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SUMMER 2016

Primary Care Respiratory **UPDATE**




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HIGHLIGHTS …

Self -management and use of rescue medication

Getting the basics right – clinical audit

Using templates to improve respiratory care

Making a difference locally

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The *Primary Care Respiratory Update* is published quarterly and distributed to members of the Primary Care Respiratory Society UK.

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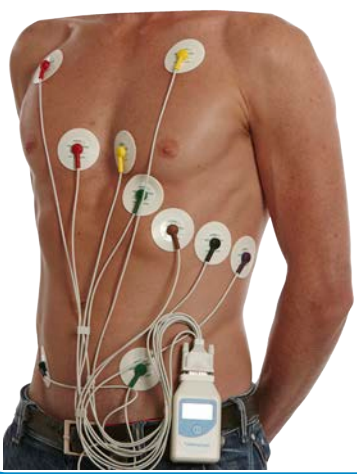

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Primary Care Respiratory **UPDATE**




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Each Fostair NEXThaler 200/6 DPI dose contains 200mcg of BDP anhydrous and 6mcg of formoterol. **Indications:** *Asthma:* Regular treatment of asthma where use of an inhaled corticosteroid/long-acting $beta_2$-agonist (ICS/LABA) combination is appropriate: patients not adequately controlled on ICS and 'as needed' (prn) short-acting $beta_2$-agonist, or patients already adequately controlled on both ICS and LABA. ***COPD* (Fostair 100/6 only):** Symptomatic treatment of patients with severe COPD (FEV_1 <50% predicted normal) and a history of repeated exacerbations, who have significant symptoms despite regular therapy with long-acting bronchodilators. **Dosage and administration:** For inhalation in adult patients (≥18 years). *Asthma:* **Maintenance And Reliever Therapy (Fostair pMDI 100/6 only)** taken as a regular maintenance treatment and prn in response to asthma symptoms: 1 inhalation twice daily (bd) plus 1 additional inhalation prn in response to symptoms. 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Formoterol itself may induce QTc prolongation. Potentially serious hypokalaemia may result from $beta_2$-agonist therapy and may also be potentiated by concomitant treatments (e.g. xanthine derivatives, steroids and diuretics) and increase the risk of arrhythmias. Formoterol may cause a rise in blood glucose levels. Fostair should not be administered for at least 12 hours before the start of anaesthesia, if halogenated anaesthetics are planned. Use with caution in patients with pulmonary tuberculosis or fungal/viral airway infections. Fostair treatment should not be stopped abruptly. Treatment should not be initiated during exacerbations or acutely deteriorating asthma. Fostair treatment should be discontinued immediately if the patient experiences a paradoxical bronchospasm. Systemic effects: Systemic effects of ICS may occur, particularly at high doses for long periods, but are less likely than with oral steroids. 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Hypertensive reactions may occur following co-administration with MAOIs including agents with similar properties (e.g. furazolidone, procarbazine). Concomitant treatment with xanthine derivatives, steroids or diuretics may potentiate a possible hypokalaemic effect of $beta_2$-agonists. Hypokalaemia may increase the likelihood of arrhythmias in patients receiving digitalis glycosides. **Fertility, pregnancy and lactation:** Fostair should only be used during pregnancy or lactation if the expected benefits outweigh the potential risks. **Effects on driving and operating machinery:** Fostair is unlikely to have any effect on the ability to drive and use machines. **Side effects:** *Common*: pharyngitis, oral candidiasis, headache, dysphonia, tremor. *Uncommon:* influenza, oral fungal infection, oropharyngeal candidiasis, nasopharyngitis, oesophageal candidiasis, vulvovaginal candidiasis, gastroenteritis, sinusitis, rhinitis, pneumonia, granulocytopenia, allergic dermatitis, hypokalaemia, hyperglycaemia, hypertriglyceridaemia, restlessness, dizziness, otosalpingitis, palpitations, prolongation of QTc interval, ECG change, tachycardia, tachyarrhythmia, atrial fibrillation, sinus bradycardia, angina pectoris, myocardial ischaemia, blood pressure increased, hyperaemia, flushing, cough, productive cough, throat irritation, asthmatic crisis, exacerbation of asthma, dyspnoea, pharyngeal erythema, diarrhoea, dry mouth, dyspepsia, dysphagia, burning sensation of the lips, nausea, dysgeusia, pruritus, rash, hyperhidrosis, urticaria, muscle spasms, myalgia, C-reactive protein increased, platelet count increased, free fatty acids increased, blood insulin increased, blood ketone body increased, blood cortisol decrease, oropharyngeal pain, fatigue, irritability, cortisol free urine decreased, blood potassium increased, blood glucose increased, ECG poor r-wave progression. *Rare*: ventricular extrasystoles, paradoxical bronchospasm, angioedema, nephritis, blood pressure decreased. *Very rare*: thrombocytopenia, hypersensitivity reactions, including erythema, lips, face, eyes and pharyngeal oedema, adrenal suppression, glaucoma, cataract, peripheral oedema, bone density decreased. *Unknown frequency*: psychomotor hyperactivity, sleep disorders, anxiety, depression, aggression, behavioural changes (Refer to SPC for full list of side effects). **Legal category:** POM **Packs and price:** £29.32 1x120 actuations **Marketing authorisation (MA) Nos:** PL 08829/0156, PL 08829/0175, PL 08829/0173, PL 08829/0174 **MA holder:** Chiesi Ltd, 333 Styal Road, Manchester, M22 5LG. **Date of preparation:** Oct 2015. 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CHFTB20160072. Jan 16.

Guest Editor's Round-Up

Anne Rodman

In this summer issue of *PCRU* we are focusing on making the best use of time and resources, an issue of ever increasing importance to clinicians and the NHS as a whole.

Our outgoing PCRS-UK Chair Stephen Gaduzo highlights some of the key developments of the society during his 3 year term of office, including the vital role of the society's publications and the continuing focus on empowering members through new education initiatives. We wish Stephen well as he steps down and welcome Noel Baxter as our incoming Chair.

Fran Robinson whets our appetites for the PCRS-UK annual conference, reinforcing the need to take every opportunity to learn and to include our patients' perspectives wherever possible. As a member of the conference organising committee I am proud of the work that has gone into this year's programme and hope all our delegates find much to enjoy and a renewed enthusiasm for implementing patient-centred changes in practice.

Sandy Walmsley's article on the use and abuse of rescue medication reminds us of the dangers of adopting a "one size fits all" approach to self-management, suggesting practical tips and issues for reflection to help keep those with COPD safe and well when their condition worsens.

In the policy round up we learn about the upcoming asthma updates from SIGN/BTS and new NICE guidelines. The focus is on improving diagnostic accuracy – relating this to real world practice – and also reviewing the more recent evidence to support best asthma management. There are new contributions to our understanding of the role of e-cigarettes in tobacco dependency.

Tricia Bryant highlights the importance of making time for clinical audit with a reminder of the basics, and I hope the interviews with Lesley Ashton and myself about practical initiatives designed to help clinicians improve outcomes will inspire and reassure you that anyone can set change in progress and move from practising to dissemination of quality care. Experience shows that time spent on such activities improves the future use of time and resources for ourselves and our colleagues.

Finally I have selected two articles from the journal summaries that could contribute to this aim by improving the diagnosis of respiratory conditions.

Firstly from *npj Primary Care Respiratory Medicine*, Turner and Bothamley show that by following guidelines before referring patients with cough many referrals could be avoided – a reminder that as primary care clinicians we can reduce the burden on secondary care resources and thereby hopefully reduce waiting times for our patients.

Getting diagnosis right first time would also avoid inappropriate inclusion of patients on chronic disease registers with the consequence of reducing unnecessary treatments and wasted appointments in general practice. In the "Best of the rest" Journal Round-Up I have chosen the paper by Looijmans van den Akker *et al* that contributes to the evidence on misdiagnosis of childhood asthma. The paper by Fisher *et al* on the Newcastle 85+ study looking at misdiagnosis at the opposite end of the age spectrum also merits attention.

In summary, I sincerely hope that time spent reading this issue will prove to be time well spent in its impact on your day to day clinical practice.

Respiratory

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COPD: Symptomatic treatment of patients with severe COPD (FEV_1 < 50% predicted normal) and a history of repeated exacerbations, who have significant symptoms despite regular therapy with long-acting bronchodilators. **Dosage and administration:** For use in adults ≥18 years. Not for use in children <18 years of age. ***Asthma:*** Not intended for the initial management. If an individual patient should require a combination of doses other than those available in the combination inhaler, appropriate doses of β_2-adrenoceptor agonists and/or corticosteroids by individual inhalers should be prescribed. The dose should be titrated to the lowest dose at which effective control of symptoms is maintained. 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If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion. A total daily dose of up to 12 inhalations could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice. *DuoResp® Spiromax® 320/9:* Only to be used as maintenance therapy. *Adults:* 1 inhalation twice daily (maximum of 2 inhalations twice daily). ***COPD:*** *Adults:* 1 inhalation twice daily. *Elderly patients (≥65 years old):* No special requirements. *Patients with renal or hepatic impairment:* No data available. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. **Precautions and warnings:** If treatment is ineffective, or exceeds the highest recommended dose, medical attention must be sought. Patients with sudden and progressive deterioration in control of asthma or COPD should undergo urgent medical assessment. Patients should have their rescue inhaler available at all times. The reliever inhalations should be taken in response to symptoms and are not intended for regular prophylactic use e.g. before exercise. For such, a separate rapid-acting bronchodilator should be considered. Patients should not be initiated during an exacerbation. Serious asthma-related adverse events and exacerbations may occur. If asthma symptoms remain uncontrolled or worsen, patients should continue treatment and seek medical advice. If paradoxical bronchospasm occurs, treatment should be discontinued immediately. Paradoxical bronchospasm responds to a rapid-acting inhaled bronchodilator and should be treated straightaway. Systemic effects may occur, particularly at high doses prescribed for long periods. Potential effects on bone density should be considered, particularly in patients on high doses for prolonged periods that have co-existing risk factors for osteoporosis. Prolonged treatment with high doses of inhaled corticosteroids may result in clinically significant adrenal suppression. Additional systemic corticosteroid cover should be considered during periods of stress. Treatment should not be stopped abruptly. Transfer from oral steroid therapy to a budesonide/formoterol fumarate fixed-dose combination may result in the appearance of allergic or arthritic symptoms which will require treatment. In rare cases, tiredness, headache, nausea and vomiting can occur due to insufficient glucocorticosteroid effect and temporary increase in the dose of oral glucocorticosteroids may be necessary. To minimise risk of oropharyngeal Candida infection patients should rinse mouth with water. Administer with caution in patients with thyrotoxicosis, phaeochromocytoma, diabetes mellitus, untreated hypokalaemia, or severe cardiovascular disorders. The need for, and dose of inhaled corticosteroids should be re-evaluated in patients with active or quiescent pulmonary tuberculosis, fungal and viral infections in the airways. Additional blood glucose controls should be considered in diabetic patients. Hypokalaemia may occur at high doses. Particular caution is recommended in unstable or acute severe asthma. Serum potassium levels should be monitored in these patients. As with other lactose containing products the small amounts of milk proteins present may cause allergic reactions. **Interactions:** Concomitant treatment with potent CYP3A4 inhibitors should be avoided. If this is not possible the time interval between administration should be as long as possible. Not recommended with ß-adrenergic blockers (including eye drops) unless compelling reasons. Concomitant treatment with quinidine, disopyramide, procainamide, phenothiazines, antihistamines (terfenadine), Monoamine Oxidase Inhibitors (MAOIs) and Tricyclic Antidepressants (TCAs) can prolong the QTc-interval and increase the risk of ventricular arrhythmias. L-Dopa, L-thyroxine, oxytocin and alcohol can impair cardiac tolerance. Concomitant treatment with MAOIs, including agents with similar properties, may precipitate hypertensive reactions. Patients receiving anaesthesia with halogenated hydrocarbons have an elevated risk of arrhythmias. Hypokalaemia may increase the disposition towards arrhythmias in patients taking digitalis glycosides. **Pregnancy and lactation:** Use only when benefits outweigh potential risks. 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MART = maintenance and reliever therapy.

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Approval code: UK/DUO/15/0042(1) **Date of preparation:** March 2016

Chair's perspective: A reflection on my three years in office

Stephen Gaduzo, *PCRS-UK Executive Chair*

My term of office as Chair of PCRS-UK comes to a close in September, so this is an opportune moment for me to reflect on the terrific progress the society has made over the last three years.

While I have been Chair, PCRS-UK has undergone some important developments in order to remain fit for purpose as a vibrant and strong professional organisation. Many of these changes reflect the technological, political and financial circumstances that have also buffeted our members. These include a dramatically increased NHS workload, financial pressures, political upheaval, the rise in the number of patients with multi-morbidities and a desire to focus on patient-centred care.

A number of the developments have been designed to enable our members to make the most of their precious time and resources, a key current campaign of ours and a theme for this issue of *Primary Care Respiratory Update*.

A key improvement has been the relaunch of the *Primary Care Respiratory Journal* (*PCRJ*) as *npj Primary Care Respiratory Medicine*. This came about as a result of a publishing agreement established between us and the Nature Publishing Group in conjunction with the International Primary Care Respiratory Group (IPCRG). The driver for this was not only the need to stem significant financial losses on the journal, but also a recognition that, although the PCRJ had many strengths as an academic journal, as a small society we did not have the capability to fully market it and realise its full potential.

npj Primary Care Respiratory Medicine is an online-only, fully open access journal; articles are freely available on the journal website and new content is published as soon as it is ready for publication rather than waiting to be assigned to an issue. One of the main advantages of being hosted on the nature.com platform is that all authors who publish in *npj Primary Care Respiratory Medicine* benefit from maximum dissemination of content through one of the most prestigious scientific web platforms in the world. As a result, the journal is attracting a wider audience and its readership is expanding.

To fill the gap created by the loss of the print issue of the journal, we launched *Primary Care Respiratory Update* to keep members abreast of society news and policy developments as well as features about good practice and a round-up of the most interesting recently published clinical papers.

The success of our partnership with the Nature Publishing Group, and recognising that we faced comparable issues with our education activities, led us to consider looking for an education partner who could help us to develop our education materials and make them more accessible to a wider group of grass roots primary care health professionals.

This resulted in our new partnership with Cogora, the publishers of Pulse, Pulse Online and Nursing in Practice and the launch earlier this year of the Primary Care Respiratory Academy offering an online 'hub' of educational materials, resources and respiratory news plus a roadshow of 20 regional meetings. If you have not already been to a roadshow event, visit http://www.respiratoryacademy.co.uk to see if there is still one to come near to you. Through the Primary Care Respiratory Academy we hope to reach out far beyond the respiratory interested health professionals who are our members to the wider body of primary care clinicians – providing easily accessible learning that highlights common pitfalls as well as evidence-based simple practical tips that work in a busy work environment.

These two successful links with external partners have parallels with general practices which are

increasingly having to join together in federations or other corporate structures in order to thrive in a changing world.

Another important development for PCRS-UK has been an increased focus on patient-centred care. Everything we do now emphasises the need to empower patients and work with them as the key drivers in their care. Mirroring a focus on patient-centred care both in NHS policy and at practice level, this theme has been an integral part of the annual conference programme for the last three years. It has resulted in some very moving and revealing insights from patients into what it means to live with a lung condition. Last year we set up a new Patient and Carer Lay Reference Group which provides direct insights into the patient's needs and actively contributes through the PCRS-UK Executive, the Conference Organising Group and with ongoing feedback on key issues.

To further improve our patient focus we have developed a closer collaboration with the British Lung Foundation (BLF). One of the fruits of this has been the COPD Patient Passport originally developed by my North West respiratory team jointly with the BLF and now reaching a far wider population through the joint efforts of PCRS-UK and the BLF. PCRS-UK has also collaborated closely with the BLF to create a new suite of COPD self-management tools which help healthcare professionals provide patients with all the information they need in the short time that they have with them.

As we look to the future we will see an increased focus on multi-morbidities and a more holistic approach to care. As a society our focus is on respiratory care, but increasingly we need to recognise that our patients very often suffer from more than one long-term condition and we cannot just think about asthma or COPD in isolation. This year our conference programme entitled "Fit for the Future: a holistic approach to respiratory care" reflects this theme. We are also increasingly looking at the bigger picture of lung health so, for example, we want health professionals to move away from seeing smoking cessation as a lifestyle choice that is often managed as a one-off intervention that can be seen as someone else's job. We are making the case for the health sector to take equal responsibility with local authorities on reducing the inequity caused by smoking and to reframe the problem as tobacco dependency, a long-term relapsing condition starting in childhood.

In a time of austerity we have had to take a hard look at streamlining and rationalising administrative and support processes and our website. In the same way that general practices have had to reassess their finances, we have had to look at ways of reducing overhead costs and realigning our expenditure with our anticipated income in order to keep the society on a firm financial footing.

By overhauling our membership systems and introducing a single membership scheme alongside investment in a new CRM (customer relationship management) system and website, we have achieved a reduction of around 30% in our overhead costs. This investment is also enabling us to develop a more dynamic, user-friendly website which makes it quicker and easier for people to search for the information they need.

Our clinical education resources are now freely available to everybody through our website. Membership of PCRS-UK is increasingly focused on giving clinicians the opportunity to be part of a friendly community of like-minded individuals interested in joining a professional organisation and keen to participate in our annual conference or respiratory leadership programme, to have a voice in how respiratory policy and guidance shapes up in the future – or just to have a simple way of keeping themselves abreast of the latest developments and respiratory best practice.

In an ever-changing world I see membership of PCRS-UK as offering a safe haven of stability and an antidote to the pressures of the NHS. PCRS-UK for me has always been a source of high quality clinical content, professional support and mentorship. I have always been proud to be a member of a society that has punched above its weight and influenced policy and service development at the highest level on behalf of its members.

Of course I do not claim sole credit for these developments. None of them could have been achieved without the passion and support of the PCRS-UK Executive, our hard working committee members and the ideas and dedication of our chief executive Anne Smith, her senior management team and the Red Hot Irons staff, who provide all the operational support for PCRS-UK.

It has been a wonderful and rewarding challenge to lead PCRS-UK for the last three years, and I am confident that the society will continue to evolve and develop in the years ahead as it focuses on helping primary care clinicians to deliver high value patient-centred respiratory care.

I wish the very best to Chair Elect Dr Noel Baxter who will be taking over from me in September. I have every confidence that, under his chairmanship, PCRS-UK will continue to survive and thrive in the challenging environment in which we live and work.

Supporting
you and your patients

We provide a range of support and information for people living with COPD and other lung conditions.

Our support includes:

- The BLF Helpline: **03000 030 555**
- A national network of **Breathe Easy** support groups
- Comprehensive COPD information online: **blf.org.uk/COPD**
- A range of leaflets and booklets for your patients: **blf.org.uk/publications**
- COPD patient passport available in print and online: **blf.org.uk/passport**

Helping you
develop your services

We also provide support and advice on service improvements and redesign across the respiratory pathway.

We offer:

- Bespoke training packages
- Awareness campaigns to support early diagnosis
- Organise patient engagement
- And much more: **blf.org.uk/hcp**

To find out more, please contact:
020 7688 5555 or **hello@blf.org.uk**

British Lung Foundation

blf.org.uk

Fit for the Future: a holistic approach to respiratory care

PCRS-UK National Primary Care Respiratory Conference

Francesca Robinson, *PCRS-UK Communications Consultant*

The 2016 PCRS-UK annual conference "Fit for the Future: a holistic approach to respiratory care" will explore the respiratory care needs of patients from cradle to grave.

Supported by our conference partners – Asthma UK, the British Lung Foundation (BLF) and Education for Health – the conference will also take a wider look at external factors that could improve patients' lives physically, mentally, socially and spiritually.

There will be patient-centred clinical updates running alongside sessions looking at the very latest thinking on how future models of care will enable primary care to respond to the changing needs of patients and the pressures on the NHS.

Dr Andy Whittamore, Co-Chair of the PCRS-UK Conference Committee, says: "The NHS is changing very rapidly and we picked a title that reflects the idea that not only do our patients need to be helped to be fit in the future but we also need to look at ourselves and the NHS as a whole to make sure that we too are fit and robust enough to provide decent care for people in the years ahead".

The opening plenary will set the scene with a presentation by Professor Simon Gregory, Postgraduate Dean for the East of England, on NHS England's Five Year Forward View and what the vision is for respiratory care and long-term conditions.

This will be followed by a panel discussion with the BLF and Asthma UK focusing on the patient perspective. Independent respiratory nurse specialist Anne Rodman, a member of the Conference Committee, says there is a patient-centred focus running all the way through the conference. "With videos and live presentations from patients of all ages we will hear what the impact of respiratory disease is on them. The idea is to try and really focus on what patients' hopes and fears are and link that to how the NHS is moving forward."

Clinical symposia

The focus of the clinical stream is on helping patients look after their lungs. Sessions cover respiratory disease throughout the life cycle with presentations on the impact of air pollution on developing lungs and how this can affect patients for the rest of their lives, living with asthma as a teenager and how they can be supported by health professionals, right through to end of life care and how to adopt a holistic approach to dying.

There will be practical ideas for encouraging respiratory patients to exercise with a presentation on the psychology of exercise by Dr William Bird, a GP from Reading who has set up schemes which encourage people to become more active. Another session is devoted to therapeutic options to reduce tobacco dependency.

An entire session is devoted to breathlessness, which will cover how to personalise care for the breathless patient and manage breathlessness holistically. There will also be a presentation on the Living with Breathlessness study. This is a programme of work carried out by the Primary Care Unit of Cambridge University that is providing new evidence on the trajectory of care needs and preferences of patients with COPD and their carers and how they can be better met.

Dr Katherine Hickman, a member of the Conference Committee, says: "This year the conference sessions will focus on looking at the bigger picture of respiratory care and will encourage delegates to look at the external factors that affect their patients. So, for example, with air pollution it's about raising

awareness of patients about it, addressing their concerns and incorporating that into routine care and asthma reviews; with exercise it's about bringing up the benefits of exercising in routine conversations."

