPD register had a record of an X-ray at the time of diagnosis, which NICE recommends for all COPD patients to exclude any co-morbidities.⁸ There was considerable variation in data accuracy and coding; the data extraction provided confidence in the quality of COPD diagnosis in only 14% of people on the COPD register.¹¹ Additionally, 41.9% of this cohort, had a co-diagnosis of asthma. This is likely to reflect diagnostic uncertainty as it is not in keeping with epidemiological data of validated diagnostic overlap. It is important to confirm diagnosis for these patients as treatment pathways are different and may result in incorrect treatment if diagnostic confusion exists, often leading to inappropriate escalation of treatment or the absence of appropriate treatment. The absence of an inhaled corticosteroid for an asthmatic patient diagnosed with COPD only could lead to uncontrolled symptoms and an increased risk of exacerbations.

The diagnosis of asthma can be difficult and should be based on the symptoms described as well as evidence of variable expiratory airflow limitation.¹² The prevalence of asthma varies and it is suggested that 20-70% of people with asthma in the community remain undiagnosed and hence untreated. Studies however also suggest that 30-35% of patients diagnosed with asthma do not have that condition, suggesting an over-diagnosis in some patients where their symptoms may be interpreted as asthma instead of gastro-oesophageal reflux disease (GORD) for example. Disease severity and co-morbidities may also be missed when an inaccurate diagnosis has been made. It is highly likely that this audit is representative of clinical practice across the UK, highlighting an urgent need for review to ensure accurate diagnoses of both asthma and COPD.

Several medicines optimisation frameworks suggested room for improvement with regards to the prescribing of respiratory medicine. The RightCare programme places the NHS at the forefront of addressing unwarranted variation in care and delivers the best possible care in the most cost effective, valuable way.¹³ One important area identified is the recorded prevalence of both asthma and COPD, especially for those in London. Early and accurate diagnosis can prevent disease progression, improve quality of life and reduce exacerbations and healthcare costs. The NHS Long Term Plan has also identified early detection and diagnosis of respiratory disease as a priority.¹³ Currently, around a third of people with a first hospital admission for a COPD exacerbation have not previously

been diagnosed.¹³ Current workstreams are being developed to help identify these patients and ensure correct and timely early diagnosis.

The local problem in City and Hackney

The recorded prevalence of asthma and COPD in City and Hackney is 4.37% and 1.08% respectively. These are significantly lower averages than the national averages of 5.93% for asthma and 1.91% for COPD.¹³ Local data also suggests that of people aged over 18 years in City and Hackney, 19.3% are self-reported smokers, compared to the English average of 14.6%, suggesting there should be expected to be a consequential larger percentage of patients with undiagnosed lung disease.¹⁴

In addition to a low reported prevalence of asthma and COPD, a recent audit found that in City and Hackney approximately 20% of patients had an incorrect diagnosis, resulting in incorrect treatment often prescribed.¹⁵ As highlighted by a Welsh audit,¹⁰ which had similar findings, it is of upmost importance that patients are prescribed the right medication which is based on accurate diagnosis as previously discussed.

Despite the low reported prevalence of asthma and COPD locally across City and Hackney, A&E attendances and admissions remain significantly high. A possible reason for this may be the number of patients who continue to receive acute care from A&E for the management of their symptoms and are not registered with a local GP.

Poor control may also be a result of non-adherence to preventer inhaled therapies. Up to 90% of NHS spend on asthma goes on medication but incorrect use of medication can also contribute to poorer health outcomes and increased risk of exacerbations and admissions. A City and Hackney CCG audit in 2013 revealed that unused medicines were costing the local NHS approximately £1 million per annum, with inhalers being the costliest proportion of returned items to pharmacies. This suggests that, locally, non-adherence to inhaled therapies may be a contributing factor to poor control and the high rates of exacerbations in both asthma and COPD.^{16,17}

The lack of English proficiency may also be contributing to adherence and health inequalities but this has not been evaluated. The total population in Hackney is 279,700 people of which 36.2% are white English, compared to the London average of 44.9% and national average of 79.8%. Over three quarters of the population speak English (75.9%), 4.5% speak Turkish, 1.7% Polish, 1.5% Spanish and 1.4% French.¹⁴ Asthma and COPD self-management plans have, however, recently been translated into Turkish in City and Hackney in an effort to address this language barrier. Asthma UK have self-management plans available in other languages also.¹⁸

