# Case studies

Alongside the evidence based options for actions and resources presented within each map section of the Atlas, this section includes case studies to provide some real-life examples of how local services are working to improve outcomes for patients. The 13 case studies have been selected to focus on the following areas of clinical importance and where possible supporting priorities within the NHS Long Term Plan:

- community-acquired pneumonia
- pulmonary rehabilitation
- case finding and diagnosis
- medicines management
- integrated children's services
- palliative care
- fuel poverty

The case studies included in this Atlas are not the only examples of innovative practice within respiratory disease care and these additional resources also contain useful case studies:

- case studies included in the 2012 Atlas of Variation in healthcare for respiratory disease
- NHS England Respiratory disease web page detailing the national ambitions for respiratory disease and providing links to many initiatives, including some case studies
- Respiratory Futures – a platform to support respiratory care in partnership with the British Thoracic Society and NHS England
- RightCare respiratory web page including the COPD Pathway and the National Priority Initiative work stream

# Case study 1: The Derby Respiratory Infections Team

## Setting

University Hospitals of Derby and Burton NHS Foundation Trust

## The problem

The problems with the management of patients hospitalised with community-acquired pneumonia (CAP) are threefold:

1. Guideline adherence, care quality and patient outcomes are poor.[1]
2. Patients of low severity are managed in hospital rather than as outpatients.[2]
3. Antibiotic stewardship - and the potential for safe streamlining of regimens based on rapid microbiological testing, with earlier decision making and discharge - is limited.[3]

## What action was taken?

A Respiratory Infections Team was developed at the Royal Derby Hospital, comprising 3 specialist nurses with consultant and pharmacist support. Consecutive patients admitted to the trust with CAP were reviewed.

The objectives of the team were to:

1. Implement the NICE pneumonia guidelines,[4] leading to ≥70% adherence in year 1, and 80% in subsequent years.
2. Identify patients with low severity CAP for outpatient management, implementing early telephone-supported discharge and follow-up, reducing their length of stay.
3. Facilitate streamlining of antibiotic treatment using point-of-care microbiological tests within 48 hours of admission, reducing total amount of antibiotics prescribed both in route and spectrum.

## Outcomes

Over 2 years the team has reviewed 947 patients with suspected CAP; 153 had a chest radiograph reported as clear and were excluded, leaving 794 for analysis. A comparison was made with a pre-intervention CAP cohort.

Length of stay was reduced when compared with pre-intervention after adjustment for pneumonia severity (low severity, 3.4 vs 4.4 days; moderate severity, 4.9 vs 7.6 days; high severity, 7.4 vs 8.9 days), and readmission rate at 30 days was unchanged. Early supported discharge was appropriate in around one-third of patients; in this group length of stay was even shorter at 3.4 days and readmission rate reduced.

A positive microbiological diagnosis was made in 26.4% patients compared with 4.9% pre-intervention. Broad spectrum antibiotic regimens were streamlined in 13.5% patients.

To date, 100% of patients have been happy with the care they received. Clinicians have found this novel service both challenging to their current practice, but also helpful from an educational perspective.

## Further project information

National Institute for Health and Care Excellence (2018) Shared Learning Database The Respiratory Infections Team – a novel paradigm in the management of community-acquired pneumonia [Accessed 11 June 2019]

[1] Daniel P, Woodhead M, Welham S and others (2016) Mortality reduction in adult community-acquired pneumonia in the UK (2009-2014): results from the British Thoracic Society audit programme Thorax 71(11):1061-63 doi:10.1136/thoraxjnl-2016-208937 [Accessed 6 August 2019]
[2] Chalmers JD, Akram AR and Hill AT (2011) Increasing outpatient treatment of mild community-acquired pneumonia: systematic review and meta-analysis Eur Respir J 37(4):858-64 doi: 10.1183/09031936.00065610 [Accessed 6 August 2019]
[3] van der Eerden MM, Vlaspolder F, de Graaff CS and others (2005) Comparison between pathogen directed antibiotic treatment and empirical broad spectrum antibiotic treatment in patients with community acquired pneumonia: a prospective randomised study Thorax 60(8):672-78 doi: 10.1136/thx.2004.030411 [Accessed 6 August 2019]
[4] National Institute for Health and Care Excellence (2014) Pneumonia in adults: diagnosis and management (NICE clinical guideline [CG191]) [Accessed 5 March 2019]

# **Case study 2:** Improvement of patient outcomes through the implementation of a Specialist Pneumonia Intervention Nursing service

## Setting

University Hospitals of Leicester NHS Trust

## The problem

Community-acquired pneumonia (CAP) is the leading cause of deaths in NHS hospitals and puts huge pressure on the NHS in winter. At a national level pneumonia and flu caused 269,313 emergency hospital admissions in the UK in 2016/17 which cost the NHS an estimated £1 billion. Better health outcomes are driven by fast diagnosis, correct disease severity assessment and rapid and tailored treatment.

## What action was taken?

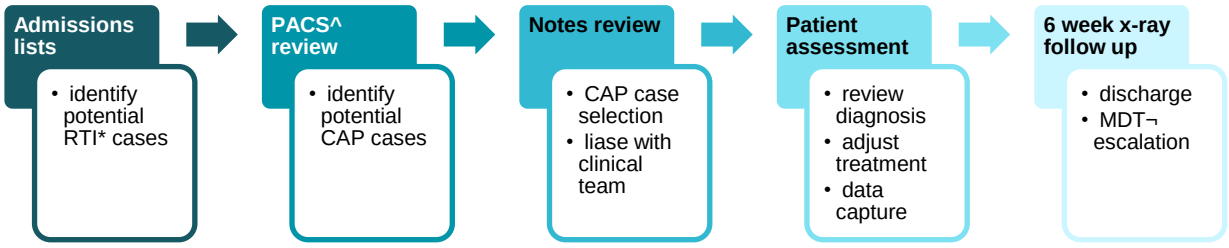
A Specialist Pneumonia Intervention Nursing (SPIN) service was set up which is dedicated to screening for potential cases from acute medical admission and implementing key evidence-based activities rapidly.