To get everyone in the mood for the conference dinner at the end of the first day there will be an entertaining but informative respiratory challenge based on University Challenge with a team of generalists battling against a team of specialists to see which group has the best knowledge of respiratory care.

Interactive workshops

Run in conjunction with Education for Health, this year the interactive workshops have been designed to give clinicians the practical skills that will enhance their consultations.

Chris Ennor, Education for Health trainer responsible for designing this section of the programme, says: "In the time pressured atmosphere in which we are all working, these sessions will help people to think how they can get value for what they are doing, how they can do things differently and how they can make best use of their time and resources".

The workshops cover:

- Templates in respiratory care: friend or foe? How can we use templates but still ensure a personalised and patient-focused approach? It will challenge delegates to think about whether their templates are fit for purpose and whether they could target care in a better way.
- Chest examinations: A session for experienced nurses and allied health professionals which will cover the unwell patient, how to recognise different chest sounds, how to spot pneumonia, how to identify whether there is something going on that is more than an exacerbation of COPD or asthma.
- Simplifying spirometry interpretation: This will provide a step-by-step guide to providing gold standard spirometry.
- Helping patients and their carers to live with breathlessness.
- Changing patient behaviour: This practical session, focusing primarily on smoking cessation and a healthy active lifestyle, will be invaluable for learning about the skills which can help our patients make real changes to their behaviour and lifestyle.
- Breaking news to respiratory patients: This workshop will explore how to break news about a diagnosis of a long-term condition or talk about end of life care, for example, in a constructive and helpful way for patients that creates an effective partnership between clinician and patient.

Service development

The service development stream will showcase new models of care and service redesign which will be of interest to people influencing the shape of respiratory services.

PCRS-UK Chair Elect Dr Noel Baxter says: "We are going to be showing that, to deliver high value respiratory care in primary care, we now have the opportunity to work with other healthcare professionals who are ready and waiting to share their skills and knowledge within new healthcare structures. The general practice workforce is under pressure and we need to think more broadly about who else has the expertise to help deliver the outcomes required of us. What will the models look like that will integrate community, hospital and primary care? The sessions in this stream will inspire people to think differently about the way respiratory care is provided and will give delegates ideas about how everyone in the workforce can make the best use of their time and resources."

Highlights include:

- Urgent and emergency care: A presentation on how the East of England Ambulance Service is working closely with respiratory services in the community to provide better coordinated services to help prevent breathless patients being admitted to A&E.
- The long-term condition clinician: This session will look at the GP Extensivist, a new role being pioneered by the New Models of Care Vanguard PACS (Integrated Primary and Acute Care System) site in Yeovil where a GP provides focused holistic care for a smaller personal list of people with complexity and multimorbidity supported by a multidisciplinary team.
- Working with other disciplines: This is an opportunity to learn about the value of working with psychologists in general practice. How, for example, they can work with respiratory patients to improve adherence to therapy, tackle depression and anxiety, and encourage behaviour change. Ravi Sharma, a practice-based pharmacist, will talk about the now much talked about GP pharmacist role and how it can bring a new therapeutic skill into the practice to improve outcomes for patients with respiratory disease.
- Treating tobacco dependency: everyone's business: This includes a session on how the London Fire Brigade has worked with the London Respiratory Network to help change the way they think about smoking, risk and health, not only by beginning to look within their own organisation but also on the way they advise patients with dementia or on oxygen about the risk of smoking in their homes. Dr Julianne Kause, an emergency care consultant from Southampton University Hospital, will talk about her and her colleagues' work to improve patient safety through the role of the internal medical examiner and their particular experience around getting tobacco smoking recorded as a cause of death on death certificates.

Research stream

The research stream run in conjunction with *npj Primary Care Respiratory Medicine* will provide a stimulating update on the latest research developments.

Last year there was a significant increase in the number of abstracts and posters and Andy Whittamore is hoping even more will be received in 2016. This is not only for cutting edge research from academic centres; he is calling on anyone who has some good practice to

share to submit their work. "I say to people, even if you think what you have done is not that big a deal, if it's something new or you have changed practice for the better, come along and share it because other people will be interested in learning about your work and applying it in their practice."

The conference will close with the popular Grand Round, this year focusing on cough, one of the most common symptoms seen in primary care. It will be introduced by Paul Stephenson, the charismatic joint Editor in Chief of *npj Primary Care Respiratory Medicine*.

Alongside the four main streams of the conference there will be a range of high quality satellite sessions developed in conjunction with our pharmaceutical company partners.

Why you should attend

This year's programme brings together the expertise of an increasingly wide range of disciplines involved in providing respiratory care in a primary or community care setting. Anybody who is leading or working in a respiratory team in the community or primary care, regardless of professional discipline, GP, practice nurse, community pharmacist, respiratory specialist doctor, nurse or physiotherapist, will find the entire conference valuable and stimulating, says Andy Whittamore.

The conference runs from 14th to 15th October at the Telford International Centre.

What people said about last year's conference:

"I have met some inspirational clinicians and leaders"

Steven, respiratory physiotherapist

"The enthusiasm in the research stream has been fantastic. It has been a privilege to listen to the abstracts being presented and speaking to the people at the posters"

Paul, academic, Edinburgh

"I go to the PCRS-UK conference to update my knowledge and then I go back and look at my practice to see what I can change and do better"

Karen, practice nurse, Daventry

"The sessions address different levels of expertise so they accommodate people like me who are new as well as those who are quite advanced"

Amy, nurse practitioner, Milton Keynes

"This conference is always really challenging and makes me look at my practice and ask – am I doing it right, could I do it better or is there another way I could be doing things?"

Karen, advanced nurse practitioner, Northfleet

"I'm involved in COPD commissioning for our CCG so the PCRS-UK annual conference always provides food for thought"

Martyn, GP, Hertford

"This conference helps me to think out-of-the-box and ask – how can we change what we doing and how can we improve on what we are already doing?"

Ann, community respiratory nurse, Bath

"I go to the PCRS-UK conference to make sure I'm keeping up-to-date, to network with other people and to hear other people's thoughts on improving care"

Clare, respiratory physiotherapist, Bristol

"This is the sort of meeting where you come away with something to think about and with questions that require attention"

Jon, secondary care respiratory specialist, Rotherham

Help your patients self-manage their asthma better

Asthma UK has launched a new range of printed booklets packed with simple, practical strategies to help with medicine adherence, using asthma action plans and more.

Download for free and find out how to order bulk copies:
www.asthma.org.uk/advice/resources

Looking for more asthma advice?

Call Asthma UK's nurses on **0300 222 5800** (open 9-5, Monday-Friday)

Join the community of healthcare professionals via **www.asthma.org.uk/professionals/sign-up**

Self-management: Use of rescue medication for COPD

Fran Robinson talks to Sandy Walmsley

Deciding when to give rescue medication to a COPD patient for them to take if their symptoms deteriorate is an art because it involves more than just writing a prescription, according to Sandy Walmsley, independent respiratory nurse practitioner and PCRS-UK Executive member.

The NICE 2010 COPD guideline recommends that people with COPD should be given a self-management plan that encourages them to respond promptly to the symptoms of an exacerbation.[1] This advice should include how to recognise an exacerbation and how to implement appropriate management strategies, including a rescue pack of antibiotics and/or oral steroids for self-treatment at home where indicated.

Recently retired from her job as Lead Respiratory Nurse Specialist at the Heart of England NHS Foundation Trust, Sandy explains that the key to giving a prescription for rescue medication is knowing the patient well and being confident that they fully understand when and how to take their treatment.

Who should be given rescue medication?

"It isn't appropriate for everyone to be given rescue medication," says Sandy, "because some people will panic and take their steroids and antibiotics 'as and when' if they don't fully understand how their medication works. The danger is they may take antibiotics when they don't have an infection or they may only take half the course and stop when they start to feel better which creates problems with antimicrobial resistance. They may also take too many steroids. If patients take three courses of steroid treatment a year when they don't need them, they put themselves at risk of problems including adrenal suppression, osteoporotic fractures, diabetes, pneumonia, psychosis, thinning skin and cataracts."

Clinicians need to be sure that the patient understands what their normal baseline is: "That is the crux of it all," says Sandy. "For one patient 'normal' will mean they can climb the stairs without getting out of breath, while another may have to stop half way up to catch their breath." She says patients can pin their normal baseline onto the very practical everyday things that they do in order to assess whether they are having a good day or a bad day.

"COPD is a very variable condition with good days and bad days, so patients should understand that they should not necessarily panic if they have two bad days in a row because that could just be due to the weather. It's such an individualised thing, there just isn't a 'one size fits all', and that's the difficulty with knowing who should be given a rescue pack. A lot of this comes with experience."

It is essential that very specific instructions about when to take rescue medication and when to contact a healthcare professional are written into the patient's self-management plan which is tailored specifically to them.

When should a patient start taking their rescue medication?

Steroids

Patients are advised to start oral corticosteroid therapy if increased breathlessness interferes with daily activities.[1]

Another concern with giving patients rescue medication is that patients might start to take their prednisolone too early or too late, or they may think they need to take their antibiotics and steroids together. Patients need to understand that sometimes they may only need to take the steroids to treat their breathlessness. "I had a patient who suffered from a lot of anxiety and this tended to make her breathless. So this lady would become quite poorly, but a

lot of her breathlessness was due to anxiety and not an infection," explains Sandy.

It is essential that very specific instructions about when to take rescue medication and when to contact a healthcare professional are written into the patient's self-management plan which is individualised to them.

Antibiotics

Antibiotics should be initiated during an exacerbation if sputum becomes purulent.[1] Sandy says this also comes back to patients' understanding of what is normal for them. "Some people cough up green phlegm every day when they get up in the morning and within an hour that phlegm has turned clear and that's to be expected if they have been lying still all night, not moving or exercising their lungs. So, for those people, that would be their normal baseline and the green phlegm first thing in the morning would not indicate the presence of an infection."

"The advice we give our patients is,, "If you wake up and your phlegm changes colour, you are feeling unwell and you've had those symptoms for more than 24 hours, then start your antibiotics. But if you think you have had flu or a viral infection it would be preferable to discuss with their GP; sometimes a sputum culture will be useful to check for bacterial infection. This is important if they have started the rescue medication and have not begun to feel better. Simply handing out more antibiotics will do no good."

The importance of a review

Sandy stresses that it is essential that anyone who starts their medication should be reviewed within three days by a healthcare professional to assess whether the antibiotics are working. If there is an infection, the antibiotics will kick in after 72 hours and the patient will start to feel better. That review should then trigger a prescription for their next rescue medication.

She says it is also crucial to ensure that receptionists are educated to understand that these patients need to be seen promptly.

TOP TIPS

- Every patient with COPD should have an individualised self-management plan. Rescue medication may or may not be part of that self-management plan.
- You must assess your patients' suitability to be given rescue medication.
- Give them very specific written instructions about when to take the medication.
- Make sure they are able to follow those instructions.
- Check that they are able to recognise what is and is not normal for their condition.
- Review the patient within three days of starting their medication.
- Alarm bells should ring if a patient's symptoms do not respond after taking their rescue medication.
- Rescue medication should never be given out on repeat prescription.

Rescue medication should never be put on repeat prescription, otherwise the danger is these patients may not be reviewed and problems will not be picked up. For example, if patients are continually taking antibiotics and not taking the whole course because they start to feel better, their exacerbation will simply flare up again in a short time. It is also important that the patient has a review so that their use of steroids can be monitored.

What about patients who are unsuitable for rescue medication?

It's a fine line whether to withhold rescue medication because a lot of patients are very stoic, put up with their symptoms without seeking help and end up in hospital with community-acquired pneumonia or an exacerbation of COPD.

Patients who are unsuitable to be given rescue medication and who start to feel unwell should be instructed to call a healthcare professional for an assessment. This should be written into their self-management plan.

"When done properly, giving a rescue pack to the right patient works really well and that makes the best use of everybody's time and resources. But you will always get a few patients who will abuse rescue medication and not use it properly, often because they have

Issues to reflect on

- If patients have taken their rescue medication, follow them up and find out whether they took it appropriately and whether it made any difference.
- Do a search for the number of COPD patients in your practice being given repeat prescriptions for antibiotics and steroids. Consider whether they are being given these prescriptions appropriately.
- Find out how many times patients ask for rescue prescriptions of antibiotics and steroids and whether they are asking for review appointments once they have started their rescue pack.
- Ask whether patients who have taken rescue medication can easily get an appointment for a review. Do reception staff understand the need for COPD patients who have used rescue medication to have a consultation for a review?

not fully understood when to take it. For clinicians, supporting self-management comes with a combination of experience and getting to know their patients," says Sandy.

NICE recommends

Patients at risk of having an exacerbation of COPD should be given self-management advice that encourages them to respond promptly to the symptoms of an exacerbation by:

- Starting oral corticosteroid therapy if their increased breathlessness interferes with activities of daily living (unless contraindicated).
- Starting antibiotic therapy if their sputum is purulent.
- Adjusting their bronchodilator therapy to control their symptoms.
- Patients at risk of having an exacerbation of COPD should be given a course of antibiotic and corticosteroid tablets to keep at home for use as part of a self-management strategy.
- It is recommended that a course of corticosteroid treatment should not last longer than 14 days as there is no advantage in prolonged therapy.
- The appropriate use of these tablets should be monitored.
- Patients given self-management plans should be advised to contact a healthcare professional if their symptoms do not improve.

References
1. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE, June 2010. www.nice.org.uk/guidance/cg101

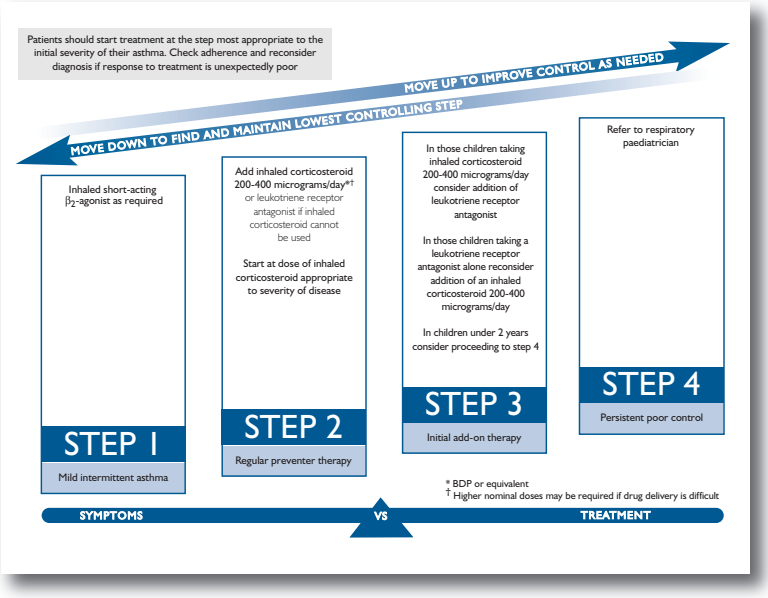
Policy Round-Up

Bronwen Thompson, *PCRS-UK Policy Advisor*

A summary of the latest developments in the UK health services, including any major new reports, guidelines and other documents relevant to primary care respiratory medicine

Asthma guidelines – where are we?

For many years the British Asthma Guideline has been the indisputable authority on best practice asthma management in the UK. But now, like buses, there are three due to arrive in the next 18 months. First, we can expect an update of the BTS/SIGN British Asthma Guideline this summer. The sections on diagnosis and pharmacological treatment have been reviewed in detail and updated with the latest evidence. New developments in diagnostic testing – and an increasing interest in the value of objective tests – and a surge of innovation in medication – compounds, combination products and devices – have driven the need to update these sections. Consultations have been held at the Winter BTS meeting in 2015 and by email with stakeholder groups in March/April. We expect publication this summer.



NICE entered the UK asthma guideline scene in 2013 by starting work on a guideline for diagnosis and monitoring of asthma. Feedback on the draft guideline in 2015 raised significant concerns about practical implementation, and NICE took the unprecedented step of putting aspects of the guideline out to field testing and delaying publication. The most contentious areas in terms of a departure from current practice are the proposals to use spirometry in diagnosing asthma as a first-line investigation and to use fractional exhaled nitric oxide (FeNO) as a routine test in primary care. NICE has selected a range of test sites around England (practices or groups of practices) which are introducing these tests into their current approach to diagnosis. They will gather a defined set of data, which will be fed back to the NICE guideline development group so that the guideline will be informed by this piece of 'real world' evaluation. We expect the final guideline to be published in 2017.

The third piece of guideline development is on asthma management. NICE has a group of clinicians and health economists reviewing the evidence on how best to manage asthma and aim to have this ready for publication in June 2017, alongside the one for diagnosis and monitoring.

So we can expect some evolution in the way that asthma is diagnosed and managed in the next few years. We will keep our 'PCRS-UK Quick Guide to the diagnosis and management of asthma' updated to provide you with a single guide with a focus on primary care. Regardless of the changes, however, the core principles will remain – individualised patient-centred care, the importance of self-management and enabling the patient to lead as active a life as possible.

COPD guideline to be updated

The NICE COPD guideline was published in June 2010 and, although it was considered for review in 2014, the view was taken that there was insufficient new evidence to warrant such a review. However, in April it was decided that there are now 500 or so new papers that make it important to undertake a comprehensive review of the current guideline. As we know, many new compounds and combination products have become available since 2010, but sections on diagnosis and management of exacerbations, as well as managing stable COPD, will be updated. PCRS-UK will be inputting a primary care perspective at every stage of guideline development and will consult with members to shape and inform our input.

European tobacco products directive now in operation

May saw the arrival of the European tobacco products directive (TPD) in the UK. This is a pan-European agreement about the control of products containing tobacco, which introduces new rules for nicotine-containing e-cigarettes. It is designed to set minimum standards for the safety and quality of all e-cigarettes to ensure that information is available to consumers and to protect children from starting to use e-cigarettes.

Companies marketing e-cigarettes containing less than 20 mg/ml of nicotine will have to notify MHRA in advance of launching, but will be able to market them as consumer products, with restrictions on how they are marketed and advertised. E-cigarettes containing more than 20 mg/ml nicotine will have to go through the MHRA licensing process for medicinal products. By April, MHRA had licensed two products but neither of these was yet on the market.

It is fair to say that there remains considerable debate about how e-cigarettes should be classified and regulated. Some countries are banning sales of e-cigarettes entirely. Wales places them in the same category as cigarettes when it comes to banning their use in public places, whereas England leaves it to the discretion of the establishment. Some feel all e-cigarettes should be classified as nicotine replacement therapy (NRT), whereas the TPD has decided to allow some to be treated as consumer products and others to be licensed as medicines, depending on the nicotine strength.

PCRS-UK advises that healthcare professionals can encourage the use of NRT for smoking cessation – including the use of those e-cigarettes which are licensed as medicines for this purpose. We advise members to be aware of the policy of their local CCG/other local healthcare organisation with respect to prescribing e-cigarettes.

PCRS-UK has long held the position that it will not be involved with the tobacco industry, and will not engage with tobacco companies which are marketing products containing nicotine. As a result, we will not be involved in the promotion of any e-cigarettes where the company marketing the product is a tobacco company or a subsidiary of a tobacco company. Also, we will only support the use of e-cigarettes which are marketed as medicinal products.

Check out our materials on smoking cessation on our website under 'resources' and, if you are interested in reading more about e-cigarettes, see the ASH briefing on e-cigarettes http://www.ash.org.uk/files/documents/ASH_715.pdf

INTERESTED IN TAKING ACTION LOCALLY?

See the ASH local toolkit which provides resources for local action.
http://www.ash.org.uk/information/ash-local-toolkit

NICE guidance

The following pieces of NICE guidance are not respiratory-specific but may be of interest to members.

Published		In development	
Transition from children to adult services guideline	Feb 2016	Multi-morbidity: clinical assessment and management guideline	Sep 2016
Anaphylaxis quality standard	Mar 2016	Older people with social care needs and multiple LTCs quality standard	Sep 2016
Food allergy quality standard	Mar 2016	Acute medical emergencies in adults and young people; service guidance	Nov 2016
Medicines optimisation quality standard	Mar 2016		

Getting the Basics Right

Clinical audit

Tricia Bryant

Introduction

Clinical audit is now recognised as a commonplace form of outcomes management in clinical governance. The very word 'audit' often heralds a sigh by busy healthcare professionals. However, clinical audit is an important tool in helping us to improve the care and equity of care for our patients, a goal we should all share. Put simply, clinical audit is a way of improving and ensuring best practice by reviewing what we are doing and comparing that practice with what the evidence tells us we should be doing, thus allowing us to adjust our practice accordingly to improve the quality of care we provide for patients.

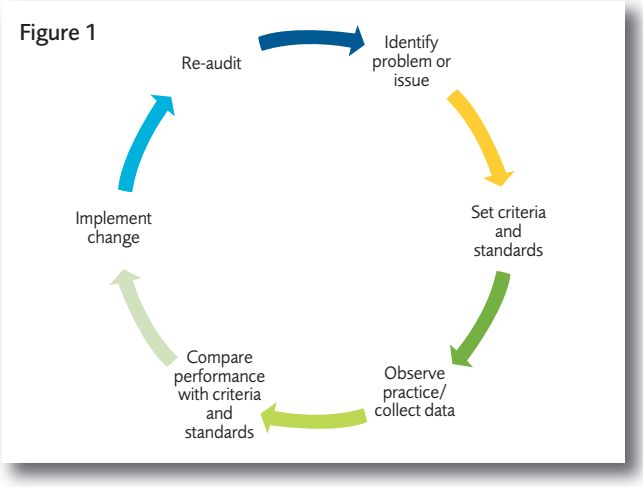
One of the first documented clinical audits was undertaken by Florence Nightingale during the Crimean War of 1853–55. On arrival at the medical barracks hospital in Scutari in 1854, Nightingale was appalled by the unsanitary conditions and high mortality rates among injured or ill soldiers. She and her team of 38 nurses applied strict sanitary routines and standards of hygiene to the hospital and equipment. Florence Nightingale had a talent for mathematics and statistics, and she and her staff kept meticulous records of the mortality rates among the hospital patients. Following these changes the mortality rates fell from 40% to 2%, and the results were instrumental in overcoming the resistance the British doctors and officers had to Nightingale's procedures. Her methodical approach, as well as the emphasis on uniformity and comparability of the results of health care, is recognised as one of the earliest programmes of outcomes management.[1]

With this in mind, it is important that we consider ways in which we can encourage a more favourable attitude towards audit among clinicians. Clinical audit should go beyond the tick box exercise of QoF; it is a way of recognising when the intended outcome of an intervention is less than favourable resulting in negative impact on patient outcomes. For example, auditing patients with multiple admissions due to exacerbations of asthma could prompt us to consider whether we could have managed the patient's condition differently and if a change in practice could lead to improvements in care for similar patients in the future. From a professional view, well-designed clinical audits can help develop practice, improve the standard of patient care and support our own professional development and revalidation.