Local solution - Specialist Respiratory Pharmacist-led clinics

A way of identifying correct and appropriate prescribing, prescription refill information by the NHS business services authority (NHSBSA) can be used. EPACT2 is a NHS online application giving authorised users access to prescription

data.¹⁹ One of the areas of focus is respiratory disease. EPACT2 reports selected metrics, such as salbutamol prescribing, frequency of prednisolone courses issued and high dose inhaled corticosteroids (ICS) as a percentage of all ICS items. The prescribing data provided within the respiratory dashboard is based on the prescription data available to the NHSBSA at the time of publication. It can be used to establish prescribing trends in general practices and identify areas for improvement by comparing CCGs to the national average. This has been a useful source of information that is very easily accessible.¹⁹

In City and Hackney, the EPACT2 reporting data is regularly used by the medicines management team to identify high risk patients, defined as those using large quantities of salbutamol, on high dose inhaled corticosteroids and prescribed more than two courses of prednisolone in 12 months.¹⁹ A Band 8b specialist respiratory pharmacist has been employed by City and Hackney CCG since 2015. Practices requiring the most support, as identified by EPACT2 data and in-house reporting, are prioritised on a rolling basis. Before initiation of a clinic at each practice, prescribing data was reviewed and discussed with the lead GP and/or the team to ensure engagement and the necessity of a review. In addition to the patients identified by the searches, GPs and nursing staff were encouraged to book in any difficult patients who they felt may benefit from a review or those with an uncertain diagnosis. Practice nurses, GPs and pharmacists often shadowed clinics.

These patients were then invited into specialist respiratory clinics with a view to optimise treatment. Each appointment was 20 minutes unless the patient required longer due, for example, to language barriers or if diagnostic spirometry was needed. The clinic at each practice runs until all selected patients have been invited for review and their treatments optimised before setting up clinics in other practices. These clinics took place every week in larger practices and monthly in smaller practices. A report or summary of findings and teaching took place at every practice to engage and upskill all staff members.

There were often barriers in implementing this service in some practices with lack of room availability often being an issue. It was also very important to engage the practice manager and reception staff to book in patients. There were some instances where clinics had been cancelled and/or poorly booked clinics and attendance due to lack of practice staff resource and time.

A comprehensive review confirms diagnosis, addresses non-adherence, checks inhaler technique, lung function testing and symptom burden. It also discusses the management of confounding triggers including, for example, allergic rhinitis or GORD. Non-pharmacological interventions which are considered to be of low cost and high value are also optimised; examples include smoking cessation, immunisations, social prescribing, pulmonary rehabilitation (PR) and access to healthy living programmes in the Borough.

The specialist pharmacist may also receive referrals from other health care professionals within the practice for 'difficult to manage' patients and undertakes home visits. Referrals have also been received from secondary care consultants, physiotherapists and other pharmacists employed by GP practices.

High dose ICS should only be required for patients with severe

asthma. However, data suggests that a large proportion of patients with asthma and COPD are prescribed unnecessarily high doses. The specialist review of medication has often resulted in a reduction of ICS or cessation where ICS is in fact not indicated at all, thus reducing the ICS burden to patients. This is particularly important for patients with COPD; recent data suggests that high dose ICS increases the risk of pneumonia.²⁰

Case study

A case study example is shown in Figure 1.

Pulmonary rehabilitation (PR)

One of the key interventions made is to ensure patients with COPD are referred to PR. Evidence suggests that 90% of patients who complete the PR programme experience improved exercise capacity and/or increased quality of life.¹³ Nationally, it is only offered to 13% of eligible COPD patients, with a focus on those with more severe disease. If all eligible patients were offered PR, over the next 10 years it is estimated that 500,000 exacerbations and 80,000 admissions could be avoided.¹³ One of the key barriers to optimising referrals to PR may be influenced by the amount of information and enthusiasm of the referring healthcare professional.²¹ Language barriers may also prevent patients from attending PR. Location and transport have also been identified as possible reasons for poor referral rates to high value interventions.¹⁸

The pharmacist also attends regular PR programme meetings to discuss education with regards to inhaler technique and self-management. Additionally, this provides an opportunity for patients to ask any further questions they have about their treatments. The group consultation format means that learning is both from healthcare professionals and patients themselves.

Self-management and admission avoidance

City & Hackney CCG and Homerton University Hospital NHS Foundation Trust have developed integrated working to prevent hospital admissions. Many patients with severe COPD are managed by an Adult Cardiorespiratory Enhanced and Responsive Service (ACERs) – a local consultant-led community respiratory team. The specialist respiratory pharmacist attends multi-disciplinary team meetings and, where appropriate, will discuss patients with the ACERs team to make informed decisions.