These include:

- completion of key interventions within 4 hours
- rapid confirmation by chest x-ray
- rapid scoring of disease severity
- guided antibiotic therapy

The process of assessing CAP cases is shown in Figure CS2. The service was initially comprised of 2 specialist pneumonia nurses working at 2 acute hospital sites during daytime hours. After 2 years the team was expanded to 5 nurses with the aim that all patients admitted with CAP will benefit from being seen by the specialist nurses.

**Figure CS2:** Process map for admission screen for CAP patients[1]




*RTI - respiratory tract infection
^PACS - picture archiving and communication system
¬MDT - multi disciplinary team

## Outcomes

In year 1 of providing the specialist service the overall death rate from CAP (within 30 days of admission) was reduced from 23% to 17% for those seen by the SPIN team. In the second year this rate reduced even further to 11.5%. This improvement remained significant after adjustment for age and other illnesses and was confirmed as significantly better than expected for NHS patients by external NHS monitors.

Compliance with key CAP intervention factors has improved in the trust with interventions implemented in >90% of assessed admissions from 2014-2016. Through early diagnosis and administration of correct antibiotic therapy, unnecessary use of antibiotics has been reduced. Outcomes have also improved for patients not personally reviewed by the SPIN team suggesting systematic learning benefits occurred.

The nurses also provide a 6 week follow up x-ray service for more than 1,000 patients per year. This task was previously delivered by consultants in hospital outpatient clinics, these appointments can now be offered to other lung disease patients.

The SPIN team provide a nurse point of contact and telephone advice to patients once they are at home which reduces readmission by increasing patient knowledge and improving self-management. This also facilitates recognition of early symptoms which can be treated in primary care. A patient survey found that the SPIN service has improved patient experiences by increasing patient communication and education and providing a quicker service which is available 7 days a week.

If a highly focussed pneumonia intervention nursing service were rolled out across the NHS it could save thousands of lives every year. Such a service also supports medical emergency admission teams during the winter pressure period.

## Further project information

Free R, Richardson M, Skeemer J and others (2018) Implementation of a specialist pneumonia intervention nurse (SPIN) service significantly improves outcomes for community acquired pneumonia (CAP) at a major NHS trust Thorax 73(S4): P23 doi: 10.1136/thorax-2018-212555.181 [Accessed 28 August 2019]

[1] Free R, Richardson M, Skeemer J and others (2018) Implementation of a specialist pneumonia intervention nurse (SPIN) service significantly improves outcomes for community acquired pneumonia (CAP) at a major NHS trust Thorax 73(S4): P23 doi: 10.1136/thorax-2018-212555.181 [Accessed 28 August 2019]

# **Case study 3:** Integrating patients with respiratory and cardiac disease in one rehabilitation programme

## Setting

University Hospitals of Leicester NHS Trust

## The context

Rehabilitation is a successful intervention for patients with pulmonary and cardiac disease, which is recommended by NICE (National Institute for Health and Care Excellence). These interventions are traditionally provided as disease-specific programmes; yet their components are largely the same. There may be a better use of staff time and resources to combine the groups.

## What action was taken?

We performed a mixed methods evaluation of clinical outcomes and experiences of staff. Patients attended rehabilitation twice a week for 6 weeks to complete education sessions, aerobic and resistance exercises. Outcome measures were collected before and after the programme: exercise capacity, dyspnoea, and mood. Qualitative focus groups also took place with staff (n= 7) involved in delivering the programme to explore staff attitudes towards the new service and were evaluated using thematic analysis.

Between April and December 2018 (8 months) 99 patients went through the breathlessness programme. Of these 56 had complete pre-post data, 58% were male with a mean age 69.3 years (Standard Deviation (SD) 11.5) and Body Mass Index (BMI) 29.9 (SD 7.4). See table CS3 for clinic outcome measures recorded before and after rehabilitation.

**Table CS3:** **Clinic outcome measures recorded before and after rehabilitation**

| Outcome | Pre Mean (SD) | Post Mean (SD) | Change Mean (SD) |
|---|---|---|---|
| Maximal exercise capacity (ISWT: incremental shuttle walk test m) | 254.1 (142.3) | 307.0 (159.6) | 52.9 (58.4)** |
| Endurance exercise time (ESWT: endurance shuttle walking test sec) | 221.1 (129.9) | 661.7 (426.8) | 440.6 (387.2)** |
| Dyspnoea (CRQ/ CHQ: chronic respiratory/ chronic heart questionnaire) | 3.1 (1.1) | 4.0 (1.2) | 1.0 (1.2)** |
| Anxiety (HADS: hospital anxiety and depression scale) | 7.5 (3.7) | 5.8 (2.4) | -1.7 (3.1)* |
| Depression (HADS: hospital anxiety and depression scale) | 6.2 (3.2) | 4.8 (3.4) | -1.4 (2.1)* |

**p<0.001

## Outcomes

This is the first time that patients with respiratory and cardiac disease have been evaluated in a combined rehabilitation programme, outside of a research context. The results show that patients had a positive outcome following rehabilitation in terms of statistically and clinically significant improvements in typical outcomes. Staff focus groups suggest a positive experience of combining the programmes, which has been shaped by continuously evolving perceptions and service structures.

## Further project information

University Hospitals of Leicester Pulmonary Rehabilitation [Accessed 23 September 2019]

Further information regarding the outcome measures used within the service:

University Hospitals of Leicester Pulmonary rehabilitation information for health professionals [Accessed 23 September 2019]

# **Case study 4:** Pulmonary rehabilitation and Breathe Easy

## Setting

Leeds Community Healthcare NHS Trust

## The problem

Pulmonary rehabilitation is considered to be an important part of the management of chronic respiratory conditions. In Leeds, it is provided through the community respiratory service, which provides specialist advice to patients with COPD as well as other chronic respiratory diseases.