Getting started with audit

The process of clinical audit, described as the audit cycle, follows a continuous cycle of quality improvement as demonstrated in Figure 1.

Figure 1



Step 1: Identify the issue and state the objective

Clinical audit is a quality improvement process and should focus on areas where a topic/issue has been identified or there is expected to be room for improvement. The audit topic should focus on:

- An issue that is related to patient care
- An issue or topic that is a priority for the practice/team
- An issue or topic that is measurable
- An issue or topic that can be investigated systematically (i.e. where data are readily available to collect/analyse and where data can be collected in a reasonable time frame)
- An issue or topic where the practice/team is prepared and able to implement changes to improve outcomes if necessary

Agree the aims and objectives for your audit.

- Are they realistic and achievable?
- Are they clear and focused?
- Ensure your aims are specific and indicate what the audit should achieve

Who will take part in your audit? Who will do the planning and carry out the audit?

- Your team should ideally include anyone who may be affected by the outcomes of the audit including any changes that are identified
- You should involve practice team members who have an interest in the audit topic
- You should use the various skills of all the team members to produce the audit (e.g. those with experience of the clinical area, those with the experience of data collection)
- You should consider if patient involvement in the audit would be useful/helpful

Finding the evidence to support your aims and objectives

Evidence can come from a range of areas. The following list provides a hierarchy to consider when looking for evidence:

- National guidelines (National Institute for Health and Care Excellence (NICE), NICE Clinical Knowledge Summaries (CKS), Royal Colleges, British Thoracic Society/Scottish Intercollegiate Guideline Network (BTS/SIGN))
- Research findings, particularly systematic reviews (Cochrane Library)
- Local policies, protocols and procedures
- Local consensus (not necessarily based on best practice – but sometimes all the information you have available)

Primary sources of information (make sure that the information is current) include:

- Books and journals
- National guidelines and reports from the Department of Health, NICE, Royal Colleges, BTS/SIGN
- Databases including the Cochrane Library, MEDLINE, EMBASE, HMIC, CINAHL
- Local care plans, protocols and guidelines
- Patient information groups (British Lung Foundation, Asthma UK)

Step 1: Example – Asthma Follow-Up

Issue

The practice wishes to ensure that every patient suffering an asthma exacerbation is reviewed within 2 weeks.

Basis for recommendation

- Follow-up is necessary after an exacerbation (National Review of Asthma Deaths (NRAD)), as the evidence suggests that more than 15% of people will have a relapse within 2 weeks (BTS/SIGN). The follow-up process should aim to identify a possible cause of the exacerbation so that strategies to prevent further exacerbations can be developed
- The evidence suggests that follow-up after an exacerbation which involves providing self-management education and a written asthma action plan may reduce hospital admissions and improve symptom control and self-management of asthma
- Outcomes may appear to differ little by the place or personnel involved (Bernanrd-Bonnin *et al*. 1995; Nathan *et al*. 2006)

Step 2: Agree audit criteria and set standards

Decide and agree audit criteria and set target standards. Standards are more specific than objectives. They are

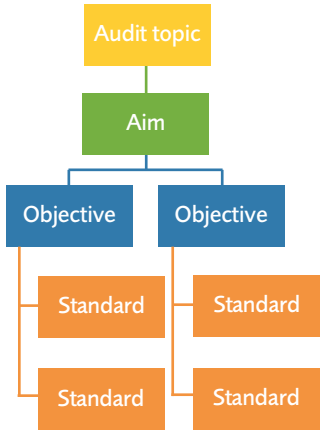
quantifiable statements detailing the specific aspects of care and/or management against which you intend to measure current practice. They should seek to ensure that the best possible evidence-based care is provided, given available resources.

Using standards to define precisely the care that you are seeking to provide means that you will be able to:

- Accurately inform anyone what the service is that you are able to provide
- Identify what is required in order to deliver the service
- Monitor and improve quality, care and performance

Standards should be related to your audit topic aims and objectives, as shown in Figure 2.

Figure 2



Standards should be SMART

S **Specific** – Clear, unambiguous and jargon-free; a standard should only mean one thing to all people who read it

M **Measurable** – Your standard must be able to be measured and quantifiable with appropriate data

A **Agreed** – The audit team must all agree the standards that are being set and that they are achievable and relevant to local targets

R **Relevant** – The standards must be relevant to the audit's aims and objectives

T **Theoretically sound** – Based on available evidence on best practice

Step 2: Example – Asthma Follow-Up

Audit Standard

100% of patients with an asthma exacerbation are reviewed within 2 weeks

Step 3: Observe practice and collect data

- How are you going to carry out your audit?
- Plan what data you need and how you are going to collect them
- Consider whether the data you are to use will be retrospective (e.g. looking back at previous data recorded in patient records) or prospective (e.g. reviewing data to be collected at clinics specifically convened for this audit)
- Your data can be either qualitative (e.g. patient or staff opinions and views on issues) or quantitative (e.g. based on facts and figures)
- You should decide on the duration of data collection for the audit
- You should decide upon your audit population – can you use the whole group (e.g. all those patients with COPD) OR will a smaller sample size be easier to manage if your population is too large? Most computer systems offer a facility to produce random samples of your chosen audit population
- You should decide how you will collect your data (e.g. computer records or a specially designed form). The PCRS-UK Quick Guide to the Diagnosis and Management of COPD includes information on COPD templates and common READ codes which may be useful in your computer searches see https://www.pcrs-uk.org/resource/Guidelines-and-guidance/QGCOPD.

If you are using a specially designed form for the purposes of your audit to use in clinics with patients, make sure the form is simple and logical to complete with succinct instructions

- Test your audit with a short pilot if using data collection forms and amend where appropriate before commencing the audit
- If you are using a computer system to collect your data, make sure you validate your registers if possible to ensure accurate results

Step 3: Example – Asthma Follow-Up

Data collection

We will conduct a search on EMIS for patients coded H333 "acute exacerbation of asthma" in the year preceding 01/03/15

If more than one exacerbation is recorded in the year, we will examine the most recent exacerbation only

We will record data on:

- Date of exacerbation
- Who did the initial assessment
- Who made the diagnosis of an exacerbation
- Was a review undertaken following the exacerbation
- How long before a review was done

Step 4: Analyse results and compare performance against your target standards

Have your audit data achieved the percentage set in your standards?

- Collate and check your results and try to highlight any anomalies
- Look for any trends or patterns
- Try and assess your results to highlight possible reasons for differing outcomes from those predicted
- Use images, graphs and tables to present your data and key summary messages in bullet form
- Present your results to your colleagues or audit team. Consider who in your team will support the change(s) and identify blockers. Who has the power to help you? Sometimes this aspect can be a challenge. The PCRS-UK respiratory leaders programme can help you develop skills, knowledge and confidence to make changes, whatever the size of your organisation – see https://www.pcrs-uk.org/respiratory-leaders-events

Step 4: Example – Asthma Follow-Up

Results

- 39 patients were coded as acute exacerbation of asthma in 1 year
- 2 diagnoses were retrieved from hospital letters and 37 diagnoses were made within the practice
- 16 patients were subsequently reviewed. The average number of days to review was 32 with a range of 3-120 days
- 23 patents were never seen again within the period of the audit

Conclusion

Currently only 41% of patients are being reviewed after an acute exacerbation of asthma. The practice failed to reach the agreed standard.

Discussion

The group discussed why our recording of exacerbations was so low. In some cases where infection was thought to be the cause of the exacerbation, the clinician would use a respiratory infection code such as acute bronchitis or chest infection and then add a separate acute exacerbation code.

It was agreed that an acute exacerbation of asthma must be coded even if another code was used to identify that there was an infection causing it.

It was clear that there was no clear policy about recalling people post-exacerbation and that when it happened soon after it reflected the degree of concern the individual clinician had rather than following a specific guidance. Where reviews happened sometime after, these were incidental and triggered by a need to do a medication review, following the practice repeat prescribing policy or because it coincided with a routine QOF related annual review.

Concern was expressed that some patients were seen in hospital or out of hours services within the subsequent 7-14 days, confirming that ad hoc review is inadequate and adherence to guidelines is essential.

Step 5: Agree and implement changes

- Have your standards been met?
- Did you meet your expected targets?
- What have you learned from your results?

- Was your data collection easy, accurate, time-consuming?
- What changes do you now wish to make in your practice documentation such as protocols, care bundles, clinic times, systems for data collection, codes and templates?
- Draw up an action plan with bullet points listing your agreed changes and an agreed time frame in which to implement the changes
- Confirm that your list of bullet points and timing is achievable
- Monitor the changes you have agreed and adapt as required

Step 5: Example – Asthma Follow-Up

Agreed actions

All A&E/hospital discharge letters with acute asthma episode to be forwarded to clinical data administrator for accurate coding and to be saved as an 'active' and 'significant' problem with length of episode of 365 days so that the issue is noted as current by sitting on top of the summary page.

All acute exacerbations of asthma diagnosed in the surgery to be appropriately coded (H333).

All patients to be advised to return at least within 2 weeks and 24-48 hours in more worrying cases and advised according to Asthma UK leaflet 'After your asthma attack' - see https://www.asthma.org.uk/advice/asthma-attacks.

Both the clinical data administrator and all clinicians either receiving hospital discharge letters or diagnosing an acute exacerbation would inform the lead respiratory nurse via the computer tasking system to ensure follow-up.

Step 6: Re-audit

Repeat your audit to evaluate if the changes you implemented have improved care:

- Decide on your re-audit date (e.g. 1 month, 1 year)
- Before re-auditing, review your standards to ensure they are still in line with national guidelines and best practice
- You should complete the audit cycle by producing an action plan and a timetable for future audits and actions

Step 6: Example – Asthma Follow-Up

We conducted an EMIS search for patients coded H333 'acute exacerbation of asthma' in the 6 months following 1/3/2015

- 23 patients coded as acute exacerbation asthma in a 6-month period
- 4 diagnoses retrieved from hospital letters and 19 diagnoses made within the practice
- 18 patients were subsequently reviewed. The average number of days to review was 18 with a range of 1-71 days
- Of those patients diagnosed within the practice, 14/19 were advised of a review date. Of those 14 advised of a review date, the average suggested date for review was 10 days
- 5 patients were never seen again within the period of the audit

Conclusion

Currently 78% of patients are being reviewed after an acute exacerbation of asthma with 52% being reviewed within 14 days. The practice has failed to achieve 100% review within 2 weeks.

Discussion

The practice team as a whole felt the audit was important with regard to changing the way we manage our high risk patients. The initial meeting following the first cycle of the audit highlighted two important learning points:

1. Correctly diagnosing and coding an acute exacerbation of asthma
2. The importance of early post-exacerbation follow-up

Members of the team acknowledged that coding an asthma exacerbation as an acute bronchitis or respiratory tract infection may mask the potential seriousness of the condition and such a history is important for a subsequent clinician to know about, especially if they are unfamiliar with them (e.g. a locum).

The practice agreed that further improvements and monitoring were relatively simple and important.

Reflection and Further Action Plan

In hindsight, expecting 100% of patients to have a follow-up within 2 weeks of an exacerbation may have been optimistic. The young and transient nature of the practice population makes it difficult to ensure follow-ups are completed. We were pleased that overall we improved, but it is disappointing that only half of completed follow-ups were within 2 weeks of exacerbation. It is reported that only one task was sent requesting the lead respiratory nurse to organise a review following a hospital/A&E diagnosis.

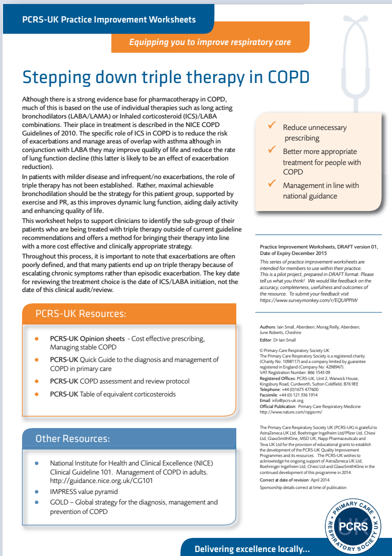
Reiterating the importance of correct coding will be highlighted and EMIS H333 will be linked to an acute exacerbation of asthma template which will require a follow-up date to be entered by the clinician.

Clinicians will be reminded to inform the lead respiratory nurse when they receive a hospital discharge letter or any form of information regarding a patient exacerbation.

The practice is now linked with a local Lung Improvement Programme (LIP) project that aims to improve communications between secondary and primary care, with the objective that each patient attending A&E for an asthma exacerbation will be followed up by their GP within 48 hours of discharge.

We feel this could greatly improve our ability to monitor post-exacerbation patients more closely to reduce the risk of readmission. A 3rd cycle audit will commence shortly to review our performance.

Other suggested audit topics


PCRS-UK Practice Improvement Worksheets

Equipping you to improve respiratory care

Stepping down triple therapy in COPD

Although there is a strong evidence base for pharmacotherapy in COPD, much of this is based on the use of individual therapies such as long acting bronchodilators (LABA/LAMA) or Inhaled corticosteroid (ICS)/LABA combinations. Their place in treatment is described in the NICE COPD Guidelines of 2010. The specific role of ICS in COPD is to reduce the risk of exacerbations and manage areas of overlap with asthma although in conjunction with LABA they may improve quality of life and reduce the rate of lung function decline (this latter is likely to be an effect of exacerbation reduction).

In patients with milder disease and infrequent/no exacerbations, the role of triple therapy has not been established. Rather, maximal achievable bronchodilation should be the strategy for this patient group, supported by exercise and PR, as this improves dynamic lung function, aiding daily activity and enhancing quality of life.

This worksheet helps to support clinicians to identify the sub-group of their patients who are being treated with triple therapy outside of current guideline recommendations and offers a method for bringing their therapy into line with a more cost effective and clinically appropriate strategy.

Throughout this process, it is important to note that exacerbations are often poorly defined, and that many patients end up on triple therapy because of escalating chronic symptoms rather than episodic exacerbation. The key date for reviewing the treatment choice is the date of ICS/LABA initiation, not the date of this clinical audit/review.

- ✓ Reduce unnecessary prescribing
- ✓ Better more appropriate treatment for people with COPD
- ✓ Management in line with national guidance

PCRS-UK Resources:

- **PCRS-UK Opinion sheets** - Cost effective prescribing, Managing stable COPD
- **PCRS-UK** Quick Guide to the diagnosis and management of COPD in primary care
- **PCRS-UK** COPD assessment and review protocol
- **PCRS-UK** Table of equivalent corticosteroids

Other Resources:

- National Institute for Health and Clinical Excellence (NICE) Clinical Guideline 101. Management of COPD in adults. http://guidance.nice.org.uk/CG101
- IMPRESS value pyramid
- GOLD – Global strategy for the diagnosis, management and prevention of COPD

Practice Improvement Worksheets, DRAFT version 01, Date of Expiry December 2015

This series of practice improvement worksheets are intended for members to use within their practice. This is a pilot project, prepared in DRAFT format. Please tell us what you think! We would like feedback on the accuracy, completeness, usefulness and outcomes of the resource. To submit your feedback visit https://www.surveymonkey.com/r/EQUIPPIW

Authors: Iain Small, Aberdeen; Morag Reilly, Aberdeen; June Roberts, Cheshire

Editor: Dr Iain Small

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Sponsorship details correct at time of publication

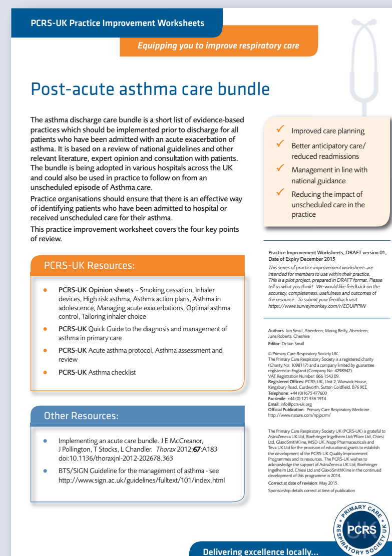
Delivering excellence locally...

Reviewing patients with COPD on triple therapy

Identify all patients with FEV >50% and on triple therapy. Our practice improvement worksheet on Stepping down Triple Therapy in COPD may help you formulate your audit standards and adjust treatment as recommended – see https://www.pcrs-uk.org/resource/Improvement-tools/stepping-down-triple-therapy-copd-improvement-worksheet

Hospital admission for asthma or COPD

Identify any patient who has had a hospital admission for asthma or COPD in the last year. Review the post-acute care packages provided by the practice and explore how these might be improved. Our post-acute care bundles on asthma and COPD may help you formulate your audit standards – see https://www.pcrs-uk.org/resource/Improvement-tools/post-acute-copd-care-bundle-improvement-worksheet and https://www.pcrs-uk.org/resource/Improvement-tools/post-acute-asthma-care-bundle-improvement-worksheet


PCRS-UK Practice Improvement Worksheets

Equipping you to improve respiratory care

Post-acute asthma care bundle

The asthma discharge care bundle is a short list of evidence-based practices which should be implemented prior to discharge for all patients who have been admitted with an acute exacerbation of asthma. It is based on a review of national guidelines and other relevant literature, expert opinion and consultation with patients. The bundle is being adopted in various hospitals across the UK and could also be used in practice to follow on from an unscheduled episode of Asthma care.

Practice organisations should ensure that there is an effective way of identifying patients who have been admitted to hospital or received unscheduled care for their asthma.

This practice improvement worksheet covers the four key points of review.

- ✓ Improved care planning
- ✓ Better anticipatory care/ reduced readmissions
- ✓ Management in line with national guidance
- ✓ Reducing the impact of unscheduled care in the practice

PCRS-UK Resources:

- **PCRS-UK Opinion sheets** - Smoking cessation, Inhaler devices, High risk asthma, Asthma action plans, Asthma in adolescence, Managing acute exacerbations, Optimal asthma control, Tailoring inhaler choice
- **PCRS-UK** Quick Guide to the diagnosis and management of asthma in primary care
- **PCRS-UK** Acute asthma protocol, Asthma assessment and review
- **PCRS-UK** Asthma checklist

Other Resources:

- Implementing an acute care bundle. J E McCreanor, J Pollington, T Stocks, L Chandler. *Thorax* 2012;**67**:A183 doi:10.1136/thoraxjnl-2012-202678.363
- BTS/SIGN Guideline for the management of asthma - see http://www.sign.ac.uk/guidelines/fulltext/101/index.html

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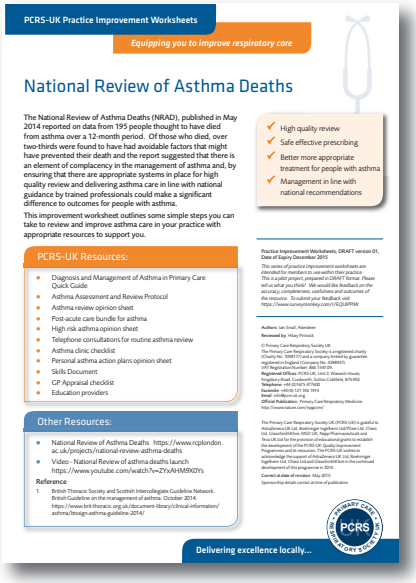
Delivering excellence locally...

Are all eligible COPD patients being offered pulmonary rehabilitation?

Search for all patients with a MRC score of 3 or more who have not yet been offered pulmonary rehabilitation and agree how these patients can be reviewed.

Have all your asthma and COPD patients got a recorded diagnosis?

Search for all patients who have a repeat prescription for inhaled therapy without a recorded diagnosis and agree how you will review and establish a diagnosis for these patients.


PCRS-UK Practice Improvement Worksheets

Equipping you to improve respiratory care

National Review of Asthma Deaths

The National Review of Asthma Deaths (NRAD), published in May 2014 reported on data from 195 people thought to have died from asthma over a 12-month period. Of those who died, over two-thirds were found to have had avoidable factors that might have prevented their death and the report suggested that there is an element of complacency in the management of asthma and, by ensuring that there are appropriate systems in place for high quality review and delivering asthma care in line with national guidance by trained professionals could make a significant difference to outcomes for people with asthma.

This improvement worksheet outlines some simple steps you can take to review and improve asthma care in your practice with appropriate resources to support you.

- ✓ High quality review
- ✓ Safe effective prescribing
- ✓ Better more appropriate treatment for people with asthma
- ✓ Management in line with national recommendations

PCRS-UK Resources:

- Diagnosis and Management of Asthma in Primary Care Quick Guide
- Asthma Assessment and Review Protocol
- Asthma review opinion sheet
- Post-acute care bundle for asthma
- High risk asthma opinion sheet
- Telephone consultations for routine asthma review
- Asthma clinic checklist
- Personal asthma action plans opinion sheet
- Skills Document
- GP Appraisal checklist
- Education providers

Other Resources:

- National Review of Asthma Deaths https://www.rcplondon.ac.uk/projects/national-review-asthma-deaths
- Video - National Review of asthma deaths launch https://www.youtube.com/watch?v=ZYxNHMRKOYs

Reference

1. British Thoracic Society and Scottish Intercollegiate Guideline Network. British Guideline on the management of asthma. October 2014. https://www.brit-thoracic.org.uk/document-library/clinical-information/asthma/btssign-asthma-guideline-2014/

Practice Improvement Worksheets, ORAFT version 01, Date of Expiry December 2015

Author: Ian Small, Aberdeen

Reviewed by: Hilary Pinnock

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Delivering excellence locally...