Due to the burden of disease and prevalence of exacerbations, guidelines recommend that patients who have either had or are at risk of having an exacerbation keep a rescue pack with antibiotic and oral corticosteroids, to use in the event of an exacerbation. The goal of treatment in COPD exacerbations is to minimise the impact of the current exacerbation and to prevent the development of subsequent exacerbations. COPD is the second most common cause of emergency admissions to hospital in the UK.

Costs associated with COPD increase as disease severity progresses, with the Department of Health (DH) suggesting that it costs nearly ten times more to treat severe COPD compared to

mild disease.²² Depending on the severity of exacerbations, the vast majority of patients can be managed in primary care, with only a small proportion requiring admission into hospital.¹⁶ Approximately a third of those admitted to hospital as a result of their COPD are readmitted within a month of discharge.

Corticosteroids and antibiotics can shorten recovery time, improve lung function, prevent admission or decrease the length of inpatient stay and reduce the risk of early relapse and treatment failure. If, however, rescue packs are used incorrectly this can be detrimental, increasing the steroid burden inappropriately and/or the risk of antibiotic resistance. Only those patients with COPD who understand how to recognise an exacerbation and use rescue packs correctly are issued with a self-management plan, antibiotics and steroids. They are advised to call the ACERs team to ensure that it is medically safe to take the rescue medication, with the aim of avoiding an admission to hospital.

Improving the Annual Review

The local Quality Outcomes Framework (QoF) electronic template for asthma and COPD used in general practices has also been updated to include prescription refill adherence records (manually counting the number of prescriptions of ICS and short-acting beta agonists (SABA) in the last 12 months) when reviewing these patients, with prompts added to improve the quality of annual reviews. An example of this is, if a patient has been issued 2 x ICS and 8 x salbutamol, the healthcare professional is prompted to discuss adherence. This also ensures that symptomatic patients are not inappropriately stepped up before issues affecting adherence are explored and addressed.

Education

Due to the large number of patients with respiratory disease, it is important to also educate and support the wider multidisciplinary team in improving patient outcomes. Recent

data suggests that incorrect inhaler technique continues to be a problem for patients and has not improved over the past 40 years.²³ A systematic review found that healthcare professionals incorrectly used an inhaler almost 85% of the time, suggesting educational efforts to improve inhaler technique amongst healthcare professionals is desperately and imminently needed.²⁴ As highlighted by the Welsh and City and Hackney audits, primary care healthcare professionals also need to appraise and review diagnosis continuously. Upskilling the workforce will ensure that diagnosis is correct, treatment is appropriate and patients are able to benefit from use of their inhalers. In City and Hackney, education has been offered to all healthcare professionals on an annual basis as well as any ad-hoc training that is requested or identified.

To ensure the whole local health economy is appropriately skilled, community pharmacists in Hackney have also received additional training on how to counsel patients on adherence, self-management and inhaler technique with access to local guidance and resources. Staff in care homes and some respiratory patients in these care homes have also received education and training. This highlighted the number of patients using inhalers incorrectly and those using a salbutamol MDI without a spacer, further emphasising the need for all healthcare professionals to be adequately trained to manage patients with respiratory conditions. Where necessary, the specialist respiratory pharmacist will ensure the provision of spacers and rescue packs are made by GP practices.

Local guidelines, inhaler flashcards with instruction of technique and inhaler summaries have been produced and distributed to all involved in patient care to ensure consistency in prescribing and advice given to patients. These have been very useful for healthcare professionals to distinguish between the myriad of inhalers and devices now on the market and choose the most appropriate device and treatment for patients. Patients also complain of different healthcare professionals giving conflicting inhaler technique advice – inhaler flashcards produced locally

An example demonstrating the role of a pharmacist of a patient with COPD who was frequently exacerbating found that the patient was receiving inhalers every month but was not administering these as he had dementia and would often forget. His inhaler technique was good but he was using 3 different devices; an accuhaler, handihaler and MDI with differing frequencies. In 12 months he had experienced 8-9 exacerbations, of which 3 had resulted in a hospital admission. In addition to his ICS/LABA/LAMA, he was prescribed theophylline and both salbutamol and ipratropium nebulas.

Both prescription refill information and patient-reported adherence suggested that the patient was adhering to his treatment but, on a home visit, a bag full of unused and expired inhalers was found and returned. The cost of this unused medication was over £1,000. The patient was issued with a simpler inhaler regime facilitated by a district nurse. This was an intervention that could only have been identified on a home visit; prescription records suggested he was adherent, the patient also believed he was adherent but this was proven to be untrue on identification of the number of unused inhalers.

Not only did this intervention impact prescribing costs, there was also a reduction in the number of hospital admissions for this patient.