The pulmonary rehabilitation program is run in 4 venues across the city, and is an 8 week program of exercise and education sessions. There was minimal support post completion of pulmonary rehabilitation, with only one Breathe Easy group for the whole city. This was well attended in the local area but left the rest of the city without a support group post pulmonary rehabilitation.

This led to patients often being re-referred to pulmonary rehabilitation or the respiratory team, with increased exacerbations and did not support the self-management agenda.

## What action was taken?

The British Lung Foundation linked in with the service to develop a more integrated approach to patient care, providing 11 Breathe Easy support groups across the city of Leeds, allowing improved accessibility to the groups.

The groups are patient led, and provides exercise maintenance classes (from exercise instructors) to ensure that people who have participated in pulmonary rehabilitation can continue to exercise and effectively self-manage their condition. They provide support for patients by patients. The group decide themselves on speakers they would like to invite, in order to keep up with local services. The groups meet weekly. People can refer themselves to the groups and referrals also come through the pulmonary rehabilitation team.

## Outcomes

This project remains in its infancy and the service is working on the development of the Breathe Easy groups to allow sustainability alongside the lead volunteers for the groups. At present, 4 groups are working very well, providing support for approximately 20 people per session.

## Further project information

Leeds Community Hospital Respiratory [Accessed 23 September 2019]

Leeds City Council Active Leeds Health Programmes: Pulmonary Rehabilitation [Accessed 23 September 2019]

# **Case study 5:** MISSION ASTHMA – Modern Innovative SolutionS to Improve Outcomes iN Severe Asthma

## Setting

Lead organisation: Portsmouth Hospitals NHS Trust

Partner organisation: Wessex Academic Health Science Network

## The problem

In Wessex asthma is underdiagnosed, a major driver for hospitalisation, and in many areas clinical outcomes compare poorly to national averages. Wessex has 147,252 diagnosed asthma patients, of whom 2,996 were admitted to hospital in 2011/12.

The prevalence of asthma in Wessex is 6.1%, which is higher than the England prevalence of 5.9%. Patients with uncontrolled asthma are at an increased risk of death, experience reduced quality of life and have high healthcare usage.

## What action was taken?

MISSION is a quality improvement and innovation project that tests the acceptability and delivery of a novel model of asthma care. care. The current journey for a patient with poorly controlled asthma in the community and hospital is convoluted and expensive requiring frequent use of out-of-hours (OOH) services. Eventually a diagnosis of severe asthma may be established by a specialist asthma Multi-Disciplinary Team (MDT), and appropriate treatments and support is initiated. This is associated with a particularly poor patient and carer experience. The aim of MISSION-Severe Asthma was to proactively identify patients with poorly controlled asthma from GP registers, to facilitate swift assessment in the community. This will be followed by rapid in hospital evaluation by a specialist asthma MDT. The intention is to dramatically reduce the length of time before severe asthma is recognised, and to reduce health costs and improve patient experience.

### What does MISSION involve?

MISSION can be divided into two areas:

**Novel Case Finding**

Patients with poorly controlled asthma are actively sought; the majority are identified from primary care registers, with a small number of patients recently admitted with acute asthma but not known to the specialist asthma team.

A Specialist Respiratory Nurse and Clinical Research Fellow will review the asthma registers of 5 GP surgeries in Wessex to assess patient records for patients suspected of having poorly controlled and potentially severe asthma; this will include any of:

- Preventer use: high dose inhaled corticosteroid use (>500mcg BDP equivalent)
- Exacerbation history: one or more Emergency Department (ED) and/or hospital admissions in previous 12 months
- Exacerbation history; 2 or more exacerbations requiring oral corticosteroids in previous 12 months
- Bronchodilator use: frequent use of short-acting bronchodilators (>6 salbutamol or equivalent inhalers in previous 12 months)
- Use of 3 or more controller medications (any 3 of inhaled corticosteroids, long-acting bronchodilators, leukotriene receptor antagonist, long-acting muscarinic antagonist, theophylline)

- Use of maintenance oral corticosteroids
- Reduced lung function ($FEV_1$ or PEFR at most recent QOF <80% predicted when well)

These patients were assessed with an ACQ (6) (Asthma Control Questionnaire-6) sent by post ahead of the first rapid review clinic in the community (a mean score of >1 will be accepted as indicating sub-optimal control). Those with uncontrolled asthma were invited to a MISSION clinic. Patients with an ACQ score of <1, indicating acceptable control were still invited for a review at one of the specialist asthma clinics at Queen Alexandra Hospital (or Southampton General Hospital as appropriate), as they had one or more other criteria indicating potentially poor asthma control for example exacerbation history.

**MISSION Clinics**

The clinics were held in 2 stages – Rapid Access Asthma Clinics (RAAC) and Severe Asthma Assessment Clinics (SAAC).

The RAAC saw a total of 150 patients over 5 days in 5 different locations across Wessex – Winchester, Southampton, Portsmouth City, Gosport and Havant.

The SAAC saw 24 patients identified from the RAAC as having severe (BTS stage 4 or 5) asthma or uncontrolled symptoms despite review. The SAAC was held at Queen Alexandra Hospital.

## Outcomes

Results of the Pilot show a reduction of:

- 24% in oral steroid courses
- 25% in non-routine GP appointments for asthma
- 30% in short acting beta agonist use
- 50% in emergency department attendances
- 100% in hospital admissions

## Further project information

Wessex Academic Health Science Network MISSION Severe Asthma – Modern Innovative SolutionS to Improve Outcomes In Severe Asthma [Accessed 23 September 2019]

Portsmouth Hospitals NHS Trust (2018) NICE Shared learning database Modern Innovative SolutionS Improving Outcomes iN Asthma Breathlessness and COPD (MISSION ABC) [Accessed 23 September 2019]

# **Case study 6:** MISSION COPD: Modern Innovative SolutionS Improving Outcomes iN COPD

## Setting

Lead organisation: Portsmouth Hospitals NHS Trust

Partner organisation: Wessex Academic Health Science Network

## The problem

Over 1 million people in the UK have diagnosed COPD which accounts for around 30,000 deaths annually. Cases of COPD are expected to increase by over 30% in the next 10 years, and an estimated 2 million people currently remain undiagnosed. Portsmouth has significantly higher than average rates of smokers, COPD admissions and readmissions, and deaths related to COPD.