Asthma. The National Review of Asthma Deaths (NRAD) published in May 2014 reported on data from 195 people thought to have died from asthma over a 12-month period. Of those who died, over two-thirds were found to have had avoidable factors that might have prevented their death.

Our practice improvement worksheet on NRAD includes suggestions for audits to help identify patients who might be at risk; for example, a simple audit based on the number of short-acting beta-agonists prescribed over the period of a year will help identify poorly controlled asthma and/or inappropriate prescribing of inhalers.

You can download the worksheet at https://www.pcrs-uk.org/resource/Improvement-tools/nrad


Primary Care Respiratory **UPDATE**

Service Development

Tools to help you stratify people with asthma who should be offered a priority review

Noel Baxter explores how to help stratify people with asthma providing links to XML files you can access and use in your practice

The primary care population with suspected or confirmed asthma is one of the greatest diagnostic and follow up burdens that falls on general practice. In 2015 it was the 4th largest long-term condition register with a prevalence of 6.1% behind Tobacco dependency (15.9%), Hypertension (13.9%) and Obesity (7.5%). http://www.gpcontract.co.uk

Anyone working in general practice will know that it can be difficult to ensure an annual review with all asthma patients. In 2015, 76% of people with asthma (who had also been prescribed inhalers in the previous year) had a review. In order to get through this volume of call and recall, practices will see people face to face, review opportunistically when they attend for other reasons and also use telephone calls for those considered low risk. Though some positive findings about identifying high risk patients were noted in the ARISSA trial[1] we still however lack a standardised and validated risk tool in general practice. So how do we know that our limited resource and effort is being applied to those who need it most?

The National Review into Asthma Deaths 2014 (NRAD) sought to provide health professionals with some key factors that may predict for the worst outcomes. https://www.rcplondon.ac.uk/projects/national-review-asthma-deaths

Overuse of short acting beta agonists (SABA)

NRAD stated:

All asthma patients who have been prescribed more than 12 short-acting reliever inhalers in the previous 12 months should be invited for urgent review of their asthma control, with the aim of improving their asthma through education and change of treatment if required.

In theory anyone using more than 6 puffs per week is overusing – that is equal to about 300 puffs per year, which at 200 puffs per device is only two devices per year! So it could be said that 12 devices per year is already 6x over generous.

Detecting people who overuse SABA

GP software systems and the reliability of electronic prescribing data allows us to easily search for apparent excess use and to proactively warn the professional reviewing a patient currently overusing.

Here we will look at what has been developed both nationally and locally (highlighting EMIS Web tools) to assist general practice and we share some local adaptations that can be further modified with the help of your local IT teams according to local agreements and situation.

The desktop alert

In 2015 Asthma UK in conjunction with EMIS Web released a number of tools to assist general practice to achieve better outcomes for people with asthma. This included a prescribing alert and a personal asthma action plan (PAAP). The prescribing alert is activated by default and readers who use EMIS Web may already have seen this. The PAAP needs to be activated within each practice to use so we would recommend that you work with your local IT people to do this though it is also easy to do by following the EMIS Web help tool.

In the high risk prescribing alert tool they have utilised the 'protocol alert' function to highlight in a pink pop up box when patients are using excess SABA or when using long acting bronchodilators without inhaled steroids.

This alert will activate if there are 3 prescriptions for SABA within a 3-month episode. This assumes that only one device is issued per prescription but in some practices SABA issues

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The service development article by Noel Baxter in the Spring issue of *Primary Care Respiratory Update* includes guidance and tools to help you stratify people with asthma who should be offered a priority review.

see https://www.pcrs-uk.org/SDTools to download the article.

Using audit to support your own professional development

Use your audit work to support your own continuing development by reflecting on the audit work you have undertaken and its outcome. Simply prepare a short report based on the following questions and include the report in your portfolio:

- Description of the audit work you have undertaken
- What was the outcome of the audit, what did you learn?
- How did you change or improve your practice as a result of the audit?
- (Nurses only): How does this work relate to the NMC Code of Professional Conduct – select one or more themes: Prioritise people – Practise effectively – Preserve safety – Promote professionalism and trust

Where to get more help with clinical audit

National Institute for Health and Care Excellence – Audit and Service Improvement 2016
https://www.nice.org.uk/about/what-we-do/into-practice/audit-and-service-improvement

National Advisory Group on Clinical Audit and Enquiries (NAGCAE)
https://www.england.nhs.uk/ourwork/qual-clin-lead/clinaudit/nagcae/

Institute for Innovation and Improvement Quality and Service Improvement tools
http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/plan_do_study_act.html

Clinical Audit Support Centre
http://www.clinicalauditsupport.com/

References

1. Clinical audit. Wikipedia history. https://en.wikipedia.org/wiki/Clinical_audit

Acknowledgements

This article has been adapted from the PCRS-UK Guide to Undertaking Respiratory Audits in Primary Care by Stephanie Austin and Andrew Booth. Thanks also to Ren Lawlor, Carol Stonham and Noel Baxter for guidance on the production of this document and information on the sample audit.

Service Development

How smart use of templates and coding can improve respiratory care


Fran Robinson interviews **Anne Rodman**

Making relatively simple changes to practice templates to facilitate coding of key indicators has enabled a Birmingham practice to improve outcomes for its respiratory patients.

This project is being led by Anne Rodman, independent advanced respiratory nurse specialist, Education for Health trainer and PCRS-UK Conference Committee member, at the Cape Hill Medical Centre in Birmingham. It is part of a wider Birmingham Cross City Clinical Commissioning Group ACE (Aspiring to Clinical Excellence) initiative which is working to improve care across a number of areas in the city.

Anne has been employed by the Cape Hill practice to spend a year focusing on improving outcomes for asthma and COPD. The 12,000 patient practice has a hard-to-reach population and high DNA and hospital admission rates for asthma and COPD.

At the start of the project an in-depth audit was conducted of all the information that was on the practice system about patients with asthma.

The GPs and nurses in the practice have varying degrees of confidence about managing asthma, and data from the audit has highlighted the need to create a more structured system for reviews and consultations that will help clinicians to follow guidelines and work through what needs to be done for the patient.

This has been achieved by adjusting two templates. For example, two codes have been added to the routine review template so that, rather than just ticking a box to say the technique has been checked, clinicians are now prompted to both observe patients' inhaler technique and correct it if necessary.

"I know from working on the National Review of Asthma Deaths that boxes get ticked but outcomes for patients don't necessarily improve. So these codes have been added to the template to make sure that patients are not only asked how they use their inhalers but to ensure clinicians actually watch them and show them how to use their inhalers as well. These were fairly straightforward codes to add," says Anne.

The audit highlighted that doctors were seeing and treating patients but weren't always following them up and were not coding their actions in a uniform way. They would often record their findings as freee text, making it impossible to audit their actions. So a new template has been introduced to guide doctors through a more thorough acute respiratory assessment process.

Specific codes for discussing lung health with patients have been introduced which are easy to audit. To facilitate these discussions the practice has purchased some micro spirometers. The clinician can now run a quick test and identify whether patients with asthma, current or ex-smokers and those presenting with chest infections are developing long-term lung damage and need referral for full spirometry.

"The idea is that, by discussing lung age and lung health with patients, they are more likely to attend for a full spirometry test because you are giving them a good reason to come back – i.e. you're saying, we've identified there is a possible problem with the lungs that might be causing this chest infection or the fact is you are having lots of symptoms with your asthma and we need to do a more in-depth test and work with you to protect your lung health," explains Anne.

The coding has been kept as manageable and as simple as possible. So there are boxes to prompt the clinician to ask whether this person needs a chest x-ray, spirometry or follow-up. There is also a prompt to make sure the patient's contact details are correct. The practice population is very disadvantaged with a high deprivation index and ethnically diverse population with over 30 languages interpreted. Trying to contact people and get them back in for follow-up is really difficult, so it is essential the practice can contact them

by telephone. Like all practices, there is pressure on appointments so if GPs can't easily find an appointment for a follow-up review, they can try to contact the patient for a telephone consultation.

There has also been a focus on improving inhaled steroid use in patients with asthma and COPD through talking to them about the risks and benefits of being on high doses, and there is a code for making sure they have spacers and steroid cards to highlight the importance of keeping their inhaler going on a regular basis.

"The GPs are not required to tick every box, but the information is there in front of them to help them focus on what else might be going on when patients present with an acute episode. The templates ensure that the information is recorded in a systematic way."

"We have made quite a lot of small tweaks that will not only improve care generally and make it part of routine practice but will also make patient care safer and more effective. The main changes have been made within the chronic review template and it takes just the same amount of time to go through these things in an asthma review as it did with the old template," says Anne.

In addition to improving their templates, the practice has implemented a rapid review system for people who have had exacerbations of asthma and COPD. A live register of patients who have had exacerbations has been set up and a daily search picks up the relevant code and puts those patients on a list for a follow-up appointment. A link worker then spends time encouraging patients to come in for a review. This is already starting to have an impact on reducing hospital admissions and reducing patients' use of reliever inhalers.

"This project is all about making the best use of time and resources, but it is also focusing on doing the right things when you have got the patient there. This work could very easily be reproduced in other practices. The whole practice has enthusiastically embraced the changes and the lead GP for the project is moving into a respiratory lead role and undergoing further training, so when I leave the practice at the end of the project they will have all the skills they need," says Anne.

For further information contact Anne via the PCRS-UK Members Directory (see www.pcrs-uk.org/directory) or via info@pcrs-uk.org

GP produces guidance for bronchiectasis and cough to improve referrals

Fran Robinson talks to **Dr Lesley Ashton**, North Shields

A GP has written a set of referral guidelines for bronchiectasis and cough for her CCG to help her primary care colleagues improve the quality of their referrals.

Dr Lesley Ashton of the Jubilee Park Surgery, part of the Collingwood Health Group in North Shields, needed to undertake a quality improvement activity for some training she was taking part in so she offered to write the guidelines for North Tyneside CCG. The CCG has been developing a referral management system for a number of specialities since mid-2015.

The aim of the CCG's referral management system is to standardise referrals and reduce variation in referral rates among practices. The guidelines are intended to provide clear guidance to clinicians and reduce inappropriate referrals. Referrals are now triaged in secondary care before being sent on to the relevant consultant and feedback on rejected referrals is channelled back to GPs.

Dr Ashton says she chose bronchiectasis and cough because they already had some good local guidance for COPD and asthma.

She felt bronchiectasis and cough were clinical areas from which referrers would benefit having clear and simple guidance regarding when to refer and when to manage the conditions in primary care.

She worked with respiratory consultants Dr John Steer and

Dr Sean Parker of Northumbria Healthcare NHS Foundation Trust to produce the guidelines which are based on either existing evidence or work that has been validated.

She says there is evidence that referrals have reduced and feedback from colleagues has been positive with comments that the guidelines have improved their understanding of when to refer.

"I collect the referrals which have been rejected and feed them back to my colleagues as a learning opportunity. This helps us to understand better what we can do for the patient before referring them. I have found this exercise very satisfying because I personally love clarity and simplicity," says Dr Ashton.

KEY POINTS

Bronchiectasis
The guidance includes:
- Criteria for referral for diagnosis
- Criteria for referral in established bronchiectasis
- Red flag symptoms where you might consider a 2-week referral

Cough
The guidance includes:
- Steps that should be taken in primary care prior to referral include examination, history taking, tests, potential steroid trial, eliminating certain diagnoses, red flag symptoms that might require a 2-week referral

For further information or to receive a link to download the guidance contact Lesley via info@pcrs-uk.org

Journal Round-Up

npj Primary Care Respiratory Medicine Key Summaries

A selection of short summaries of original research articles published in *npj Primary Care Respiratory Medicine*. The articles featured have been selected by the Primary Care Respiratory Update editorial board as being the most relevant and useful to primary care respiratory clinical practice in the UK. You can download freely any articles of interest from the website http://www.nature.com/npjpcrm/

npj Primary Care Respiratory Medicine is the only fully indexed scientific journal devoted to the management of respiratory diseases in primary care. It is an international, online, open access journal and is part of the Nature Partner Journal series.

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**** EDITOR'S CHOICE ****

Chronic cough and a normal chest X-ray – a simple systematic approach to exclude common causes before referral to secondary care: a retrospective cohort study
Richard D Turner & Graham H Bothamley
Article number: 15081 (2016) doi:10.1038/npjpcrm.2015.81
Published online: 03 March 2016

UK researchers suggest most cases of chronic cough currently referred to specialists could be dealt with by GPs using existing guidelines. Richard Turner and Graham Bothamley of the Homerton University Hospital NHS Foundation Trust, London assessed the primary care management of patients referred to their clinic with isolated chronic coughs. Among 266 patients who returned for follow-up, only 21% had undergone simple spirometry tests and 86% had had chest X-rays. Only 39% had been given corticosteroids to rule out asthma, the most common diagnosis among the study participants. The authors estimate 87% of the cases could have been dealt with by GPs. They say improved primary care awareness and application of existing guidelines for chronic cough management could lead to quicker resolution of symptoms and lower healthcare costs.

Reducing antibiotic prescriptions for respiratory tract infections in family practice: results of a cluster randomized controlled trial evaluating a multifaceted peer-group-based intervention
Marcia Vervloet, Marianne A Meulepas, Jochen W L Cals, Mariëtta Eimers, Lucas S van der Hoek & Liset van Dijk
Article number: 15083 (2016) doi:10.1038/npjpcrm.2015.83
Published online: 04 February 2016

Communications training and peer support help reduce the amount of antibiotics doctors prescribe for respiratory tract infections. Liset van Dijk from the Netherlands Institute for Health Services Research, Utrecht and colleagues studied how meetings between primary care doctors and pharmacists designed to improve prescribing behaviour could help reduce overprescription of antibiotics. Doctors were given training to help them communicate better about antibiotics with their patients, and feedback at quarterly meetings. Better prescribing practices were built in to their electronic prescribing systems. Doctors who received this support significantly reduced the amount of antibiotics they prescribed for common respiratory tract infections to patients over the age of 12 compared with the control group. The intervention did not affect prescriptions for children, a finding that the group wishes to study further.

Changes in initial COPD treatment choice over time and factors influencing prescribing decisions in UK primary care: a real-world, retrospective, observational study
Kevin Gruffydd-Jones, Guy Brusselle, Rupert Jones, Marc Miravitlles, Michael Baldwin, Rebecca Stewart, Anna Rigazio, Emily Davis, Dorothy L Keininger & David Price
Article number: 16002 (2016) doi:10.1038/npjpcrm.2016.2
Published online: 25 February 2016

There is a disconnect between doctors' prescriptions for chronic obstructive pulmonary disease (COPD) and current guidelines, say researchers. A team led by David Price from the University of

Aberdeen in the UK found that 1 in 4 people newly diagnosed with COPD did not receive any treatment despite having significant symptoms. And almost half were prescribed inhaled corticosteroids (ICS) even though guidelines state that ICS should be reserved for people with frequent flare-ups. The study authors concluded that there is a pressing need to improve treatment of newly diagnosed patients with COPD. Ensuring most appropriate maintenace therapy including reducing exposure to ICS and its associated risks, such as pneumonia, could improve treatment outcomes for large numbers of patients and reduce the societal burden of the disease.

Enhancing the use of Asthma and COPD Assessment Tools in Balearic Primary Care (ACATIB): a region-wide cluster-controlled implementation trial

Miguel Román-Rodríguez, Marina Garcia Pardo, Lucia Gorreto López, Ana Uréndez Ruiz & Job FM van Boven
Article number: 16003 (2016) doi:10.1038/npjpcrm.2016.3
Published online: 10 March 2016

Healthcare professionals use respiratory health assessment questionnaires slightly more often when trained about their benefits and uses. Miguel Román-Rodriguez from IdisPa Balearic Health Research Institute in Spain and colleagues organised an educational training-of-trainers program for small teams of primary care physicians and nurses from 37 clinics on the Spanish island of Mallorca. The workshop covered the use of questionnaires used in the assessment and management of diseases such as asthma and chronic obstructive pulmonary disease. Peer-to-peer training was then conducted by 31 of the 37 trained teams. Practices on the islands of Ibiza and Menorca were used as controls. The researchers report that 26 clinics showed increased use of the questionnaires after training. However, the effect was low, with the overall number of respiratory patients with recorded scores increasing from 0.45% to 1.7%.

Multi-component assessment of chronic obstructive pulmonary disease: an evaluation of the ADO and DOSE indices and the global obstructive lung disease categories in international primary care data sets

Rupert C Jones, David Price, Niels H Chavannes, Amanda J Lee, Michael E Hyland, Björn Ställberg, Karin Lisspers, Josefin Sundh, Thys van der Molen & Ioanna Tsiligianni on behalf of the UNLOCK Group of the IPCRG
Article number: 16010 (2016) doi:10.1038/npjpcrm.2016.10
Published online: 7 April 2016

An evaluation of tools for assessing the severity of chronic lung disease highlights limitations of a newly proposed framework. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) recently recommended a change of focus for assessing chronic obstructive pulmonary disease (COPD), moving from assessing lung function alone to including current symptoms and future risks. Rupert Jones at Plymouth University, UK and co-workers compared the effectiveness of two existing COPD indices with a new assessment framework set out by GOLD. They analysed data from 5114 primary care COPD patients from the UK, Sweden and Holland. None of the assessment tools excelled at predicting future outcomes, though the DOSE index performed best overall. The GOLD categories proved inconsistent at predicting future risk, although the team suggest they may be useful in combination with DOSE.

A community-based cross-sectional immunisation survey in parents of primary school students

Kam Lun Hon, Yin Ching K Tsang, Lawrence C N Chan, Daniel K K Ng, Ting Yat Miu, Johnny Y Chan, Albert Lee & Ting Fan Leung on behalf of the Hong Kong Society of Paediatric Respirology and Allergy
Article number: 16011 (2016) doi:10.1038/npjpcrm.2016.11
Published online: 7 April 2016

Public health authorities in Hong Kong need to better inform people about the risk of pneumococcal infections and the available vaccine. Kam Lun Hon and colleagues at The Chinese University of Hong Kong surveyed the parents of more than 3,400 primary school children. They found that parents of children who had not received the influenza vaccine or pneumococcal conjugate vaccine (PCV) tended to be poorer and less educated, as well as less aware of both the dangers of pneumococcal disease and the availability and efficacy of the vaccine. Unvaccinated children were also more likely to live with unvaccinated elderly relatives, leaving both groups at risk of infection. The authors recommend that public education and promoting uptake of PCV and influenza vaccines should focus on these at-risk groups.

A new instrument to predict smoking cessation among patients with chronic obstructive pulmonary disease: an observational longitudinal study of the Trying To Quit smoking questionnaire

Lena Lundh, Hassan Alinaghizadeh, Lena Törnkvist, Hans Gilljam & Maria Rosaria Galanti
Article number: 16013 (2016) doi:10.1038/npjpcrm.2016.13
Published online: 14 April 2016

A new survey may help physicians predict which lung disease patients are likely to quit smoking, and offer treatment accordingly. Continued smoking is a powerful predictor of morbidity and mortality in patients with chronic obstructive pulmonary disease (COPD). Lena Lundh and colleagues from the Karolinska Institutet in Sweden asked whether the Trying to Quit questionnaire could assess which COPD sufferers were most likely to quit smoking. High scores on the Trying to Quit questionnaire were associated with a lower likelihood of quit attempts. Detailed analysis of test results found contradictory results, indicating larger studies are needed to help elucidate specific mental states associated with quitting. A reliable test will allow doctors and other health professionals to target support programmes to patients with the best odds of successfully quitting smoking, an important step in slowing the progression of COPD.

Best of the rest

These reviews were prepared by Dr Basil Penney and published by Doctors.net.uk Journal Watch. They have been selected and edited for inclusion into *Primary Care Respiratory Update* by editor Dr Hilary Pinnock.

The Doctors.net.uk Journal Watch service covers other specialities as well as respiratory medicine. Doctors.net.uk is the largest network of GMC-registered doctors in the UK. To find out more about membership visit http://www.doctors.net.uk

Abbreviations used in these reviews are:

Respiratory conditions

AECOPD	Acute exacerbation of chronic obstructive pulmonary disease
COPD	Chronic obstructive pulmonary disease
HIV	Human immunodeficiency virus
OSA	Obstructive sleep apnoea
TB	Tuberculosis

Measures and investigations

ABG	Arterial blood gas
ADO	Age, dyspnoea, obstruction index
CT	Computed tomography
CXR	Chest X-ray
DOSE	Dyspnoea, obstruction, smoking, exacerbation index
ECG	Electrocardiograph
FEV_1	Forced expiratory volume in 1 second
FVC	Forced vital capacity
HCO_3	Bicarbonate
LDCT	Low dose computed tomography
mmHg	Millimetres of mercury
pCO_2	Partial pressure of carbon dioxide
QoL	Quality of life
SaO_2	Oxygen saturation in arterial blood
SpO_2	Peripheral capillary oxygen saturation
VBG	Venous blood gas

Respiratory treatments

CPAP	Continuous positive airway pressure
ICS	Inhaled corticosteroids
LABA	Long acting beta-agonist
LAMA	Long acting muscarinic agent
SABA	Short acting beta-agonist

Organisations

GOLD	Global Initiative for Chronic Obstructive Lung Disease
GINA	Global Initiative for Asthma

Statistical terms

n	Number(s)
HR	Hazard ratio
RCT	Randomised controlled trial
RR	Relative risk
SD	Standard deviation
95% CI	95% Confidence interval

**** EDITOR'S CHOICE ****

Overdiagnosis of asthma in children in primary care: a retrospective analysis

Looijmans-van den Akker I, van Luijn K, Verheij T
Br J Gen Pract 2016;66:e152-7 http://dx.doi.org/10.3399/bjgp16X683965

Diagnosis of asthma in children <6 years old is symptom-based and, for older children, guidelines advise assessment of lung function as essential for the diagnosis. Previous studies have indicated that asthma is over-diagnosed in children. However, the scale of this over-diagnosis has not been quantified. This retrospective analysis in four academic primary healthcare centres in the Netherlands aimed to assess whether the diagnosis of asthma and/or asthma treatment in children is preceded by the correct diagnostic process for asthma as recommended in international guidelines.