Figure 1: Case study

and use of RightBreathe inhaler videos (www.rightbreathe.com) ensures that the same message is delivered by all and reduces confusion often experienced by patients. Additionally, the RightBreathe application is encouraged for use by patients who have been identified as being unintentionally non-adherent to their medication due to forgetfulness.

Further and continuous education is required in City and Hackney to ensure that patients are receiving the correct diagnoses and thereby the correct medication to help manage their conditions. There still remains a high number of salbutamol inhalers issued with 27.12% of patients receiving more than six inhalers per annum across the CCG, compared to the national CCG average of 26.03%,¹⁹ often issued concurrently every month with preventative treatments. Prescribing habits therefore need to change and GPs need to be supported in doing this by engaging community pharmacists, GP practice staff and patients to only request salbutamol when required and not automatically each month.

Patient education of good asthma control also needs to be highlighted and those genuinely using large quantities of salbutamol need to be urgently reviewed as highlighted by the national review of asthma deaths report published in 2014.²⁵ These patients can often be difficult to identify as there is a large number of medication that is not in-fact used; i.e. when salbutamol is stored in multiple locations, thus also highlighting the importance of only ordering medication when required.

Medicines optimisation of respiratory care therefore needs to involve the whole community, patients, healthcare professionals as well as addressing ordering systems in changing behaviours. By ensuring adherence to inhaled therapies, symptom burden can be reduced and have a significant impact on healthcare utilisation and the health economy.

The role of the specialist respiratory pharmacist in general practices

The role of the specialist respiratory pharmacist in primary care was implemented in 2015 when pharmacists in general practice were a rarity and the role was not established. There was also a lot of resistance from GPs who were worried about the impact a pharmacist would have on the care of their patients. This changed very quickly when patients reported improvements in their symptoms and management of disease. Not only has the impact of a specialist pharmacist in primary care improved the quality of life, it has shown to reduce the prescribing of high dose ICS in both asthma and COPD (30.69% of all ICS prescriptions in June 2015, compared to national average of 36.71% to 29.69% in June 2019, national average of 38.30%),¹⁹ GP emergency visits and A&E attendances. This is continuously reviewed at each practice as prescribing habits can influence these outcomes. Upskilled practice support pharmacists regularly review prescribing indicators, facilitated by EPACK2 data, such as high dose ICS prescribing and salbutamol prescribing with lead GPs and disseminate information and suggestions for change.

GPs particularly have found having a specialist respiratory pharmacist in practice to be useful in managing their patients and reducing emergency GP appointments affiliated with poor

symptom management and exacerbations. With the myriad of inhalers now available, the support of a specialist in primary care has been important and timely.

"The pharmacist is an exceptionally skilled clinician with great expertise in asthma and COPD. She has changed the diagnosis and treatment of several of our patients at the Group Practice, Hackney, helping their care and our costs. She also helps our clinical staff improve their own skills"

GP Partner, January 2020

"The Pharmacy Respiratory Service has been absolute invaluable for our patients here at the Practice. Since initiation of the service, I can confidently say that the team have significantly improved the control of our patients with Asthma and COPD; whom we had previously struggled to manage. They have been exceptionally thorough in their care and identified many novel ways to support our patients with their respiratory health. Feedback from patients has always been positive and they have truly valued the teams' commitment to improving their health and well-being."

The respiratory pharmacist has been a great support to all the clinical staff here at the practice; for whom she has led dedicated teaching sessions and answered multiple patient queries. She has gone out of her way to support our practice both in-house and with our borough-wide health campaigns, in which her presence has always been extremely well received.

We could not recommend the service highly enough. It has truly made a positive difference to the health of our patients and we are very grateful for their support. Thank you"

GP Partner and Clinical Director - South West of Hackney and the City of London.

Future initiatives include the utilisation of virtual reviews – where the specialist pharmacist can review patients in collaboration with the practice pharmacist or primary care network pharmacist, GP and practice nurse to further share learning and education. The teachings from these reviews can then be applied to everyday practice and ensure correct diagnosis and treatment for all patients.

Summary and Conclusions

Medicines optimisation in respiratory medicine requires identification of high risk patients to ensure correct diagnosis and identification of confounding co-morbidities to optimise management.

Adherence to inhaled therapies is known to be poor but identification of this and discussing the barriers to adherence can help influence control. The role of the pharmacist here is of upmost importance. This, in turn with good inhaler technique, can improve symptom burden, reduce exacerbations and improve patient quality of life.

Reduced healthcare utilisation will not only make medication cost savings but also indirect cost savings to the health economy.

Declaration of interests

- Hetal Dhruve declares a payment offered from Pharmacy Management for writing the article.
- Hashi Sagal and Rozalia Enti have nothing to declare.

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