## What action was taken?

The project team from Portsmouth Hospitals NHS Trust proactively identified patients with undiagnosed or high-risk COPD from 5 GP registers. An assessment was conducted of disease control, quality of life and triggers in the practice surgery, followed where necessary by evaluation in hospital by a specialist respiratory team. Tailored education sessions were held in 3 venues.

Patients were followed up after 3 and 6 months to assess sustained health outcomes, disease control and quality of life.

MISSION-COPD assessed patients to NICE quality standards at an earlier stage of disease where intervention can yield greater results in disease control and quality of life. Reducing the length of time before uncontrolled COPD and other comorbidity is recognised, reduced cost and improved the patients experience of care.

MISSION COPD followed on from the successful MISSION Asthma project undertaken the year before, and lessons from MISSION Asthma informed the design and implementation of MISSION COPD.

In the set-up phase of the project, clinic-style mirrored the asthma model, whilst taking into account the COPD patient cohort was often older with a greater number of comorbidities. In addition, the COPD clinic included case finding requiring reversibility testing on spirometry (to clarify if their diagnosis was more likely to be asthma). This meant that we had to adapt the original clinic capacity and increase it to a maximum of 25 patients, allowing 1.5 slots for each case-finding patient.

The final rapid clinic carousel consisted of a medical review, spirometry, inhaler technique, smoking cessation and an introduction to available research projects. The carousel was followed by an education session about COPD and a physiotherapy session focussing on relieving breathlessness, chest clearance and breathing control. Each patient then had an individual feedback session and was given a personalised self-management plan and fridge magnet designed for the clinic.

The severe clinics adopted the same model as the Asthma model but with addition of echocardiography, social services and palliative care. Thirty patients were seen in the secondary care clinic, with a focus on identifying and managing comorbidity in patients with a heavy symptom burden. We initially planned to see a maximum of 24 patients, but found we could accommodate 30. The patient journey through the severe clinic was individualised, but included a medical review, revision of inhaler technique, blood sampling, advanced physiology, CT, echocardiography, dietician, psychology, palliative care, smoking cessation and social services.

The British Lung Foundation supported each clinic. This has led to a close working relationship between the teams. The local Breathe Easy Committee has offered to fund raise for equipment for the next stage of the project following our presentation of our outcomes to them.

After each encounter with the MISSION team both patient and GP received a summary of their results, treatment changes and diagnoses.

## Outcomes

53 of the 72 care cohort patients remained with a diagnosis of COPD, 12 were re-diagnosed to asthma, 6 to Asthma-COPD overlap syndrome (ACOS) and one to heart failure.

Of the 36 case-finding patients 22 had asthma, 5 had COPD, 2 had ACOS and 7 had diagnoses other than airways disease (lung cancer with hypersensitivity pneumonitis, reflux, bronchiectasis, dysfunctional breathing).

Anxiety/depression and dysfunctional breathing were screened for using the Hospital Anxiety and Depression Scale (HADS) and Nijmegen questionnaires. 22% of attendees screened positive on the HADS questionnaire with more in the case finding group. 48% screened positive on the Nijmegen questionnaire; the cases where the MDT felt dysfunctional breathing was significant were referred to specialist physiotherapy in the severe clinic or separately.

We also identified several other clinically significant diagnoses:

- lung cancer
- cardiac: heart failure, pulmonary hypertension, valve dysfunction
- additional lung pathology: fibrosis, bronchiectasis
- occupational lung disease
- psychiatric issues including risk of self-harm
- vitamin deficiencies requiring treatment

## Further project information

Wessex Academic Health Science Network MISSION COPD: Modern Innovative Solutions to Improve Outcomes in COPD [Accessed 23 September 2019]

The Health Foundation, Portsmouth Hospitals NHS Trust MISSION COPD: Modern Innovative SolutionS in Improving Outcomes iN COPD [Accessed 23 September 2019]

National Institute for Health and Care Excellence (2018) Shared learning database Modern Innovative SolutionS Improving Outcomes iN Asthma Breathlessness and COPD (MISSION ABC) [Accessed 23 September 2019]

# **Case study 7:** COPD case-finding in community pharmacies in the Wirral[1]

## Setting

Twenty-one community pharmacies in the Wirral area working together in the Community Pharmacy Future project.

## Context

Case finding by screening people at risk of COPD is effective when conducted by GPs. The aim of this project was to deliver a COPD case finding service in a range of community pharmacies in England and estimate the cost and effects associated.

## What action was taken?

The project identified 238 patients as either smokers or regular purchasers of cough medicines. These patients were screened by the pharmacies over 9 months, using a symptom questionnaire and spirometry. Pharmacy staff engaged with local GP surgeries before the project to make them aware of potential referrals and to ensure continuous patient support.

The questionnaire, using a validated disease risk assessment questionnaire, asked about age, lifetime cigarettes smoked (if>100), shortness of breath, ever coughing up mucus or phlegm, and if breathing problems affect usual activities. Each response was graded out of 2, a score of 6 or more resulted in a GP referral.

Micro-spirometry (hand-held spirometers) was used to determine the amount of air forcibly exhaled at 1 and 6 seconds ($FEV_1$ and $FEV_6$). A ratio of $FEV_1$ to $FEV_6$ of less than 0.7 or $FEV_1$ less than 80% of normal predictions resulted in a GP referral. All patients were either given lifestyle advice, signposted or offered smoking cessation support and/or referred to their GP.