652 children from the cohort of 4,960 children aged 6–18 years were identified as being asthmatic on the basis of computer coding (n=546) or being in receipt of chronic inhalation medication without the code for asthma (n=106). Only 105 children (16.1%) had an asthma diagnosis confirmed by spirometry. In 23.2% (n=151) the signs and symptoms were consistent with suspected asthma but the children should have undergone further lung function tests. Over half (53.5%, n=349) of the children had signs and symptoms that made asthma unlikely and thus they were most likely over-diagnosed.

This study suggests that spirometry is under-utilised in the diagnosis of asthma in children and that over-diagnosis of childhood asthma is common in primary care.

Association between interstitial lung abnormalities and all-cause mortality

Putman RK, Hatabu H, Araki T, Gudmundsson G, Gao W, Nishino M, Okajima Y, Dupuis J, Latourelle JC, Cho MH, El-Chemaly S, Coxson HO, Celli BR, Fernandez IE, Zazueta OE, Ross JC, Harmouche R, Estépar RS, Diaz AA, Sigurdsson S, Gudmundsson EF, Eiríksdottír G, Aspelund T, Budoff MJ, Kinney GL, Hokanson JE, Williams MC, Murchison JT, MacNee W, Hoffmann U, O'Donnell CJ, Launer LJ, Harrris TB, Gudnason V, Silverman EK, O'Connor GT, Washko GR, Rosas IO, Hunninghake GM; Evaluation of COPD Longitudinally to Identify Predictive Surrogate Endpoints (ECLIPSE) Investigators; COPDGene Investigators
JAMA 2016;315(7):672–681
http://dx.doi.org/10.1001/jama.2016.0518

Interstitial lung abnormalities are defined as specific patterns of increased lung density noted on chest CT scans, which are identified in participants with no prior history of interstitial lung disease and are present in approximately 7% of a general population sample. They are associated with reduction in lung capacity, exercise capacity, gas exchange and genetic abnormalities common to patients with familial interstitial pneumonia and idiopathic pulmonary fibrosis (IPF). This suggests that they may, in some cases, represent an early and/or mild form of pulmonary fibrosis.

Putman *et al* investigated all-cause mortality over a 3- to 9-year median follow-up period in four prospective cohort studies where participants had CT chest performed (Framingham Heart Study; the AGES-Reykjavik Study; the COPDGene Study and the ECLIPSE study). Cause-of-death information was also examined in the AGES-Reykjavik cohort.

Interstitial lung abnormalities, noted among approximately 7% of adult participants, were associated with a higher rate of all-cause mortality. The associations between interstitial lung abnormalities and mortality were not attenuated after adjustment for smoking, cancer, COPD or coronary artery disease. Among an older population from Iceland, the higher rate of mortality in those with interstitial lung abnormalities was associated with a higher rate of death from respiratory failure and pulmonary fibrosis.

Follow-up studies should determine the risk factors for and the events that lead to death among persons with interstitial lung abnormalities. Given the ability to treat more advanced stages of pulmonary fibrosis, future clinical trials attempting to reduce the overall mortality associated with pulmonary fibrosis should consider including early stages of the disease.

E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis

Sara Kalkhoran, Stanton A Glantz
Lancet Respir Med 2016;4:116–128
http://dx.doi.org/10.1016/S2213-2600(15)00521-4

E-cigarette use is increasing in many countries. Adults report various motivations for e-cigarette use, including helping them to quit cigarettes. In 2015 the US Preventive Services Task Force concluded that evidence was insufficient to recommend e-cigarettes for tobacco cessation in adults because of conflicting and limited evidence.

Kalkhoran and Glantz conducted a systematic review and meta-analysis of clinical trials and observational real-world studies to assess the association between e-cigarettes and cigarette smoking cessation among adults, including all smokers as well as only those interested in quitting smoking. The primary endpoint was cigarette smoking cessation. Odds of smoking cessation among smokers using e-cigarettes compared with smokers not using e-cigarettes were assessed using a random effects meta-analysis.

38 studies (of 577 studies identified following a search of PubMed and Web of Science between 27 April and 17 June 2015) were included. The 20 studies with control groups (15 cohort studies, 3 cross-sectional studies and 2 clinical trials) were included in the meta-analysis.

The odds of quitting cigarettes were 28% lower in those who used e-cigarettes compared with those who did not use e-cigarettes (odds ratio 0.72, 95% CI 0.57 to 0.91). Sensitivity analysis showed that the results were not affected by a wide range of study design factors.

Although quitting smoking is a common marketing claim, this meta-analysis suggests that e-cigarettes are associated with significantly less quitting among smokers.

Effect of behavioral interventions on inappropriate antibiotic prescribing among primary care practices: a randomised clinical trial

Daniella Meeker, Jeffrey A Linder, Craig R Fox, Mark W Friedberg, Stephen D Persell, Noah J Goldstein, Tara K Knight, Joel W Hay, Jason N Doctor
JAMA 2016;315(6):562–570
http://dx.doi.org/doi:10.1001/jama.2016.0275

Despite clinical guidelines and efforts to change prescribing patterns, antibiotic overuse persists. There is increasing interest in the use of behavioral science, including psychology and behavioral economics, to identify new social and cognitive devices to gently nudge clinician decision making while preserving freedom of choice.

This cluster randomised trial conducted in primary care practices in Boston and Los Angeles assessed the effects of behavioural interventions and rates of inappropriate (not guideline-concordant) antibiotic prescribing during ambulatory visits for acute respiratory tract infections. 248 clinicians were randomised to a control group or one of three interventions for 18 months. All clinicians received education on antibiotic prescribing guidelines on enrollment. The three interventions, implemented alone or in combination were suggested alternatives, electronic pop-ups suggesting non-antibiotic treatments; accountable justification, prompting clinicians to enter justifications for prescribing antibiotics into records; or peer comparison, compared clinician antibiotic prescribing rates with those of "top performers".

14,753 visits during the baseline period and 16,959 during the intervention period met criteria for outcome evaluation. Mean antibiotic prescribing rates decreased from 24.1% to 13.1% for control practices; from 22.1% to 6.1% for suggested alternatives ($p=0.66$ for differences in trajectories); from 23.2% to 5.2% for accountable justification ($p<0.001$); and from 19.9% to 3.7% for peer comparison ($p<0.001$) .

Among primary care practices the use of accountable justification and peer comparison as behavioural interventions resulted in lower rates of inappropriate antibiotic prescribing for acute respiratory tract infections.

Respiratory health and disease in a UK population-based cohort of 85 year olds: the Newcastle 85+ Study

Thorax

Andrew J Fisher, Mohammad E Yadegarfar, Joanna Collerton, Therese Small, Thomas B L Kirkwood, Karen Davies, Carol Jagger, Paul A Corris
Thorax 2016;71:255–266
http://dx.doi.org/10.1136/thoraxjnl-2015-207249

The very old (aged 85 years and older) age group is expected to double in size from 2010 until 2030 to 2.8 million. This group frequently uses healthcare resources and understanding their burden of disease is important.

This cohort study identified 845 participants aged 85 years and aimed to assess respiratory health, prevalence of respiratory disease and use of spirometry in diagnosis in this group. They also aimed to evaluate lung function measurements to disentangle the effects of lung disease and 'normal' ageing in a healthy reference group (n=151). GP records were examined and participants had a respiratory assessment at their home including measurement of spirometry (n=737).

74.4% of men and 58.0% of women had smoked, although few were current smokers. A significant proportion of men had occupational exposures. The most common physician-diagnosed respiratory condition was COPD (prevalence 16.6%) with no significant gender difference. 23.8% of these reported being 'never smokers'. Only 75.6% satisfied (GOLD) criteria for airflow obstruction and, in the healthy subgroup without respiratory symptoms or diagnoses, 44.4% (n=67) reached GOLD criteria for airflow obstruction and 43.3% (n=29) NICE criteria for at least moderate COPD. A diagnosis of asthma had been made in 10.5% with a predominance in women (men: 6.9%; women: 12.7%; p=0.007). Other respiratory diagnoses were rare.

Current definitions of COPD based on spirometry may lead to overdiagnosis in a group with 'normal' lung ageing, whereas failure to use spirometry to assess symptoms in this age group may lead to mislabeling those with breathlessness or cough as having COPD when there are other explanations.

Social inequalities in wheezing in children: findings from the UK Millennium Cohort Study

EUROPEAN RESPIRATORY *journal*

David C Taylor-Robinson, Anna Pearce, Margaret Whitehead, Rosalind Smyth, Catherine Law
Eur Respir J 2016;47:818–828
http://dx.doi.org/10.1183/13993003.01117-2015

Lower socioeconomic position is associated with higher asthma and wheezing prevalence, but it remains unclear what factors explain the social patterning of childhood asthma. Transient wheezing is well characterised, with onset of wheezing within the first year of life, resolution by mid-childhood and no lasting subsequent effects on pulmonary function. By contrast, all the other phenotypes can lead to persistent symptoms in adulthood.

Taylor-Robinson *et al* analysed data from the Millennium Cohort Study (MCS), a nationally representative sample of children (n=11,418) born in the UK between September 2000 and January 2002, to explore how early-life risk factors explain any differences in wheezing by socioeconomic circumstances. Data were collected when they were aged 9 months and 3, 5 and 7 years old. Relative risk ratios were estimated using multinomial regression.

Children of mothers with no educational qualifications were ~40% more likely to have transient wheezing in the early years of life and ~30% were more likely to have wheezing that persisted to the age of 7 years. Adjustment for maternal smoking during pregnancy and breastfeeding removed the socioeconomic inequalities. Male sex, maternal age, body mass index, atopy, smoking during pregnancy, preterm birth, breastfeeding, exposure to other children and furry pets were independently associated with wheezing, but the pattern of association varied between wheezing types.

Much more needs to be done to reduce the large social differentials in stopping smoking during pregnancy and promoting breastfeeding.

The natural history of severe asthma and influences of early risk factors: a population-based cohort study

Thorax

Wenjia Chen, Carlo A Marra, Larry D Lynd, J Mark FitzGerald, Zafar Zafari
Thorax 2016;71:267–275
http://dx.doi.org/10.1136/thoraxjnl-2015-207530

Severe asthma, while affecting only 5–10% of the asthma population, is associated with the greatest share of asthma morbidity and economic burden. The clinical course of severe asthma and its risk factors remain poorly understood.

This study from Canada used health data to retrospectively follow patients 14–55 years of age with newly diagnosed severe asthma to describe the long-term natural history of severe asthma and identify early course risk factors that modify the disease prognosis.

285,287 patients aged 14–55 years of age with asthma were classified into mild, moderate or severe asthma based on intensity of resource use and occurrence of exacerbations each patient year. 13,467 (5%) were identified with a new onset of severe asthma. The average follow-up was 5.5 years. They estimated the probability of transition between severity levels over the study period using a four-state Markov model and used this to assess the 10-year trajectory.

Ten years after the onset of severe asthma, 394 (3%) patients had died. Of the patients still in the study, 43%, 40% and 17% were classified as having mild, moderate and severe asthma, respectively. Low socioeconomic status, high comorbidity burden and high adherence to asthma controller therapy in the first year were independently associated with, respectively, 10%, 24% and 35% more time with severe asthma over the next 10 years. Gender had no influence on the clinical course.

This study suggests that incident severe asthma is generally not progressive; in most patients the condition improves to milder states.

Using venous blood gas analysis in the assessment of COPD exacerbations: a prospective cohort study

Thorax

Tricia M McKeever, Glenn Hearson, Gemma Housley, Catherine Reynolds, William Kinnear, Tim W Harrison, Anne-Maree Kelly, Dominick E Shaw
Thorax 2016;71:210–215
http://dx.doi.org/10.1136/thoraxjnl-2015-207573

Current NICE COPD guidelines recommend obtaining an ABG in all patients admitted to hospital with a COPD exacerbation. Arterial sampling is technically more difficult than VBG sampling. Using less invasive measures of pCO_2 and SaO_2 could greatly benefit patients by both

decreasing pain and streamlining the care pathway.

McKeever et al assessed the relationship between arterial and venous measures of pCO_2, pH and HCO_3 and between arterial and pulse oximetry oxygen saturations during exacerbations of COPD, to establish whether VBG analysis combined with pulse oximetry could replace ABG analysis in the initial assessment of COPD exacerbations.

234 participants with a COPD exacerbation were recruited and had at least one paired sample of blood gases. The mean age of the population was 71 years (SD 10.8) and 50% of the population were male. There was good agreement between arterial and venous pH, HCO_3^- and between SaO_2 and SpO_2 in patients with SpO_2 of >80%. Arterial sampling required more attempts and was more painful than venous sampling. 96% of patients with an ABG pH of <7.35 also had a VBG pH of <7.35 and only two patients were misclassified as having a normal venous pH but a low arterial pH.

Initial assessment of COPD exacerbations could be based on VBG analysis and pulse oximetry rather than ABG analysis, simplifying the care pathway.

The efficacy of fluticasone furoate administered in the morning or evening is comparable in patients with persistent asthma

R D Kempsford, J Bal, A Baines, J Renaux, R Ravindranath, P S Thomas
Respir Med 2016;112:18–24
http://dx.doi.org/10.1016/j.rmed.2015.12.011

Once-daily ICS dosing has been shown to improve adherence by approximately 20% compared with twice-daily dosing. Fluticasone furoate (FF) monotherapy is now approved for once-daily treatment of asthma. This randomised, double-blind, placebo-controlled study aimed to compare the efficacy of once-daily FF administered either in the morning or evening in adult patients with asthma.

All patients had persistent asthma and were clinically stable on either low- to mid-dose ICS with/without a SABA or a low-dose ICS/LABA combination for at least 4 weeks preceding the screening visit. Patients were excluded if they had a history of life-threatening asthma, any recent asthma exacerbation or hospitalisation, or suspected adverse reaction to the study medication.

After a 14-day run-in period, patients received either FF 100 µg in the morning, FF 100 µg in the evening or placebo via the ELLIPTA® inhaler. Patients received all three treatments (14±2 day duration) separated by a 14- to 21-day washout period. The primary endpoint was 24-h weighted mean FEV_1 measured at the end of each 14-day treatment.

21 patients (aged 19–67 years) completed the study. FF 100 µg administered either morning or evening for 14 days was associated with a similar increase in FEV_1 compared with placebo at all time-points over the 0–24 h assessment period. The treatment difference and adverse events relative to placebo were comparable whether it was taken in the morning or evening.

Morning or evening doses of once-daily FF 100 µg produced comparable improvements in lung function.

Clinical phenotypes in adult patients with bronchiectasis

Stefano Aliberti, Sara Lonni, Simone Dore, Melissa J McDonnell, Pieter C Goeminne, Katerina Dimakou, Thomas C Fardon, Robert Rutherford, Alberto Pesci, Marcos I Restrepo, Giovanni Sotgiu, James D Chalmers
Eur Respir J 2016;47:1113–1122
http://dx.doi.org/10.1183/13993003.01899-2015

The population of patients with bronchiectasis is extremely heterogeneous, representing a group of disorders with a wide range of causes and varying clinical, radiological and microbiological features. This study used cluster analysis, a methodology previously used to identify 'phenotypes' in asthma and COPD.

This secondary analysis of five European databases of prospectively enrolled adult outpatients with bronchiectasis (n=1145) aimed to identify discrete groups of patients. Demographics, comorbidities, disease severity, aetiology of bronchiectasis, respiratory symptoms, sputum evaluation, radiological findings in the stable state, quality of life, long-term treatments and outcomes during a 3-year follow-up were recorded in each database. Clusters were externally validated in an independent cohort of patients with bronchiectasis, also investigating inflammatory markers in sputum.

Four clusters were identified. Cluster 1 ("Pseudomonas", 16%) had chronic infection with *P. aeruginosa*, more severe disease and the worst outcome measures. Cluster 2 ("Other chronic infection", 24%) had chronic infection with pathogens other than *P. aeruginosa*. In cluster 3 ("Daily sputum", 33%), no patients had chronic infection but almost all of them had daily sputum. Patients in cluster 4 ("Dry bronchiectasis", 27%) had the lowest level of inflammatory biomarkers and less functional impairment. None of these patients had chronic infection and none had daily sputum. In the validation cohort, sputum inflammatory markers were significantly different among the clusters.

Identification of clinical phenotypes showing similar biological profiles and prognosis could enable a tailored approach to management which should be tested in further RCTs.

Historic air pollution exposure and long-term mortality risks in England and Wales: prospective longitudinal cohort study

Anna Hansell, Rebecca E Ghosh, Marta Blangiardo, Chloe Perkins, Danielle Vienneau, Kayoung Goffe, David Briggs, John Gulliver
Thorax 2016;71:330–338
http://dx.doi.org/10.1136/thoraxjnl-2015-207111

While the impact of air pollution on mortality in the short term (days) and medium term (<10 years) is now well established, few studies have assessed the long-term impact of air pollution.

This study investigated air pollution exposures in 367,658 individuals in a national cohort drawn from the 1971 census and followed for 38 years. Outcomes were all-cause (excluding accidents), cardiovascular and respiratory mortality. Black smoke and sulfur dioxide (SO_2) arising from fossil fuel combustion were measured until the 1990s. Thereafter, nitrogen dioxide (NO_2) and particulate matter with a diameter of 10 µm or less were measured as transport emissions became the largest source of air pollution.

Historic exposures to black smoke and SO_2 were associated with increased risks of all-cause, cardiovascular and respiratory mortality in

England and Wales over 30 years later, though mortality risks associated with a given exposure generally decreased over time. Subgroup analyses showed the highest risks for COPD and lung cancer mortality. Adjusting for past black smoke or SO_2 exposures resulted in slightly lower observed mortality associations with recent particulate matter exposure (suggestive of confounding), but there was no clear evidence that higher air pollution exposures in earlier life resulted in greater or lesser susceptibility to particulates (effect modification). Limitations include limited information on confounding by smoking and misclassification of historic exposures.

This study suggests that air pollution exposure is associated with long-term effects on mortality that persist decades after exposure, and that historic air pollution exposures influence current estimates of associations between air pollution and mortality.

Randomised crossover trial of telemonitoring in chronic respiratory patients (TeleCRAFT trial)

Thorax

M Chatwin, G Hawkins, L Panicchia, A Woods, A Hanak, R Lucas, E Baker, E Ramhamdany, B Mann, J Riley, M R Cowie, A K Simonds
Thorax 2016;71:305–311
http://dx.doi.org/10.1136/thoraxjnl-2015-207045

Despite negative outcomes in a number of trials, telecare is being advocated to assist a shift from acute hospital management to greater care in the community and has already attracted considerable health service investment. This randomised crossover trial assessed the impact of home telemonitoring on health service use and quality of life in patients with severe chronic lung disease.

68 patients with COPD (n=38) or chronic respiratory failure due to another chronic respiratory disorder (n=30), who had been admitted with an infective exacerbation of their chronic lung disease within the previous 6 months and who fulfilled the criteria for long-term oxygen therapy or who had an arterial oxygen saturation level of ≤90% on air during the previous admission, were enrolled. All received 6 months of clinical care (control group) and 6 months with the addition of telemonitoring via broadband link to a hospital-based care team. The primary outcome measure was time to first hospital admission for an acute exacerbation. Secondary outcome measures were hospital admissions, general practitioner consultations and home visits, quality of life, anxiety and depression and self-efficacy scores.

Time to first acute respiratory exacerbation requiring hospitalisation did not differ between the telemonitoring and control limbs overall. Hospital admission rate at 6 months increased (0.63 telemonitoring vs 0.32 control, p=0.026). Home visits increased during telemonitoring; GP consultations were unchanged. Self-efficacy fell, while depression scores improved marginally during telemonitoring.

Telemonitoring in patients with chronic respiratory failure increased healthcare activity without generating an improvement in quality of life for the patient.

Segmental volume reduction using thermal vapour ablation in patients with severe emphysema: 6-month results of the multicentre, parallel-group, open-label, randomised controlled STEP-UP trial

THE LANCET Respiratory Medicine

Felix J F Herth, Arschang Valipour, Pallav L Shah, Prof Ralf Eberhardt, Christian Grah, Jim Egan, Joachim H Ficker, Manfred Wagner, Christian Witt, Uta Liebers, Peter Hopkins, Wolfgang Gesierich, Martin Phillips, Franz Stanzel, William H McNulty, Christoph Petermann, Greg Snell, Daniela Gompelmann
Lancet Respir Med 2016;4:185–193
http://dx.doi.org/10.1016/ S2213-2600(16)00045-X

Bronchoscopic lung volume reduction has gained clinical traction because the interventions are minimally invasive with reduced mortality and morbidity. Valve and coil bronchoscopic techniques need the implants placed on a lobar basis and valve implants do not achieve adequate volume reduction in the presence of collateral ventilation. Vapour ablation induces lung volume reduction by delivering water vapour to targeted emphysematous segments of the lungs, irrespective of the presence of collateral ventilation.

This multicentre, parallel group, randomised, controlled, open-label Sequential Staged Treatment of Emphysema with Upper Lobe Predominance (STEP-UP) trial assessed whether selective sequential treatment with vapour ablation led to clinical improvement. Patients aged 45–75 years with upper lobe-predominant emphysema, a FEV_1 between 20% and 45% and post-rehabilitation 6-min walk test >140 m were enrolled. Both treatment (n=45) and control (n=24) groups had stopped smoking, completed pulmonary rehabilitation and were on optimised inhaled therapy.

The mean relative improvement at 6 months in FEV_1 between the treatment group versus the control group was 14.7% (95% CI 7.8% to 21.5%, p<0.0001) and in St George's Respiratory Questionnaire was –9.7 points (95% CI –15.7 to –3.7, p=0.0021). COPD exacerbations occurred in 11 (24%) of the treatment group and 1 (4%) of the control subjects. One exacerbation resulted in a patient death that was possibly related to treatment.

Vapour ablation therapy in a targeted manner leads to clinically meaningful improvements.

Comorbidity in severe asthma requiring systemic corticosteroid therapy: cross-sectional data from the Optimum Patient Care Research Database and the British Thoracic Difficult Asthma Registry

Thorax

Joan Sweeney, Chris C Patterson, Andrew Menzies-Gow, Rob M Niven, Adel H Mansur, Christine Bucknall, Rekha Chaudhuri, David Price, Chris E Brightling, Liam G Heaney
Thorax 2016;71:339–346
http://dx.doi.org/10.1136/thoraxjnl-2015-207630

Despite treatment with high-dose ICS plus a second controller and/or systemic corticosteroid therapy, most patients with severe asthma still have poor symptom control. Further understanding of systemic corticosteroid-induced morbidity in this population would help to determine the potential benefit of new steroid-sparing treatments. This cross-sectional observational study utilised the primary care Optimum Patient Care Research Database and the British Thoracic Society Difficult Asthma Registry to identify the prevalence rates of morbidities associated with systemic steroid exposure in severe asthma.

The primary care database included 7,195 subjects in three age- and gender-matched groups: severe asthma (GINA treatment step 5, n=808), mild/moderate asthma (GINA treatment step 2/3, n=3,975) and non-asthma controls (n=2,412). 770 subjects with severe asthma

were included from the BTS Difficult Asthma Registry (442 received daily oral corticosteroids).

There was a predominance of women (63%) with a mean age of 59 (±17) years in the step 5 group. Potential corticosteroid-induced morbidities were identified in 93% of subjects with severe asthma and 53% had three or more morbidities, which was significantly higher than for both mild/moderate asthma and non-asthmatic controls ($p<0.001$).

Morbidity rates in people with severe asthma compared to those with mild/moderate asthma were significantly higher for type II diabetes (10% vs 7%, $p<0.01$); osteoporosis (16% vs 4%, $p<0.001$); dyspeptic disorders (65% vs 34%, $p<0.001$) and cataracts (9% vs 5%, $p<0.001$). High rates of osteopenia (35%) and obstructive sleep apnoea (11%) were also identified in the BTS Registry.

New treatments for severe asthma are needed that will reduce exposure to oral corticosteroids and the overall burden of disease.

Sleep-disordered breathing and incident heart failure in older men

Sogol Javaheri, Terri Blackwell, Sonia Ancoli-Israel, Kristine E Ensrud, Katie L Stone, Susan Redline
Am J Respir Crit Care Med 2016;193:561–568
http://dx.doi.org/10.1164/rccm.201503-0536OC

Sleep-disordered breathing and heart failure are highly prevalent comorbid conditions, and increased morbidity and adverse outcomes occur in patients with heart failure with comorbid sleep apnoea. However, it is unclear whether sleep apnoea is an antecedent risk factor for clinical heart failure. The degree to which obstructive versus central sleep apnoea modulates the natural history of ventricular dysfunction is also unclear.

This prospective multicentre observational study from the USA examined the association between sleep apnoea and incident heart failure using data from the MrOS (Osteoporotic Fractures in Men) study, a large community-based cohort of older men (n=2,865). Mean age was about 76 years. 30% had a prior history of coronary artery disease, 13% had diabetes, 63% had hypertension and 6% already had a history of heart failure. Participants underwent baseline polysomnography and were followed for a mean of 7.3 years. Primary exposures for analysis included the obstructive apnoea–hypopnoea index (AHI), central apnoea index (CAI) ≥5 and Cheyne-Stokes breathing.

CAI ≥5 and Cheyne-Stokes breathing but not obstructive AHI were significant predictors of incident heart failure. After excluding those with baseline heart failure, the incident risk of heart failure was attenuated for those with CAI ≥5 but remained significantly elevated for those with Cheyne-Stokes breathing.

These data suggest that central sleep apnoea/Cheyne-Stokes breathing is not simply a marker of more severe heart failure but may precede the onset of clinical heart failure.

The association between smoking abstinence and mortality in the National Lung Screening Trial

Tanner NT, Kanodra NM, Gebregziabher M, Payne E, Halbert CH, Warren GW, Egede LE, Silvestri GA
Am J Respir Crit Care Med 2016;193:534–541
http://dx.doi.org/10.1164/rccm.201507-1420OC

The National Lung Screening Trial (NLST) demonstrated a 20% reduction in lung cancer mortality by screening with annual LDCT. Beyond screening, patients with lung cancer who continue to smoke post diagnosis have worse survival; hence smoking cessation is an essential component of a high-quality screening program. This secondary analysis of the NLST aimed to evaluate the additive effect of smoking abstinence to lung cancer screening on mortality to inform cessation efforts.

A subset of the NLST cohort [non-Hispanic white (n = 47,902) and non-Hispanic black (n = 2,361)] was identified. 24,190 were current and 26,073 were former smokers. Cox regression was used to estimate HRs for the association between time to death and the variables of interest including age, race, screening arm, pack-years, quit-years and their interactions.

Current smokers had increased lung cancer-specific (HR 2.14–2.29) and all-cause mortality (HR 1.79–1.85) compared with former smokers irrespective of screening arm. Former smokers in the control arm who had been abstinent for 7 years had a 20% mortality reduction comparable with the benefit of screening. The maximum benefit was seen with the combination of smoking abstinence at 15 years and screening, which resulted in a 38% reduction in lung cancer-specific mortality (HR 0.62; 95% CI 0.51 to 0.76).

As screening programs are implemented, further research into interventions to reduce smoking rates in those eligible for screening will need to be pursued to impact on lung cancer mortality.

Mind the gap: TB trends in the USA and the UK, 2000–2011

Nnadi CD, Anderson LF, Armstrong LR, Stagg HR, Pedrazzoli D, Pratt R, Heilig CM, Abubakar I, Moonan PK
Thorax 2016;71:356–363
http://dx.doi.org/10.1136/thoraxjnl-2015-207915

Despite similarities in economic, population health and migration indices, trends in annual reported TB case counts and incidence rates in the USA and the UK have been diverging. While the USA has reported 22 years of annual TB decline (3.0 cases/100,000 in 2013), TB rates in the UK increased steadily over the last 20 years (12.3 cases/100,000 in 2013). Nnadi *et al* examined trends in reported TB cases and incidence rates between the USA and the UK, with a focus on the demographic and clinical characteristics that may help explain the differing trends.

A total of 259,609 TB cases, including 163,837 cases in the USA and 95,772 cases in the UK, were reported between 2000 and 2011. In the USA, incidence rates declined from 5.8 to 3.4 cases/100,000 while in the UK rates increased from 11.4 to 14.4 cases/100,000. Most cases in both the USA (56%) and the UK (64%) were among foreign-born persons, but foreign-born cases declined by 15% in the USA while increasing by 80% in the UK over the same period. Native-born cases fell by 54% in the USA but remained largely unchanged in the UK.

Sex, race/ethnicity, age group, site of disease, previous TB history, HIV status and time from entry to disease diagnosis among the foreign-born were significantly associated with differences in trend between the USA and the UK.

To achieve TB elimination in the UK, a re-evaluation of current TB control policies and practices with a focus on foreign-born are needed.

PCRS-UK News Round-Up

DATE FOR YOUR DIARY!

EVENT FOR RESPIRATORY CLINICAL LEADERS 25–26 November 2016, Kents Hill Park, Milton Keynes

Influencing and negotiating made easy

Being effective in our roles increasingly requires clinicians to be able to communicate persuasively in order to promote improvements in respiratory disease management and services. So how do we set about influencing the local agenda and priorities for the benefit of respiratory patients? What skills do we need and how do we know how best to present our messages and to whom to target them? How do we know when we have achieved a win:win for all parties?

This workshop will address all these issues and more. If you want to learn how to be more effective in putting your case and being heard, this workshop is for you. Developed and led by clinicians, for clinicians, these workshops are very popular events at which to learn and hone your skills and knowledge. Regular sessions on hot clinical topics and a policy update also provide value in keeping up to date with developments in the clinical world and on the NHS environment.

PCRS-UK Respiratory Clinical Leadership Programme – equipping you to make things happen in your respiratory community

HOW MUCH ARE IT TOOLS BEING USED IN THE PROCESS OF DELIVERING RESPIRATORY CARE?

High demand for primary care services in a tightly constrained financial environment is putting GP practices under a lot of pressure. Various organisations have looked at the use of technology in primary care and have identified this as a major area of opportunity. We were interested to know whether IT tools were being exploited by our members to manage this pressure – such as software and systems for practices to triage patients and prioritise consultations, or Apps or websites to support patients in self-management.

A brief survey through our website found that our members and their practices are recommending Apps to support self-management more frequently than they use tools to manage patient demand. Fifty-seven members responded to our online survey.

Key findings were:

- 24% recommend Apps to patients to support them with self-management (13/55)
- Only nine of the 13 recommend them specifically for asthma. The most commonly mentioned asthma App was myasthma.com.
- Several commented that they signpost patients towards Asthma UK website.
- Seven of the 13 recommend Apps to COPD patients – including mylungs mylife, COPD tracker, myCOPD, 'How are you today?' (developed by Lancashire Care FT and Intelesant)
- Non-respiratory Apps recommended to patients were most commonly to support patients in quitting smoking, then for general health and weight loss and family planning.
- However, only four reported that their practices use any triage systems such as AskmyGP/ WebGP (7%)

One member reported using Skype and Facetime to undertake telephone consultations. An academic advised that his team is currently trialling an exercise and healthy living behavioural support App for people with COPD they have developed. He also advised that his department has developed their own informatics systems for identifying high risk patients and is working on better asthma tools through a NIHR-funded Programme Grant (the DIPSS study).

For further information:

- Digital requirements for new primary care models, Nuffield Trust, 2016
- Understanding patient access to online GP services, Citizen's Advice Bureau, 2015

Apps

- Mylungsmylife website http://mylungsmylife.org
- MyAsthma.com (sponsored by Glaxo-Smithkline) App and website https://myasthma.com/en/about-myasthma
- Asthma UK website particularly for inhaler technique training videos https://www.asthma.org.uk
- MyCOPD http://www.health.org.uk/programmes/shine-2012/projects/my-copd-solution
- How are you today? (http://howareyoutoday.info)

PCRS-UK does not endorse any specific Apps or IT tools; healthcare professionals should seek advice locally on what Apps/IT tools are recommended to patients.

NEW CHAIR OF THE TRUSTEES APPOINTED FOR PCRS-UK

Dr Patrick White, having served nine years as PCRS-UK trustee, is stepping down at the PCRS-UK AGM in October. Patrick has been Chair of Trustees since Autumn 2011. During this period, working closely with the Chair of PCRS-UK Executive and the Trustee Board, he has ensured oversight of the Society's activities and has steered the Society through significant change, including negotiation of a new publishing agreement with Nature Publishing Group to develop *npj Primary Care Respiratory Medicine* and the partnership with Cogora to develop the Primary Care Respiratory Academy. Our very sincere thanks go to Patrick for the very significant contribution he has made to the Society throughout his nine-year term as a trustee.

PCRS-UK News Round-Up continued

The trustees have appointed Charles Waddicor as the next Chair of Trustees who will pick up the reins from Patrick on 1st October 2016. Charles joined the PCRS-UK Board of Trustees in May 2013.

Summary Biography

Charles Waddicor has worked in public services for the last 40 years. He has been Director of Housing and Social Services in two local authorities and Director of Social Services in Oxfordshire until 2007. He worked in the NHS as Chief Executive of Berkshire PCT from 2007 to March 2013. Most recently he has set up his own company (SAMRO: health and social care solutions) and his current clients include the Care Quality Commission and United Health Care (UK). He was also a member of a technological appraisal committee for NICE. He is a non-executive Director for a North London Mental Health Trust and chairs a programme board for Social Finance overseeing projects placing severely mentally ill patients in employment. He has written many articles and has contributed to several books on health and social care issues. He lives in London, cycling whenever possible.

Commenting on the end of his term and on Charles's appointment, Patrick says, "The Primary Care Respiratory Society UK continues to grow in importance and in its influence on respiratory care across the NHS from the Department of Health to the care of patients in individual surgeries. It has been a great pleasure for me to have been involved as a trustee of this very patient-focused organisation. I have particularly enjoyed working with a succession of inspirational executive chairs who have had to guide the Society through many challenges and with Anne Smith, our Chief Executive. As I approach the end of my term I am pleased that I will be handing over as Chair of Trustees to Charles Waddicor who has a great feeling for primary care and for the Society. We have a thoughtful and active Board of Trustees that will provide excellent guidance to the Society in the coming years."

Responding, Charles says, "I am delighted to have been asked to Chair the Board of Trustees. I believe it is a very exciting time for PCRS-UK as it continues to promote best practice in respiratory medicine in primary care teams. By focusing on the better management of respiratory disease, PCRS-UK continues to highlight the importance of primary care services in an increasingly complex health system. I am grateful to Patrick for all he has achieved during his nine years as Chair and I look forward to working with my fellow trustees, the Chair of the Executive Committee and the Chief Executive in carrying on his good work."

NEW MEMBERS OF THE PCRS-UK EXECUTIVE 2016

Following two elections of the membership earlier this year, we were delighted to reappoint Dr Iain Small and appoint Helen Ashdown and Valerie Gerrard to the PCRS-UK Executive.

Iain has been a long serving and valuable member of the PCRS-UK Executive and we are delighted that he stood for election for another three-year term of office having completed a co-opted term as immediate past Chair PCRS-UK Executive. Iain is Clinical Lead of the NHS Grampian Respiratory Strategic Advisory Group, Chair of National Advisory Group to Scottish Government (Respiratory), Associate Editor of *npj Primary Care Respiratory Medicine* and Respiratory Lead in his practice in Peterhead. He has previously chaired the PCRS-UK Executive for nearly six years and was heavily involved in the development of the PCRS-UK Quality Award and the practice improvement programme. He has been involved in respiratory education for more than 20 years and has published widely in academic literature.

Dr Helen Ashdown brings some much valued respiratory research expertise to the PCRS-UK Executive. Since qualifying in 2008, Helen worked as an Academic Clinical Fellow in Primary Care from 2010 to 2014 and has since obtained a fellowship funded by the National Institute for Health Research. Helen divides her time between working as a GP in Oxford and a clinical researcher at the University of Oxford Nuffield Department of Primary Care Health Sciences, where she has both a clinical and research interest in respiratory medicine. She is particularly interested in primary care diagnosis, especially near-patient testing, and is currently doing a PhD investigating whether we can use blood eosinophils and fractional exhaled nitric oxide (FeNO) to target which patients with COPD will benefit most from inhaled steroids.

In the second election, PCRS-UK was delighted to appoint Val Gerrard. Val brings her experience as a Nurse Practitioner in General Practice to the Executive where she sees patients daily with a multitude of respiratory diseases and manages their care in both acute and chronic situations. She is involved with her local CCG in delivering skills training within the CCG. Val is also the lead of a PCRS-UK affiliated group within her area and joined the PCRS-UK Education Committee in January this year.

Congratulations to all the new appointees. Tremendous thanks go to Ren Lawlor and Sally Harris who retired from the Executive and also Dr Rupert Jones who served on the Executive as Research Lead for six years. They have all made superb contributions to the organisation. Ren continues to work with PCRS-UK on a number of nurse-led projects and is involved in the development of the Affiliated Group Leaders meeting; she also sits on the Education Committee. We look forward to welcoming Sally Harris back once she has completed her academic studies.

ASPIRING AND INSPIRING RESPIRATORY RESEARCHERS WORKSHOP

PCRS-UK is delighted to announce a new workshop to be held on 13 October 2016. The workshop will provide a fantastic networking opportunity to meet leading primary care respiratory researchers from across the country including the editors of *npj Primary Care Respiratory Medicine* and learn more about how to get research accepted and published in leading journals.

PCRS-UK News Round-Up continued

To find out more about the workshop and to register visit our website at https://www.pcrs-uk.org/civicrm/event/info?id=49&reset=1

The workshop aimed at those who are new to or have an interest in getting more involved in respiratory research will take place from 12.30 until 17.30 on 13 October 2016 at Telford International Centre and precedes the annual PCRS-UK national primary care conference (https://www.pcrs-uk.org/pcrs-uk-annual-conference). The workshop immediately precedes the AstraZeneca Satellite symposium (18.30–20.00). If you are a healthcare professional and plan to attend the AstraZeneca satellite symposium, you will have the opportunity to apply for the 'two for one' accommodation offer for the nights of 13 and 14 October. (This is only available for the first 100 delegates.) Please note all delegates are responsible for booking their own accommodation – please visit the accommodation page of the website for details (https://www.pcrs-uk.org/accommodation). You will be notified if you have been successful in receiving the 'two for one' accommodation offer.

SECOND OPINION

Your respiratory questions answered...

Question: I am a respiratory nurse interested in respiratory research. In 2012, as part of my academic studies I completed my dissertation on 'The types of interventions to help young people stop smoking in our locality: the view of stop smoking advisors'. I have never published my work but feel that it would be of value to other PCRS-UK members and those interested in helping their patients to quit. Can you give me some advice on how I can disseminate the key aspects of my work.

Answer: Thanks for your question. At PCRS-UK we are keen for all our members to share examples of best practice and disseminate their work within the respiratory community. There are a number of different options on how you can share your work. For example,

- You can **submit an abstract for the PCRS-UK** conference to be held in October 2016. This will give you the opportunity to present your abstract at the conference if accepted. Abstracts can be either original research-based submissions or best practice abstracts where you can promote and share your learning. The subject of your abstract is particularly relevant as the conference organising committee are keen to see abstracts submitted on evidence highlighting tobacco dependency as a long term relapsing condition starting in childhood and/or studies/projects looking at innovative ways of providing smoking cessation services/improving quit rates. Original research abstracts are also published in the *npj Primary Care Respiratory Medicine* journal (see http://www.nature.com/npjpcrm/). To find out more about how to submit an abstract visit https://www.pcrs-uk.org/abstracts-0. The process is easy and, you never know, your abstract might be the winning conference abstract!
- You could submit a news item to ***Primary Care Respiratory Update*** – see https://www.pcrs-uk.org/pcru. If you wanted to submit an article to *Primary Care Respiratory Update* then the article would need to be in the style of a news item (rather than a research article) with brief information on what you did and advice on what the learning was and how others could implement the learning locally. Look at the style of the articles in *Primary Care Respiratory Update* to get a feel for how they are written. This is the ideal vehicle to spread best practice respiratory news and tips to your colleagues and, of course, for you to get some recognition for the work that you did. If you think you would like to submit an article to *Primary Care Respiratory Update* contact us at info@pcrs-uk.org and we can provide you with help and guidance on how to prepare your article.
- **Submit an article to our journal**. If your article meets the criteria for publication and is of scientific merit then you could aim for it to be published in *npj Primary Care Respiratory Medicine*. The journal is an academic scientific journal and there are strict guidelines and criteria for article submissions and the types of articles that may be accepted, but the journal does include help and advice for authors. Please see the website for details on the types of articles that are accepted together with instructions on how to submit your article http://www.nature.com/npjpcrm/authors-and-referees/guide. For your information, *npj Primary Care Respiratory Medicine* is a Medline listed journal with an Impact Factor of 2.54.

Have you got a question for Second Opinion?
If you have a question for Second Opinion please submit your question to info@pcrs-uk.org quoting "Second Opinion" in the subject line

Delivering Excellence Locally

Featuring initiatives led by PCRS-UK members around the UK, supported by PCRS-UK programmes and tools

Celebrating 10 years of high quality respiratory care: The Bristol Community Health Respiratory Service


Francesca Robinson talks to **Clare Cook** of the Bristol Community Health Respiratory Service

The Bristol Community Health Respiratory Service is celebrating 10 years of providing care, having grown from a pulmonary rehabilitation service into one which provides a range of city-wide respiratory services.

Starting out as a pulmonary rehabilitation service, the social enterprise now delivers a supported discharge service, a seven-day 'Hospital at Home' admissions avoidance service and a community oxygen service. Last year they were allocated an additional £110,000 to address winter pressures and inequalities of healthcare for COPD patients.

The service is led by Community Physiotherapists Clare Cook and Laura Turner. Clare, who has been in post for 18 months, says their work builds on foundations laid by previous leaders, including Jen Tomkinson, who is now Manager of Specialist Services. All the service's leaders have taken part in a number of PCRS-UK respiratory leaders' workshops and Clare currently sits on the PCRS-UK Respiratory Leadership Event Organising Committee.

The service has grown out of clinical need. As they have identified gaps in services, team leaders have bid on an annual basis for various pockets of money. They say their confidence to do this has been boosted by the skills and knowledge they have gained from the PCRS-UK leadership weekend workshops they have attended.

Service developments include an expansion of the Hospital at Home service, which now offers a respiratory review service so any patient in their caseload who has had an acute episode is offered a four-week follow-up. During this time, the team assess what led to the exacerbation, whether rescue medication was deployed at the right time, whether there is a need for any specialist referrals and addresses any issues affecting a patient's ability to self-manage.

The service works closely with community matrons and urgent care clinicians who help to identify patients who require support with their exacerbations. They are also closely integrated with the University Hospitals of Bristol NHS Foundation Trust respiratory service; they participate in weekly multidisciplinary team meetings and have direct access to the respiratory consultant's follow-up clinic. About one in eight patients in the Hospital at Home service are covered by the specialist respiratory nursing team, enabling them to cross-link with expertise from secondary care. They also work closely with other groups like the heart failure team and their local stop smoking services.