## Outputs

In total 135 patients (56.7%) were identified as at risk of COPD. Of these 88 (65.2%) were current smokers. Of these 34 (38.6%) refused smoking cessation services, 16 (18.2%) received an in-house pharmacy smoking cessation service, and 30 (34.1%) were referred to an external service.

Lifestyle advice was given to 150 people to decrease their risk of developing COPD, including advice about smoking cessations services, diet and nutrition, physical activity, alcohol and weight management, and were signposted to the GP to provide timely diagnosis.

## Outcomes

As well as the significant benefits to those at risk of developing COPD, the service also found that there would be significant cost savings through case-finding by screening. If the findings were replicated in England, the service would identify more than 205,000 people at risk of COPD and save £214.7million.

The project shows community pharmacists can effectively undertake case finding of COPD and targeted screening can identify a single patient with moderate severity COPD for every 2 patients screened. The project also identified smokers without COPD who would consider accessing smoking cessation services.

[1] Wright D, Twigg M and Thornley T (2015) Chronic obstructive pulmonary disease case finding by community pharmacists: a potential cost-effective public health intervention International Journal of Pharmacy Practice, 23, 83–85 doi: 10.1111/ijpp.12161 [Accessed 4 August 2019]

# **Case study 8:** SIMPLE approach to managing people with asthma and COPD

## Setting

Leicester, Leicestershire and Rutland (LLR) sustainability and transformation partnership (STP)

## The problem

The LLR STP's 2016 draft plan highlighted respiratory disease as a priority.[1] Leicester City has very high emergency admission rates for asthma and COPD, substantially above the national average. The plan highlighted variation across the STP in mortality from respiratory disease, with poor health being driven by deprivation and exacerbated by lifestyle factors. A key solution was to enhance community-based treatment, focusing on prevention, aiming to lead to a wide range of positive health outcomes including: reduction in smoking; medicine optimisation and patient management.

With the medical treatments currently available, it is possible to achieve asthma control in most patients and reduce symptom and exacerbation burden for people with COPD. However, patients may not be prescribed appropriate medicines and/or can make wrong choices about self-management. It is well documented that inhaler technique and sub-optimal adherence are fundamental issues and support to improve both can lead to significant enhancements in health outcomes. The community pharmacist, an under-utilised resource, can support primary care services by optimising medicines, improving inhaler technique and medicine adherence. They can also promote other services that can improve asthma and COPD control and reduce healthcare utilisation.

## What action was taken?

A structured comprehensive Medicines Use Review (MUR) service was developed and delivered by community Pharmacists. The service was targeted to people with asthma or COPD. The service was built on the SIMPLE approach to management to integrate community pharmacists by involving them in chronic disease management within the healthcare team, as follows:

- **S**top smoking support – very brief advice, support or refer
- **I**nhaler technique – observe and optimise
- **M**onitoring – control, symptoms, exacerbation rates and medicine adherence
- **P**harmacotherapy – optimise and provide patient information and support
- **L**ifestyle factors – promote exercise, vaccinations and highlight the benefits of pulmonary rehabilitation and Breathe Easy groups
- **E**ducation – provide self-management information and plans

People attending the pharmacy to collect a repeat prescription were invited to have a full review of their condition and medicines, including optimisation of inhaler technique and provision of a personalised self-management plan. In addition, the pharmacist delivered public health messages, signposting to stop smoking services, vaccination and other services.

An educational toolkit was developed to support pharmacists undertaking the asthma or COPD reviews. Pharmacists attended bespoke training events and follow-up resources were provided to support the service.

## Outcomes

Implementation of the SIMPLE MUR service demonstrated the following outcomes:

### SIMPLE asthma service

There were significant improvements in patient asthma control (measured by the Asthma Control Test (ACT) questionnaire) (p=0.002). Intention-to-treat analysis confirmed significance (p=<0.001). 40% of patient's ACT score increased by a score that would be clinically important.

The number of visits to the GP for an asthma-related issue over the study period reduced by 32% (p=0.053).

Inhaler technique was checked by the pharmacist in 99% of cases. Patient inhaled technique improved significantly (p<0.001).

Medication adherence – both self-reported and adherence scores calculated by prescription re-fill data from the pharmacy computer system showed improvements. The results showed a significant reduction in the collection of prescriptions for short-acting beta agonist (SABA) and a highly significant increase in the prescription refill of inhaled corticosteroids (ICS) (p<0.001). 92% of patients at the end of six months collected at least 80% of their ICS inhalers.

The pharmacist completed and provided a personalised asthma action plan for 80 patients (78%).

### SIMPLE COPD service (n=125)

There was a statistically significant reduction (i.e. improvement) of 3.6 points of the overall COPD Assessment Test (CAT) score over this 6 month period (p< 0.001) and MRC dyspnoea score 2.60 (95% CI 2.35, 2.85) at 6 months in comparison to 2.80 (95% CI, 2.58, 3.02) at the baseline.

Inhaler technique improved (evaluated using the 7-steps framework), particularly the critical inhalation step improved from only 39% correct at baseline to 74% at 2-month (p<0.001) and breath-hold 52% to 80% (p<0.001).

## Conclusion

The analysis of both services does indicate that the SIMPLE service provided by community pharmacists can improve clinical outcomes for patients with COPD and asthma. Subsequently, the SIMPLE approach to managing Asthma and COPD has been adopted as the clinical framework for MUR and New Medicine Service (NMS) services by community pharmacists in LLR STP.

[1] Leicester, Leicestershire and Rutland Sustainability and Transformation Plan. 21 November 2016. Better Care Together Draft Plan [Accessed 26 August 2019]

# **Case study 9:** Impact of pharmacist led asthma and COPD clinics in General Practices

## Setting

City and Hackney Clinical Commissioning Group (CCG)

## The problem

The NHS spends over £1bn on respiratory medicine in direct costs, but patients continue to experience exacerbations and poor quality of life. A City and Hackney audit in 2013 revealed that unused medicines were costing the local NHS approximately £1million per annum, with inhalers being the costliest proportion of returned items to pharmacies. Additionally, despite the low reported prevalence of asthma and COPD across City and Hackney, A&E attendances and admissions were significantly high.