Data from 2015 shows that the proportion of COPD patients cared for by the Bristol Community Health Respiratory Service readmitted to hospital within 90 days has fallen from 30% to 14%. The team is optimistic that an imminent review of integrated services in Bristol will enable them to deliver service improvements across numerous pathways.

Other future benefits are likely to come from work to integrate electronic documentation so that clinicians can make notes on patient care and prescribe electronically in patients' homes and feed it in real time into the GP system. "This will ensure that our care is joined up and our patient assessments are instantly accessible by the GP. So, if the GP is wondering how to manage risk, they will receive real-time information from us on the health of those patients. The lovely thing about this job is that we are respected by our primary care colleagues. That's the advantage of having built up a good reputation as a team over 10 years," says Clare.

The service chairs a Bristol-wide respiratory education group providing education and leadership for practice and community nurses and specialist health professionals. This facilitates communication between all the respiratory clinicians in the city.

To achieve their goals, Clare says they are trying to work more strategically as a team in order to offer greater sustainability. However, they face a number of challenges. Their current targets are to identify every

patient who would benefit from pulmonary rehabilitation and to maximise capacity in the Hospital at Home service to prevent admissions to secondary care and facilitate discharge. Recruitment and retention of experienced respiratory staff is also an issue, as it is in primary care, and often they have to recruit relatively inexperienced staff and provide their own in-house training.

However, Clare is optimistic for the future. "We have a model of constant learning, implementing new strategies and have rewritten our service specification several times. However, the vision for the service has always been that it should be accessible and sustainable with patient decision-making and empowerment at its heart."

"The strength of our team is innovation; we are constantly changing in order to deliver the best care for our patients. We are a highly ambitious team which takes a real pride in the standard of respiratory care that we provide to our patients and in the quality of the work we do."

Making a difference locally – setting up a local group

Supporting local continuing professional development
Inspiring and sharing best practice in your area
Making the most of time and resources

These days we are all so busy delivering the day-to-day care and administration of a busy practice, it is often difficult to see beyond the surgery environment. But in these challenging times it has never been more important to share examples of best practice and innovative service delivery to make the most of time and resources.

Over the years PCRS-UK has witnessed many excellent examples of best practice in respiratory care as well as some superb and innovative examples of service delivery that have resulted in improved respiratory care for patients.

Take, for example, **Melissa Canavan** and **Sarah Anderson** (Leeds) who, on researching the variation in standards of respiratory care in the Leeds area via the Atlas of Variation in Healthcare for People with Respiratory Disease (http://www.rightcare.nhs.uk/index.php/atlas/respiratorydisease/), decided to take action. After attending a PCRS-UK Respiratory Leaders workshop, they established the Leeds Respiratory Network in 2013 with the aim of improving nurse education in order to reduce variation and improve quality of care for respiratory patients. The Leeds Respiratory Network organises regular evening educational meetings and also respiratory events with inspirational national speakers. The Network uses social media, blog accounts and regular emails to disseminate information locally, creating a sense of local community and networking to share best practice and information. Since establishing the network they have gone on to establish a social enterprise called 'Respiratory Care Solutions', specialising in and providing respiratory care nurses to support primary care practices. They are hopeful that, in the future, Clinical Commissioning Groups will commission their service.

Local respiratory groups or networks are a powerful means of educating and supporting healthcare professionals and can play a key role in influencing service delivery or commissioning. Local groups can be very diverse in how they are set up and what they do and most evolve over time. At one end of the spectrum a group may be exclusively involved with education and support for practice nurses, whilst at the other it may be a multidisciplinary group concerned with service delivery and commissioning – or it may be involved across the full spectrum. By understanding what the members are involved with, information and support can be tailored to their needs. Whatever their format, local groups can be entertaining and fun as well as having an important role in sharing best practice and information. Visit our website at https://www.pcrs-uk.org/civicrm/google-mapping?reset=1 to find out what affiliated local groups are available near you.

Dr Robin Carr (Oxfordshire) commented in his article in *Primary Care Respiratory Update* (February 2015) that educational events run by his local affiliated group are as much entertaining as they are informative. "The camaraderie also contributes to the educational content, with each person chipping in with their own experience and how they managed a situation. There are many ways of doing some parts of our jobs, and sometimes no evidence to provide guidance. So having lots of tried and tested examples can really help; something that only comes from getting together with your fellow practice nurses. It's a hard job but it is massively rewarding and made all the better by some mutual support," he reported.

Sally King (Gloucester) commented that her affiliated group includes an informal mentoring scheme which has been helpful and has meant, for example, that Association for Respiratory Technology & Physiology

trained nurses can either teach spirometry or help interpret results or symptoms when asked by fellow nursing staff. This collaboration helps those asking, and enables them to learn as well as empowering those who have the skills and wish to use them. In short, we all win.

The idea of setting up a local group can be daunting but it can be simple. Your group does not have to be sophisticated or complicated. You can simply arrange to meet periodically at one of the practices and, using materials and news from PCRS-UK, you can provide an update of respiratory news and tips, share local best practice and discuss ideas for how you can work locally to improve respiratory care in your area. The work you do in your group can also be used as a basis for supporting continuing professional development, reflection and revalidation.

PCRS-UK offers help and support to assist you in setting up and running your local network/group including:

- We can help you get started and introduce you to members who are already running successful groups so that they can help mentor you through the initial stages
- We can provide you with a resource pack to help you get started – see https://www.pcrs-uk.org/resource-pack-help-you-get-started
- We can promote your events/meetings by sending emails to members in your area and adding your meetings to our events listing on our website
- We will list your group on our website and promote it to our members
- We can point you in the direction of tools and resources that you can use as a basis for discussion and local update
- We can help you network with other colleagues who are running groups and support your professional development through PCRS-UK programmes and our annual Affiliated Group Leaders meeting
- We offer complimentary membership to the PCRS-UK for Affiliated Group Leaders, saving you an annual £59 fee*
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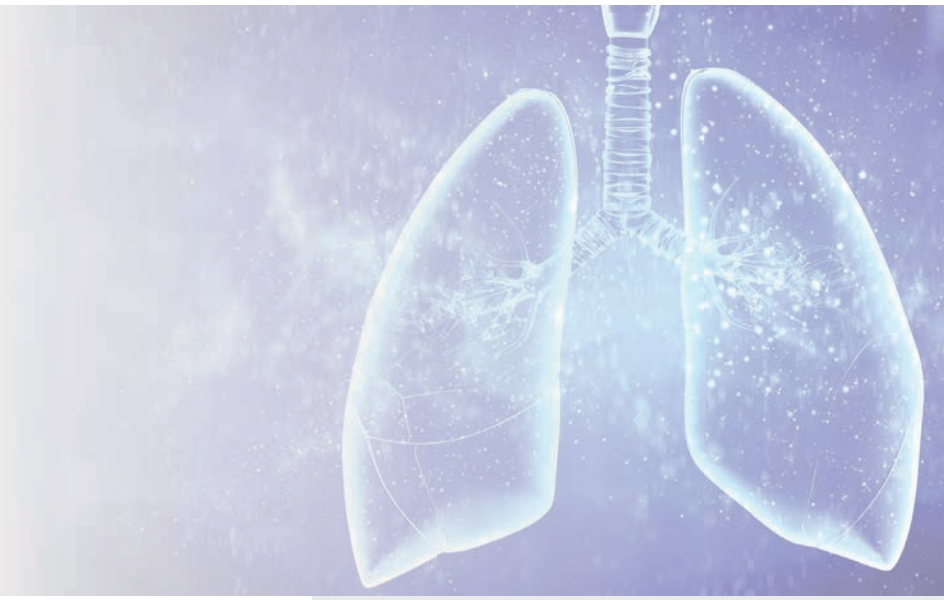

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ARTICLE OPEN

Chronic cough and a normal chest X-ray - a simple systematic approach to exclude common causes before referral to secondary care: a retrospective cohort study

Richard D Turner[1,2] and Graham H Bothamley[1,2]

Chronic cough is common in the community and can cause significant morbidity. It is not clear how closely treatment guidelines are used in general practice, or how often specialist referral is indicated. We aimed to assess the management of chronic cough in primary care before referral to a cough clinic, and to assess the outcome of managing chronic cough with an approach of simple investigation and empirical treatment trials. Data were extracted from the records of all patients attending a district general hospital respiratory clinic over a two-year period with isolated chronic cough lasting ⩾8 weeks. The clinic assessed symptoms with a cough-severity visual analogue scale and the Leicester Cough Questionnaire. Among 266 patients, the most frequent diagnoses were asthma (29%), gastro-oesophageal reflux (22%) and angiotensin-converting enzyme inhibitor use (14%). In all, 12% had unexplained chronic cough. Common diagnoses had often not been excluded in primary care: only 21% had undergone spirometry, 86% had undergone chest radiography and attempts to exclude asthma with corticosteroids had been made only in 39%. In the clinic few investigations were conducted that were not available in primary care. Substantial improvements in symptoms occurred with a median (interquartile range) total of 2 (2–3) clinic visits. We estimated that 87% of patients could have been managed solely in primary care; we did not identify distinguishing characteristics among this group. Most cases of chronic cough referred to secondary care could be managed with a simple and systematic approach, which is potentially transferrable to a community setting.

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INTRODUCTION

Cough is common in primary care.[1] Although most coughs are short-lived and self-limiting, those that persist have an impact on the quality of life.[2] By definition, isolated chronic cough lasts >8 weeks and is unexplained by chest X-ray findings.[3] Smoking, angiotensin-converting enzyme inhibitor (ACEi) medication, asthma, gastro-oesophageal reflux disease (GORD) and upper airway pathology (chronic rhinosinusitis or post-nasal drip) are considered common contributing causes,[4] but the relative frequency of each probably depends on the clinical setting. Primary-care referrals are under-represented in the literature, as most reports come from tertiary-referral cough clinics.[5]

There are benefits to the patient and the wider health system from treatment in primary rather than secondary care.[6] For the management of chronic cough, UK and international guidelines exist,[4,7,8] with suggestions that much could be done in the primary-care setting without the need for complex investigation.[4] Indeed, an explicit management pathway for chronic cough involving minimal investigation has been advocated, although it has only been tested in a well-established tertiary-referral cough clinic.[9]

There is evidence that referral to secondary care for chronic cough occurs prematurely. One survey from Northumberland reported that only 31% of general practitioners (GPs) were aware of published guidelines for chronic cough,[10] and studies from two regions of England reported that, contrary to the UK guidance,[4] <75% of patients had a chest X-ray and <40% underwent spirometry or a trial of corticosteroid treatment to help exclude asthma in primary care before onward referral.[10,11]

The aims of the current study were to review general practice management of chronic cough in patients later referred to secondary care, and to describe outcomes (final diagnoses and resolution of symptoms) from managing chronic cough with an approach based on simple investigation and empirical treatment trials in a district general hospital.

RESULTS

Patient characteristics and clinic follow-up

In total, 404 patients were referred with isolated chronic cough (Figure 1). Clinical records were available for all of them. More than 95% were seen by one clinician (RDT). The median (interquartile range (IQR)) age was 52 years (40–64), and 252 (62.4%) were female ($P = 0.001$ for an expected equal sex ratio). Diagnoses were not made for 138 patients (34.2%), mainly because of ongoing assessment at the time of the study and loss to follow-up (Figure 1). In those who completed follow-up, the median (IQR) number of visits was 2 (2–3). Forty-five of the 67 patients (67%) who failed to attend a scheduled follow-up appointment attended

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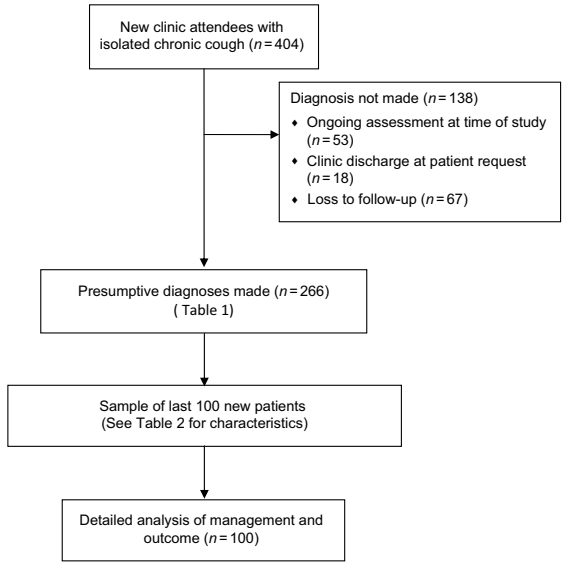

Figure 1. Flow of patients included in the study.

the clinic only once. The previous clinic intervention in 20 of these 67 had been to prescribe a proton pump inhibitor (PPI), and in 25 to trial inhaled or oral corticosteroids. There were no differences in the duration of cough, cough severity or cough-related quality of life at the first clinic visit in all those who were lost to follow-up from those who completed their intended management (median (IQR) duration, 6 (3–12) vs 6 (3–18) months, $P = 0.98$; Leicester Cough Questionnaire (LCQ) score, 10.2 (8.7–13.1) vs 9.4 (7.9–11.8), $P = 0.18$; visual analogue scale (VAS) score, 63 (45–87) vs 72 (54–90), $P = 0.18$, respectively).

Diagnoses

Final diagnoses in the 266 patients who completed follow-up are given in Table 1, with asthma (28.7%), GORD (21.5%) and ACEi use (14.2%) being the most common. In all, 11.9% had unexplained chronic cough (UCC) and 19 (7.3%) had >1 diagnosis.

Of the 75 diagnosed with asthma, 23 (30.7%) had obstructive spirometry, of whom 14 (18.7% of all with asthma) demonstrated bronchodilator reversibility. In 46 of the 75 who had skin-prick tests, there was evidence for atopy in 24 (52.2%). Fourteen (58.3%) of those with atopy and an asthma diagnosis had normal spirometry. Thirty-seven (49.3%) were therefore diagnosed with asthma only because of a response to corticosteroids.

Of the 56 patients with presumed GORD-related cough, none underwent upper gastrointestinal studies from the clinic, although four (7.1%) had had previous investigations compatible with the diagnosis. Among the most recently discharged 100 patients, 19 responded to PPI treatment, including 10 of 31 reporting heartburn. Heartburn therefore had a sensitivity of 52.6% (95% confidence interval, 29.5–74.7%), a specificity of 74.1% (62.9–82.87%) and a positive predictive value of 32.2% (17.3–51.5%) for PPI-responsive cough.

The median (IQR) duration of symptoms in those assumed to have a post-infective cough was 3 (2–4) months. Sixteen of these 30 patients had other upper respiratory tract symptoms at the start of the prolonged cough, but the diagnosis was based on the self-limiting nature of symptoms. Four patients were diagnosed with lower respiratory tract infection (bronchitis) on the basis of symptoms and response to antibiotics.

Sixteen of the 17 patients with a diagnosis of upper airway-related cough (94%) had associated symptoms, although only four reported post-nasal drip. Other symptoms included nasal congestion, irritation and discharge, sneezing and hyposmia. Thirteen of the 17 were referred to the ear, nose and throat (ENT) clinic, of whom five subsequently had sinus computed tomography (CT). The diagnosis in four patients was made primarily on a response to nasal corticosteroids.

Two patients had subsequent diagnoses of malignancy: cancer of unknown primary involving the mediastinum, and metastatic prostate cancer. Both reported potentially concerning features on the first clinic visit (weight loss and previous prostate cancer, respectively) but had normal chest X-rays.

Of the 31 patients with UCC, 23 (74.2%) were female and the median age was 56 years (47–63), with symptoms for 12 (7–39) months at the first visit. This duration of symptoms was greater than in those given another diagnosis (6 (3–12) months, $P < 0.001$). The median number of clinic visits in UCC was 3 (2–5). There was significant improvement in 16 of these 31 patients between visits despite not taking trials of treatment and having had the cough for a median of 12 (7–24) months at the first visit (compared with 12 (5–14) months in non-improving UCC; $P = 0.422$). Symptoms were cyclical in six patients, of varying duration with no obvious underlying pattern.

Primary-care management, clinic investigation and patient-reported outcomes

The characteristics of the last 100 patients to be discharged from clinic were similar to the entire group of all 404 clinic referrals, apart from in the smaller sample there were significantly more females and a higher proportion of diagnoses of asthma (Table 2). In all, 86 of the 100 had had a chest X-ray in primary care and only 21 had spirometry. Trials of treatment for cough had been antibiotics (in 64.0%), inhaled bronchodilators (53.0%), anti-GORD treatment ($n = 42$; 32 PPI for >4 weeks), inhaled corticosteroids (36.0%), nasal steroids (25.0%), oral steroids (17.0%) and anti-histamines (12.0%; Table 2). In all, 12.0% had been taking ACE inhibitors at the time, or within 2 months, of the first clinic visit; the medication had been stopped by the GP in five patients.

All 100 patients eventually had a chest X-ray and 97 had spirometry. Twenty-seven patients were referred to ENT; seven of these underwent sinus CT. Two were screened for tuberculosis. One had chest CT. None underwent bronchoscopy, bronchial hyper-reactivity testing or upper gastrointestinal studies. ENT assessment was perhaps unnecessary in 10 of the 27, as the underlying diagnosis was rhinosinusitis in only nine and unexplained cough in eight. In retrospect, there was a clear need for secondary care input in only 13% of the sample: nine diagnosed with rhinosinusitis following ENT assessment, one with bronchiectasis following CT and three with persistent unexplained cough.

There were paired quality-of-life (LCQ) data for 76 of the 100 and paired cough-severity (VAS) scores for 96. Median (IQR) LCQ scores increased from 9.4 (7.9–11.8) at the first clinic visit to 17.3 (14.4–20.0) at discharge ($P < 0.001$; maximum possible score 21). VAS scores decreased from 72 (54–90) to 23 (5–42; $P < 0.001$; Figure 2). Changes in LCQ and VAS scores were correlated (Spearman's $r = -0.72$, 95% confidence interval -0.82 to -0.58). In the five patients who showed no improvement in at least one of the scores, there was ongoing smoking ($n = 3$), transfer to an asthma clinic ($n = 1$) and a baseline LCQ score of near the maximum value, allowing little room for improvement ($n = 1$). There was no association between final diagnosis and initial cough scores (data not shown). There was no evidence that patients who failed trials of empirical treatment (i.e., the 13 who would likely have not been treatable in primary care) had been more or less troubled by their cough at baseline than those who showed a response (VAS 81 (70–96) vs 70 (54–89), respectively, $P = 0.15$; LCQ 9.2 (7.9–12.0) vs 9.7 (7.9–12.2), $P = 0.73$), nor was there a difference

Table 1. Final diagnoses of patients completing follow-up at Homerton Hospital cough clinic ($n = 266$)

Diagnosis	n *(%)*
Asthma	75 (28.7)
Gastro-oesophageal reflux	56 (21.5)
ACEi use	37 (14.2)
Post-infective	30 (11.5)
Smoking	23 (8.8)
Upper airway pathology (rhinosinusitis)	17 (6.5)
COPD	5 (1.9)
Lower respiratory tract infection	4 (1.5)
Voluntary coughing/throat clearing	3 (1.1)
Malignancy	2 (0.8)
Bronchiectasis	1 (0.4)
Pulmonary fibrosis	1 (0.4)
Unexplained chronic cough	31 (11.9)
Spontaneously resolving	16 (6.1)
Persistent	15 (5.7)

Note: 19 patients (7.3%) had >1 diagnosis.
Abbreviations: ACEi, angiotensin-converting enzyme inhibitor; COPD, chronic obstructive pulmonary disease.

in the duration of cough at the first clinic visit between the two groups (6 (3–20) vs 6 (3–12) months, respectively, $P = 0.76$).

DISCUSSION

Main findings

We demonstrated good patient outcomes in a secondary-care cough clinic over a median of only two clinic visits. Although ENT referral contributed to the diagnosis in 17%, we undertook very few investigations which were not available to GPs in the UK. Skin tests were commonly performed but were not essential for diagnosis. The majority (>80%) of cases of chronic cough referred from primary to secondary care could therefore be managed in a systematic and simple way.

Before referral from general practice, there had frequently been a failure to fully consider common causes of chronic cough by simple investigation (chest X-ray and spirometry) and interventions (empirical trials of treatment or withdrawal of an ACEi). The most common diagnoses were asthma, gastro-oesophageal reflux and ACEi use, together contributing to 65% of chronic coughs. Although those with coughs of a longer duration were more likely to have UCC, neither duration of cough nor other baseline characteristics that we investigated were associated with a subsequent failure of cough symptom scores to improve during follow-up.

Interpretation of findings in relation to previously published work

Our findings are consistent with other reports from the United Kingdom,[10,11] which indicate that referrals to secondary care for chronic cough are often premature (Table 2). This is in keeping with an observed low awareness of cough guidelines among GPs.[10]

For example, only a minority of patients had been adequately assessed for asthma, our most frequent diagnosis. All GPs should have access to spirometry,[12] but only 21% of patients had undergone this investigation. Although often normal in asthma, spirometry may also pick up other diagnoses and is recommended by cough guidelines.[4] There is only limited evidence for the effectiveness of bronchodilators in cough-variant asthma,[13] yet this medication was tried by referring GPs in 53%. Because of frequent underlying eosinophilic airway inflammation, corticosteroids are the preferred treatment for cough-variant asthma,[4] yet they were prescribed in just 39% before attending the clinic.

Similarly, we diagnosed ACEi-related cough in 14% presumably only because of an under-appreciation among the referring GPs of this phenomenon. ACE inhibitors can lead to chronic cough even months or years into therapy,[14] probably by increasing cough reflex sensitivity to cause intolerance of otherwise innocuous stimuli.[15] It is recommended that no-one presenting with chronic cough should continue ACEi treatment.[4] ACEi-induced cough is straightforward to manage, although symptoms can take up to 3 months to resolve.[14]

Unlike in the current study, other cough clinics include referrals from secondary as well as primary care.[16–18] Despite this, our diagnoses (amongst only primary care referrals) and their relative frequencies are similar to those reported elsewhere.[5] The contributions of underlying diagnoses presumably vary with the sources of patient referral to cough clinics. We are unaware of any relevant reports but, because of the levels of specialist knowledge, ACEi- or asthma-related cough is probably referred from other respiratory clinics less frequently than from general practice. We estimated that unexplained cough and rhinosinusitis would be the most common diagnoses among GP referrals if a simple management algorithm had already been followed. Although this has yet to be tested directly, final diagnoses among a group of primary- and secondary-care referrals not responding to a similar algorithm in another clinic were idiopathic cough (39%), GORD (33%) and rhinitis (12%), with only one patient (6%) being diagnosed with asthma.[9] If allowing for different referral sources and the fact that GORD as a major cause of cough is debatable,[19] these findings are not dissimilar to our own.