## What action was taken?

High risk patients, those highly symptomatic, on high-dose inhaled corticosteroids (ICS) and patients who were frequently exacerbating were identified by practice support pharmacists and reviewed in a specialist respiratory pharmacist clinic. The review included ensuring correct diagnosis, assessing symptom burden, lung function, inhaler technique and adherence to medication. Where applicable smoking cessation advice was given.

Patients were invited to group training sessions as well as one to one reviews with additional home visits for house bound patients by a specialist respiratory pharmacist. Training was also given to staff and patients in local nursing homes.

GPs, nurses and practice pharmacists in primary care were upskilled with respect to reviewing diagnosis and assessing inhaler technique. Ongoing support is also provided to all health care practitioners for queries and review of difficult patients identified.

City and Hackney CCG has developed integrated working to prevent hospital admissions, many patients with severe COPD are managed by the 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. The pharmacist also attends a regular pulmonary rehabilitation programme to discuss medicines related issues with the patients attending.

To ensure the whole local health economy is appropriately skilled, community pharmacists have received additional training on how to counsel patients on adherence, self-management and inhaler technique with access to local guidance and resources.

Local guidelines, inhaler flashcards and inhaler summaries have been produced and distributed to all involved in patient care to ensure consistency in prescribing and advice given to patients.

The local Quality Outcomes Framework (QoF) electronic template used in general practices has also been updated to include adherence when reviewing asthma and COPD patients, with prompts added as decision aids to improve the quality of annual reviews.

## Outcomes

Approximately 3,200 patients have been reviewed by the specialist respiratory pharmacist in GP practices or in their homes. Adherence to medication was significantly improved for patients with asthma and COPD, resulting in improvements in Quality of Life (QoL) measures such as Asthma Control Test (ACT), COPD Assessment Test (CAT) and Medical Research Council (MRC) dyspnoea scores.

The dose of ICS was significantly reduced with an increase in long acting bronchodilator prescriptions for patients with COPD, reducing the steroid burden and risk of pneumonia and other adverse events. Existing medication was stopped for many patients where it was not appropriate.

Despite step down and cessation of inhalers, statistically significant improvements were found in the rates of exacerbations and emergency GP appointments. Improvements in lung function tests (measured by peak expiratory flow (PEF) and forced expiratory volume in one second ($FEV_1$), for asthma and COPD respectively were also demonstrated.

Inhaler technique was checked for over 90% of patients and where necessary changes made to their devices or technique.

This work continues to deliver cost savings, improve patient quality of life (QoL) and reduces exacerbations.

## Further project information

To find out more about pharmacist led asthma and COPD clinics in general practice within City and Hackney CCG please click on the link below:

National Institute for Health and Care Excellence (2016) Shared Learning Database Impact of a pharmacist-led Asthma and COPD respiratory clinic in General Practice [Accessed 11 June 2019]

# **Case study 10:** The Evelina London model of care: Children & Young People's Health Partnership

## Setting

The socioeconomically diverse boroughs of Lambeth and Southwark, South London.

## The problem

Asthma care for children in the UK falls below standards in health outcomes, care service quality, and service-use indicators.[1] Emergency department (ED) attendances for children in Lambeth and Southwark rose by 58% in 2007-2016, projected to increase by 50-60% by 2030. Around 75% of ED attendances are likely to be manageable in primary care, or through integrated care models. In Lambeth and Southwark ED attendances among children are significantly associated with deprivation.

Across Lambeth and Southwark, around 1 in 3 children is living in poverty. Poverty causes ill health and prevents children from reaching their full potential in life. Furthermore, ill health and deprivation are often accompanied by hidden emotional problems which can affect school, home life and access to care.

## What action was taken?

The Children and Young People's Health Partnership (CYPHP), a clinical-academic group hosted by Evelina London Children's Hospital and King's College London, is implementing and evaluating a health system strengthening initiative and new model of care for children. CYPHP are improving outcomes for asthma through a population-based approach to biopsychosocial *whole child* care.

Active case-finding using the GP call-re-call system, together with parental self-referral, improves equity of access to care. CYPHP created a pre-assessment Health Check, which can be completed via a child-friendly electronic portal, so that care can be tailored to each child's physical health condition, emotional wellbeing, and social circumstances. Families receive a Health Pack with top tips for promoting health and practical "how-to" guides for self-management and mental wellbeing, parenting, and links to useful local resources. Children who need extra support receive a bespoke integrated care and support package from CYPHP's children's multidisciplinary health team, providing and coordinating care across primary, community, and hospital settings, integrating physical and mental healthcare for the child's social context.

The phased roll-out of the Evelina London (CYPHP) model allows an opportunistic evaluation using a cluster randomised controlled trial design.[2] The evaluation will measure the impact of the new model of care on child and parent health and wellbeing, healthcare quality, and health service use.

## Outcomes

The first wave of active case finding reached 90% of the eligible population, with high proportions from ethnic minority families and those living in deprived conditions. Early results suggest improved healthcare quality and reductions in ED use for children with asthma: 288 fewer ED contacts for asthma per 100 patients per year. Net cost savings from the asthma service are projected from year 2 onwards.

Children, young people and families are highly satisfied with the CYPHP model: "If this was an Ofsted you'd have to say it is outstanding in terms of the health provision and probably the broad happiness it's given us just to cope with it and move on from what was fairly difficult" quote from CYPHP family.

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[1] Royal College of Physicians (2014) National Review of Asthma Deaths - Why asthma still kills [Accessed 30 July 2019]

[2] Newham JJ, Forman JR, Heys M et al (2019) Children and Young People's Health Partnership (CYPHP) Evelina London model of care: protocol for an opportunistic cluster randomised controlled trial (cRCT) to assess child health outcomes, healthcare quality and health service use BMJ Open. [Accessed 20 September 2019]

# **Case study 11:** Community case conferences improve the palliative care needs and quality of life of patients and carers living with fibrotic lung disease[1]

## Setting

Royal Brompton Hospital, London

## The problem

Patients with fibrotic lung diseases experience substantial unmet symptom and psychosocial concerns that profoundly impact on patients' and carers' lives. In addition, poor communication and co-ordination of care, with little or no discussion surrounding important end of life preferences has been reported.

Recent UK government legislation promotes better integration of care to improve patient experience and outcomes, providing better continuity of individualised care at the end of life.

## What action was taken?

We aimed to obtain information on whether a case conference intervention (Hospital2Home) influences the palliative care concerns of patients with advanced fibrotic Interstitial Lung Disease and their carers, and to evaluate the feasibility and acceptability of the intervention in this group. Hospital2Home was trialled at the Royal Brompton Hospital using a fast-track randomised controlled trial with qualitative interviews. We measured change in Palliative Care Outcome Scale (POS) (a measure of symptoms and concerns at 4 weeks. Other outcomes measured included symptom control, quality of life, consent and recruitment rates. Fifty-three patients and 45 carers were recruited.

## Outcomes

A statistically significant and clinically relevant improvement in the primary outcome of palliative care needs [mean change in POS at 4 weeks -5.3 (95% CI -9.8 to -0.7); independent t test p=0.02; effect size (95% CI) -0.7 (-1.2 to -0.1)] was found.

The secondary outcomes of quality of life, anxiety and depression were superior in the fast-track arm.

Qualitative findings corroborated these data and indicated that patients, carers and health professionals valued the holistic assessment, individual care plans, improved communication, co-ordination of care and crisis management plans.

Patients, carers and health professionals felt empowered to manage symptoms with all stating that the symptom control guidance was helpful.

The case conference specifically addressed information needs and started discussions around advance care planning, enabling 90% of the 21 patients that died before the end of the study to achieve their preferred place of death, with only 28% of patients dying in hospital.

Qualitative work suggested that patients became less dependent on acute care services through improved community relationships, facilitating death outside of hospital.

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[1] Bajwah S, Ross JR, Wells AU and others 2015 Palliative care for patients with advanced fibrotic lung disease: a randomised controlled phase II and feasibility trial of a community case conference intervention Thorax 70: 830-839. doi:10.1136/thoraxjnl-2014-206583 [Accessed 26 August 2019]

# Case study 12: COPD patients with complex lives

## Setting

North Manchester Macmillan Palliative Care Support Service (NMMPCSS), Manchester

## The context

This case study describes the journey of a patient with COPD and complex needs. It is based on a real patient, but the name has been changed. Julie had end stage COPD and a chaotic lifestyle, lived in homeless accommodation and was driven by her addiction to illegal drugs. She used assisted ventilation at home and had a complex medication regime due to her drug dependency. Further treatment options had been exhausted. Julie was aware of her limited prognosis and that further care would be palliative.

## The problem

Julie lived alone, her only friends being other drug users that often stole from and manipulated her. Housebound and dependant on others for activities of daily living and social support, Julie remained adamant that she did not want to return to hospital for further treatment.

Julie was estranged from her mother and children due to her drug use. Her palliative diagnosis rekindled the relationship; although this was at first strained, the relationship improved with help from NMMPCSS as they became a third party present during many difficult conversations.

## What action was taken?

NMMPCSS co-ordinated a complex partnership approach that included Julie, her General Practitioner, the local Drugs and Alcohol Team to manage her medication and drug regime to prevent distressing withdrawal as she approached the end of her life, as well as to oversee social and financial support, difficult family communications and advance care planning.

Julie wasn't admitted to hospital in the final year of her life, but treated at home for several exacerbations of her COPD and associated pulmonary hypertension. On these occasions NMMPCSS increased their input and liaised closely with district nurses and the other community teams. Julie's personal care was funded by the NHS through Continuing Health Care.

Julie and her Macmillan Nurse, over time, established a close and trusting relationship and had sensitive and honest conversations about her preferred place of death and wishes for her funeral. She initially wanted to stay at home, but eventually realised that this was not a viable option. Julie had had a previous "poor experience during that hospice admission and took [her] own discharge". End of life care in a hospice was not an option. Julie agreed to a nursing home for end of life care, choosing a local home – she was frightened of dying alone and withdrawing from drugs.

## Key considerations

What was important to Julie?

- being normal and being treated like a young woman
- staying at home for as long as possible
- not being readmitted to hospital
- having her wishes listened to
- regaining dignity and respect at the end of her life
- not being in pain or distress due to withdrawal from drugs

## Outcomes

Julie was admitted to the nursing home when it was clear she was deteriorating and she, her mother and the home's staff were supported by NMMPCSS. She died peacefully 3 days later.

Julie's case has demonstrated that, where there is a co-ordinated, comprehensive service for patients with life-limiting illnesses, including those with non-cancer diagnoses, people who don't fit society's "norms" can be supported as their conditions deteriorate and can achieve appropriate end of life care and can achieve a "good death", free from distress. Palliative care can be appropriate at any point in a patient's illness journey.

## Further project information

The NMMPCSS is one of the Macmillan Cancer Improvement Partnership (MCIP) projects and was funded by Macmillan Cancer Support and North Manchester CCG. The project was developed in partnership with North Manchester Clinical Commissioning Group, North Manchester Care Organisation, which is part of the Northern Care Alliance NHS Group (NCA), St Ann's Hospice and Macmillan Cancer Support. It is based on a Macmillan Service development in Midhurst Surrey and adapted to suit the needs of North Manchester.

The team has been enhanced to include a Consultant in Palliative Medicine, a GP with special interest in palliative care, a service manager, Clinical Nurse Specialists, a dietician, a speech and language therapist, a physiotherapist, an occupational therapist, assistant practitioners, a volunteer co-ordinator, dedicated administration and a medical secretary. The service provides a single point of contact for patients and extended working hours from 8am-8pm, 7 days a week. This enhanced service was operationally launched in April 2015.