The age and gender profile in our clinic was similar to that in other cough clinics,[20] and patients with UCC were particularly likely to be female. This is consistent with a proposed gender difference in the mechanisms of cough,[20,21] although women are more likely than men to seek medical attention for many symptoms.[22]

Because the clinic used few investigations, our diagnostic criteria differ from those in other studies.[23,24] For example, we diagnosed cough-variant asthma primarily on response to corticosteroids without testing for bronchial hyperresponsivity or airway eosinophilia,[24] and GORD on response to PPIs without corroboratory evidence from gastrointestinal studies.[19] The influence of the extent of investigation on the final diagnosis is also problematic for the terms 'unexplained' or 'idiopathic chronic cough'.[25,26] For this reason, 'cough hypersensitivity syndrome' might be preferred to describe excessive coughing with or without a probable contributory diagnosis.[27,28]

The proportion of chronic cough attributed to rhinosinusitis in other series is highly variable,[5] and the importance of ENT disease in chronic cough has been questioned.[13] In keeping with this, our findings suggest that upper airway pathology is unlikely to be contributory in the absence of relevant symptoms. Imaging of the sinuses is likely to have low specificity in chronic cough[29] and was not performed in our clinic.

Malignancy was the diagnosis in only two cases of chronic cough and normal chest X-ray, but assessment in the clinic led to early confirmatory investigations, prompted by features other than cough. This suggests that lung cancer is a rare diagnosis in patients with cough as the only symptom, a normal chest X-ray and no additional concerning features including smoking. Hence, CT is recommended in isolated chronic cough only after failure of other interventions.[4]

True habit or psychogenic cough exists but appears to be rare in adults.[30] Correspondingly, we encountered this diagnosis in only 1.1%. Post-infective coughs generally resolve in <8 weeks[31] but can potentially last longer.[4] We made this diagnosis where symptoms were self-limiting, particularly with a history of acute upper respiratory tract symptoms. The longest duration of post-infective cough was 5 months, although it could have perhaps

Table 2. Age and gender profile of referrals to cough clinic and management undertaken in primary care

Location	*Current study*			*Harding* et al.[11]	*Mackley* et al.[10]
	East London, UK			*South London, UK*	*Northumberland, UK*
n	404	100	*P*	66	47
Age	52 (40–64)	52 (40–66)	0.954	55 (15)	59 (27–84)
Gender (% female)	62	73	0.048	62	63
Duration of symptoms (months; median, range)	6 (2–216)	6 (2–120)	0.548	NA	7 (2–420)
Final diagnosis (%)[a]					
Asthma	28.7	39.0	< 0.001	NA	NA
GORD	21.5	20.0	0.159		
ACEi	14.2	11.0	0.570		
Prior CXR (%)	NA	86		52	75
Prior spirometry (%)	NA	21		17	39
Trial of antireflux treatment (%)	NA	32		17	50
Trial of inhaled or oral steroid treatment	NA	39		35	NA
Trial of nasal steroid	NA	25		NA	NA
Trial of antibiotic	NA	64		NA	NA
Trial of inhaled bronchodilator	NA	53		NA	NA

Whole group compared with a smaller sample in the current study (Figure 1) and in context of other work. Values are median (IQR) or mean (s.d.), unless otherwise stated.
Abbreviations: ACEi, angiotensin-converting enzyme inhibitor; CXR, chest X-ray; GORD, gastro-oesophageal reflux disease; NA, not available.
[a]Diagnoses only made for 266 of initial 404 patients; Figure 1.

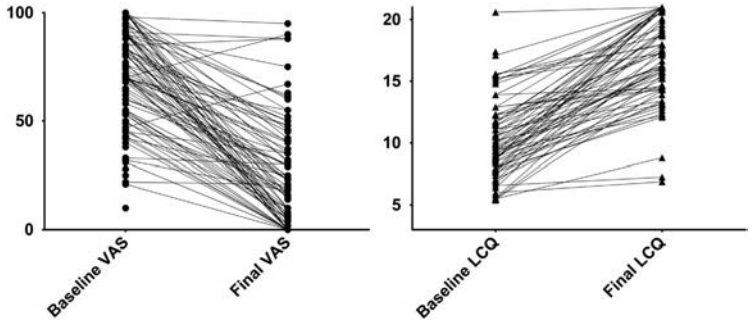

Figure 2. Patient-reported cough scores. Cough severity (VAS) and cough-related quality of life (LCQ) scores at initial and final clinic visits.

been better classed as UCC.[32] As seen here, chronic cough can resolve spontaneously,[33] and it may have done so more frequently if no treatment had been given, again indicating the difficulty in making diagnoses for chronic cough based on responses to medication.

Ojoo *et al.*[9] have also shown that the majority with chronic cough (72%) can be managed with minimum investigation. However, unlike in the current study, at least some of the treating physicians were experienced cough specialists, and patients were referred from secondary as well as primary care. Our findings therefore complement this other study, but they are more relevant to general practice. We are not aware of any other work that has attempted to identify baseline clinical characteristics of isolated chronic cough associated with a failure to respond to sequential empirical treatment trials.

Strengths and limitations of this study

This is one of the largest surveys of the management of chronic cough, with final diagnoses for 266 patients. Furthermore, unlike many similar studies,[34] we used validated patient-reported outcome measures to quantify responses to treatment.

A limitation of the study is our inability to comment on how chronic cough is managed in the community generally. As we have only observed primary-care management of chronic cough in those patients subsequently referred to the clinic, we do not know how GPs' approach to cough varies. Although this does not affect our conclusion that the majority of chronic coughs should be treatable in primary care, observing variation in practice could lead to strategies for change. Our clinic conformed closely to the national British Thoracic Society guidelines on the management of chronic cough, and all patients in this cohort were seen by one clinician (RDT) on at least one occasion. Although this suggests consistency, we cannot comment on the use of our approach by a broader number of individuals, including in settings other than an inner-city population. However, our clinic algorithm was simple, and a very similar management strategy has shown similar success in Hull, where there is representation from both urban and rural settings.[9]

A substantial proportion of our cohort (>20%) was lost to follow-up. Although this is a potential shortcoming as we cannot verify the effectiveness of our interventions in these patients, we assumed that at least some of them improved precisely because they did not return for further advice.[4] There were some missing data for VAS and LCQ scores, but insufficient numbers to affect the overall observed improvements in these values.

Chronic cough—referral to respiratory clinic

Patient name:

Date of birth (age): Occupation:

Smoker: Current/ ex /never; When stopped: Pack years:
Duration of cough: Cough severity: /10
Patient's description of cough + concerns:

Sudden onset: y/n Preceding URTI: y/n
Sputum: y/n Type/quantity:
Diurnal variation:

Precipitants:

Associated respiratory symptoms
Wheeze: y/n Breathlessness: y/n

Associated other symptoms
Heartburn/epigastric pain: y/n Nasal symptoms: y/n; describe:

Systemic symptoms:

Relieving medication (those in **bold** most useful in chronic cough; tick if tried, y/n for response):

O Over the counter	y/n	O **Inhaled steroids**	y/n (details)
O **Oral steroids**	y/n	O Bronchodilators	y/n (details)
O Antibiotics	y/n	O **Anti-reflux**	y/n (details)
O Codeine/opiates	y/n	O **Nasal sprays**	y/n (details)
O Antihistamines	y/n	O Other	y/n (details)

Past medical history (respiratory):
Asthma or childhood wheeze y/n Atopy y/n (details)

Past medical history (non-respiratory):

Medication
ACE inhibitor: y/n If stopped, when?
Other:
Social history:

Examination:

Chest X-ray date: Findings:

Spirometry date:

`	pre-	Post- bronchodilator
FEV_1:	L (% predicted)	L (% predicted)
FVC:	L (% predicted)	L (% predicted)
Ratio:		

Figure 3. Example referral template to secondary care for chronic cough. URTI, upper respiratory tract infection. Adapted from ref. 4.

Implications for future research, policy and practice

Further research would corroborate our findings in other settings, particularly to directly evaluate a similar approach to chronic cough in primary care. More generally, to overcome the inherent flaws in diagnosis by symptomatic response to treatment, an increased understanding of phenotypes of chronic cough is required through increased measurement of clinical variables.[35]

Specialist respiratory clinics will continue to have a role in chronic cough, for managing complicated cases and providing reassurance, but cough could be often managed more extensively in primary care before referral onwards. This should result in quicker resolution of symptoms and lower expenditure. Rather than necessarily seeing patients with chronic cough relatively early on, hospital physicians could suggest that GPs work through a standard referral template first. This could be based on the questionnaire published with the British Thoracic Society guideline[4] and include information about chest X-ray and spirometry findings, and outcomes from withdrawing any ACEi medication and empirical treatment trials (Figure 3).

Conclusions

Fewer patients with chronic cough could be referred to secondary care. The majority of patients in our clinic were managed successfully with a simple and systematic approach adaptable to general practice.

MATERIALS AND METHODS

Setting

This was a retrospective cohort study conducted at Homerton University Hospital, an inner-city district general hospital in London, UK. We set up a clinic in the respiratory department for GP referrals in July 2012 for the management of isolated chronic cough. Patients in whom GPs had a significant suspicion of cancer were referred to a separate clinic. The approach of the cough clinic followed that advocated by British Thoracic Society guidelines,[4] with emphasis on 8- to 12-week trials of treatment before detailed investigation,[9] as summarised in Figure 4. As the last step in the algorithm, options for persistent cough of unknown cause included referral to a respiratory physiotherapist for behavioural cough-suppression training,[36] a trial of gabapentin[37] or tertiary referral for entry into a clinical trial. For smokers, once serious pathology and airway disease were excluded, management was smoking cessation. From mid-2013, the clinic

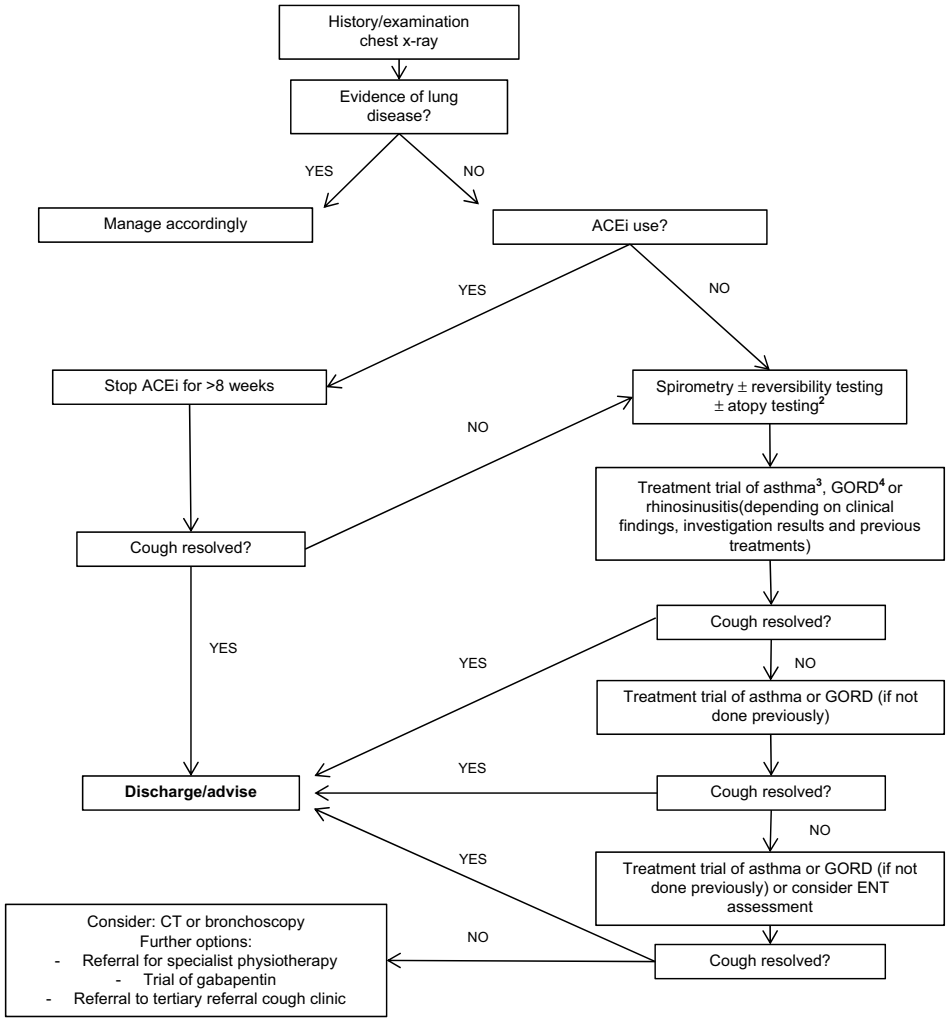

Figure 4. Algorithm for the management of chronic cough at Homerton Hospital cough clinic. 1, obstructive spirometry was followed by reversibility testing (positive if there was >12% increase in baseline forced expiratory volume in the first second (FEV_1) with bronchodilator); 2, skin-prick tests to common aeroallergens supported a diagnosis of allergic asthma, although they are not specifically mentioned in UK cough guidelines (see ref. 4); 3, inhaled beclometasone (100–200 μg twice daily), or, if there was doubt about the inhaler technique or adherence to previous inhaled corticosteroid, a 10- to 14-day course of 30 mg daily prednisolone was considered; 4, high dose proton pump inhibitor, e.g., lansoprazole 30 mg or omeprazole 40 mg twice daily, even in the absence of dyspeptic symptoms; 5, trials of nasal steroids were generally only used in the presence of upper airway symptoms, or evidence of rhinitis or sinusitis on assessment in the ENT clinic.

assessed patient-reported cough severity and cough-related quality at clinic visits with a 0–100 VAS[23] and the LCQ,[38] respectively.

Data collection

Data were extracted from the records of all cough clinic attendees from July 2012 to July 2014. Patients were included if they been referred from general practice because of chronic cough as the only or predominant symptom of uncertain cause for ⩾8 weeks before the first visit. For all patients, age, gender, symptom duration, number of clinic attendances and final diagnosis were noted. A sample of the most recent 100 patients to complete follow-up was used to describe management undertaken before and after clinic referral, and patient-reported outcomes. Ethics committee approval was not sought, as the study was a review of the management of patients for whom we had clinical responsibility.

The minimum important difference for the VAS and LCQ was taken as 17 mm[39] and 1.3,[40] respectively. Data were analysed using Prism Version 6.04 (GraphPad Software Inc., San Diego, CA, USA), and non-parametric summary statistics (median and IQR) are reported as appropriate. Two-sided Mann–Whitney and Wilcoxon matched-pairs signed rank tests were used for comparing unpaired and paired data, respectively.

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CONTRIBUTIONS

GHB set-up the cough clinic. It was run by RDT and overseen by GHB. RDT and GHB jointly conceived this work. RDT collected and analysed data. The manuscript was written by RDT and GHB. Both authors are guarantors of the work.

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Combating cough

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Thursday afternoon cough clinic is the highlight of my working week. There is always something unique and previously unrecognised, by me at least, even after running one for 30 years. In that time, cough has been transformed from a mere symptom of other diseases into a condition in its own right, a view recently endorsed by the European Respiratory Society who have accepted the definition of cough hypersensitivity as a 'clinical syndrome characterised by troublesome coughing, often triggered by low levels of thermal, mechanical or chemical exposure'.[1] Virtually all chronic cough occurs because of this hypersensitivity of the afferent nerves of the vagus. Patients are frequently amazed that you can predict that they have bouts precipitated by phenomena such as change in atmospheric temperature, strong smells and perfumes (it is always cheap perfume), and exposure to smoke and dust. The typical patient is a middle-aged woman. Women seem to have a heightened cough sensitivity, perhaps to protect them against aspiration during pregnancy.[2] Associated conditions are irritable bowel syndrome and obesity.[3] The relief the patient feels that someone understands the 'sensitive throat' from which they are suffering is palpable. The distress caused by chronic persistent coughing causes a decrement in quality of life greater than that seen in severe COPD or cancer.[4]

Over the years, our understanding of the diagnosis and treatment of chronic cough has also undergone radical change. Previously, chronic cough was thought to be because of three causes: asthma, GORD and postnasal drip. However, very few patients fit neatly into these boxes, and those who do show many atypical features from the classic diseases. Thus, patients who clearly had an asthmatic-type cough, which responded to inhaled corticosteroids, frequently had no wheeze or airflow obstruction, and thus the term cough variant asthma was invented.[5] In others, there was not even bronchial hyperresponsiveness, and thus the definition was stretched further to include eosinophilic bronchitis.[6] For those who did not fit into any of the boxes, we had to develop a term—idiopathic cough. The cough hypersensitivity syndrome does away with all of this confusion and gives the patient a reassuring and common diagnosis. However, what is the cause of the hypersensitivity?

Viruses hijack our cough reflex, giving rise to hypersensitivity in order to disseminate themselves to the next victim.[7] Environmental insults, such as exposure to cold air, can cause inflammation leading to hypersensitivity. However, for the 1 in 10 of the world population who suffer from a chronic cough,[8] this cannot be the answer. My view, and it is little more than that as I am unable to produce physiological proof, is that most chronic cough is a result of reflux, but not reflux as it is commonly understood.[9] GORD is acid liquid reflux, but the reflux that causes the cough hypersensitivity is a non-acid gaseous mist, which we all produce, and in those who develop a cough it causes hypersensitivity of the airway nerves. I have therefore named this airway reflux.[10] The reason why I am convinced this is true is that the patients tell us so. We have developed a validated questionnaire[11] of 14 questions, which picks out the associated features, such as coughing with food or after meals, loss of voice, cough on lying down or on first rising in the morning. Each individual patient has a different profile of answers to these questions, but normal people score 4 out of 70. The upper limit of normal is 14, with most of the patients I see in the cough clinic having a score in the 30–60 s. The questionnaire is available on the website issc.info, and every patient who comes to see me fills it in beforehand. That way you do not waste time asking the questions to which the answer is negative. This is a fundamentally different problem from acid reflux, and it does not respond to anti-acid treatment. Promotility agents, such as metoclopramide, domperidone, baclofen and azithromycin, produce a successful response in the majority of patients.

In the linked paper, two physicians Richard Turner and Graham Bothamley[12] report their experience from a cough clinic and find, unsurprisingly, that the overwhelming majority of patients could have been successfully treated in primary care had the referring physician taken the appropriate steps in management. This certainly concurs with my experience. A referral, such as 'Please see this obese 50-year-old lady with a known hiatus hernia and previous irritable bowel syndrome' is simply a waste of money. Frequently, Turner and Bothamley find that even the most basic of investigations have not been performed. All the guidelines say chest X-ray is mandatory, and although the yield in terms of diagnosing malignancy is low, the bronchial wall thickening of recurrent aspiration is not an unusual finding. It is these patients who are at greatest risk of having a decline in lung function. The majority of patients with chronic cough protect the airways with the cough reflex hypersensitivity. Others, however, particularly the older patients, aspirate leading to bronchial inflammation, which if they have been a smoker will be labelled as COPD, or even a frank bronchiectasis. It is these patients who are at most risk of progressive lung disease, and early vigorous treatment, up to and including fundoplication, is indicated.[13] Turner and Bothamley have applied the existing guidelines to their patients and found that had these procedures been applied in primary care before referral the majority of patients would have been successfully managed. The guidelines are, however, well out of date, and despite the best efforts of specialists to update them to include modern evidence, just as with the NICE COPD guidelines, we are left to make up our own minds in the modern world.

In exact parallel to the revolution that is occurring in COPD, there is a realisation that in chronic cough treatment is governed by the type of inflammation that is occurring in the airways. Our previous simple paradigm that asthma was an extrinsic allergic condition, although true, is only the tip of the iceberg when we are dealing with eosinophilic, TH2-type inflammation with the lungs. More recent studies have shown that non-allergic, innate, mechanisms caused by epithelial damage can precipitate, in predisposed individuals, to an eosinophilic-type reaction.[14] Although it is possible to use techniques such as induced sputum and exhaled nitric oxide to determine which of these patients sitting in front of you have this eosinophilic-type inflammation, simply looking at the blood eosinophilic count from the historical records may be just as valuable. This is certainly what I do in the clinic. If the eosinophil count is above 0.3, either repeatedly or on an occasional basis, then I would classify the patient as having an asthmatic cough, and anti-asthma treatment is indicated. Because the inflammation is more deep-seated, inhaled steroids may be only partially effective.[15] To establish the diagnosis, a prednisolone trial may be indicated, and because the particular lymphocyte involved in this form of innate immunity is packed

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with leukotriene receptors, the anti-leukotriene drugs, such as montelukast, can be highly effective.[16]

Therefore, I agree with doctors Turner and Bothamley that the overwhelming number of patients with chronic cough should be successfully managed in primary care. A chest X-ray and spirometry with a Hull Airways Reflux Questionnaire will establish the diagnosis in the majority of patients. The type of inflammation, eosinophilic or not, can be determined in the office from the historical blood counts. Treatment can then be either directed against the eosinophilic inflammation, the oesophageal dysmotility or both. If we do this, my clinic will become even more interesting, as the weeping patients who declare 'doctor you are the first one who has understood' will have already been successfully managed and I will be left with the exotic yellow nail syndrome, mononeuritis multiplex or, as last Thursday, the lady who watched TV with a parrot on her shoulder.

COMPETING INTERESTS

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