The main aims of the service are:

- to identify patients early in their palliative journey, to undertake a full assessment and provide palliative and supportive care in their preferred place of care
- to increase collaboration and integrated working between those caring for patients with a palliative prognosis resulting from any life limiting illnesses
- to increase care and support for patients and carers therefore relieving pressure, avoiding crisis and enabling patients to live life well until the end
- to reduce the number of inappropriate hospital admissions in the last year of life
- to increase the numbers of patients dying in their preferred place of death and reduce the number of deaths in hospital

During the first year of NMMPCSS being in place, GP palliative care registers increased from 380 to 826 patients with 35 out of 36 GP practices now holding these meetings. Better integrated and co-ordinated care has resulted in less crisis management of those on the caseload. The service caseload increased to 395 with all patients being contacted within 24 hours of referral. Of those patients known to the service, 83% of patients have an advance care plan in place and 82% die in their preferred place of care. Patients known to the service dying in the hospital setting has dropped from over 20% to 13%. The success of NMMPCSS has led to further Macmillan funding and a plan to extend it across the whole of Manchester.

# **Case study 13:** Warmer Homes Advice and Money (WHAM) tackling fuel poverty in Bristol and North Somerset

## Setting

A partnership of 7 advice organisations led by the Centre for Sustainable Energy, with a pool of caseworkers who rotate between organisations acting as a single point of contact. A caseworker is also based inside 3 NHS trusts within Bristol City and North Somerset unitary authorities (North Bristol NHS Trust, Weston Area Health NHS Trust, and University Hospitals Bristol NHS Foundation Trust) identifying patients at risk of returning to a cold home and referring them into the project.

## The problem

In Bristol and North Somerset, like much of the UK, the main drivers of fuel poverty are poor quality housing, high energy prices and low incomes. Within the Bristol City unitary authority, 11.7% (approx. 23,000 households) of households are estimated to be in fuel poverty. In North Somerset unitary authority, the estimate is 9.5% (approx. 9,100 households).[1]

Living in a cold home and coping with unaffordable fuel bills can have significant adverse implications on mental and physical health, educational and social outcomes.[2,3,4] An estimated 21.5% of excess winter deaths can be attributed to the coldest quarter of the UK's housing, where there is a greater risk of death than in warmer housing.[2] There is also a strong relationship between cold temperatures and respiratory diseases. Children living in cold homes are at greater risk of respiratory problems and lower educational attainment.[2] Struggling to pay fuel bills also has a negative impact on mental health, people who struggle to manage their bills often experience higher levels of anxiety and depression.[5,6] An estimated 34% of fuel poor households include somebody with a disability or long term health condition.[7]

## What action was taken?

WHAM aims to tackle the interconnected causes of fuel poverty through a partnership between different support organisation who can help with energy, debt, money management, income, home repairs, housing and other issues. WHAM is implementing most of NICE's recommendations from their 2015 guidance,[4] particularly ensuring there is a single-point-of-contact referral service for people living in cold homes. The project aims are to:

- improve the warmth, comfort, safety and security of the home
- improve knowledge and confidence around energy bills and managing energy more efficiently
- reduce debt and help people manage their money
- ensure households are receiving all the benefits they are entitled to
- providing advice on legal, immigration and housing issues

The project's unique strategy is having caseworkers who rotate between each partner organisation, understanding the specialisms of each organisation, becoming the single point of contact for beneficiaries and co-ordinating the work undertaken by all partners. Beneficiaries can remain in contact with their caseworkers to update them about progress, additional problems and outcomes.

## Outcomes

Since the project started in winter 2017 as a partnership between 3 organisations using 2 caseworkers with funding by Bristol City Council, WHAM has supported 1,217 households. It has since received additional resource to support a further 4 caseworkers bringing the total to 6. The expanded project now includes North Somerset unitary authority, 4 additional partner organisations and has doubled the number of people it aims to reach and support. The project can now access funds for free installation of first time gas central heating systems for low incomes households through the council's Warm Home Fund.

Quantifiable outcomes are monitored continually via agreed indicators, the current results of which are shown in table CS13.

**Table CS13: WHAM outcome indicators for tackling fuel poverty in Bristol and North Somerset**

| Outcome indicator | Total for the first 2 years |
|---|---|
| Beneficiaries will receive an income maximisation check which will ensure they are accessing all their entitlement | 1106 |
| Beneficiaries will report improved warmth & comfort at home in the winter | 576 |
| Beneficiaries will report that they are less anxious about their energy bills | 1011 |
| Beneficiaries will report that they are more confident & better able to keep their homes safe, secure & warm | 623 |
| Increased referrals generated from health/social care & VCS groups | 319 |
| Money saved or gained for beneficiaries | £323,187 |

As the project is currently midway through its 4 year duration, a full and final evaluation of outcomes will be completed at the end of the project. However, the first phase of the evaluation on people's health and wellbeing is planned for winter 2019/2020.

[1] Department for Business, Energy and Industrial Strategy (2019) Fuel poverty sub-regional statistics [Accessed 13 September 2019]
[2] Marmot Review Team (2011) The Health Impacts of Cold Homes and Fuel Poverty [Accessed 13 September 2019]
[3] Bridgeman T, Thumim J, Asher M and others (2016) Understanding the Characteristics of Low Income Households Most at Risk from Living in Cold Homes Final Report to the Welsh Government [Accessed 13 September]
[4] National Institute for Health and Care Excellence (2015) Excess winter deaths and illness and the health risks associated with cold homes (NICE guidance [NG6]) [Accessed 08 August 2019]
[5] Wilson T, Robertson J and Hawkins L (2012) Fuel Poverty Evidence Review: Defining, measuring and analysing fuel poverty in Scotland [Accessed 13 September 2019]
[6] Centre for Sustainable Energy (2010) You just have to get by [Accessed 13 September 2019]
[7] Centre for Analysis of Social Exclusion (2012) Getting the measure of fuel poverty [Accessed 13 September 2019]