Winter 2021
Issue 23

Primary Care Respiratory Update




Edition Highlights

- Focus on asthma
- Building blocks of a good asthma review
- Supporting patients to steer clear of the cliff edge
- Improving care for people severe asthma
- Post COVID syndrome referral pathway
- Lung cancer in never smokers

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We are now entering the post-peak phase of the global COVID-19 pandemic and a safe return to respiratory diagnostic testing is being advised. We've created a helpful guide to get you started.

With a return to diagnostic spirometry in primary care, we know that patient safety is of paramount importance to you. The pandemic has taught us that we must rethink how to perform pulmonary function testing within general practice settings. Patient and practitioner safety, and the reduction of virus transmission are the main priority.

International guidance has been reasonably consistent on the considerations for resuming pulmonary function services and testing post-COVID.

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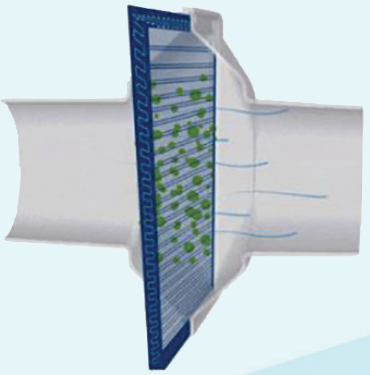

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Primary Care Respiratory Update

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Contents

Primary Care Respiratory Update

Special features

Editor's Round-Up
Iain Small 5

Good building blocks of an asthma review
Katherine Hickman 6

Asthma Right Care – How to optimally use the asthma infographics to 'Support patients to steer clear of the cliff edge': From Reactive asthma management to Proactive asthma management
Frances Barrett and Katherine Hickman 10

NHS Accelerated Access Collaborative: Implications and opportunities to improve care for patients with severe asthma
Carol Stonham and Steve Holmes 14

How can primary care help schools manage asthma better?
Georgie Herskovits 18

Managing COVID in Primary Care – PCRS Simple Infographics 19

Post COVID syndrome referral pathways
Dr Vince Mak 25

Not all lung cancer is a result of smoking
Dr Anthony Cunliffe 28

Regular feature

PCRS News Round-Up 30

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Editor's Round-Up

Dr Iain Small, *Editor Primary Care Respiratory Update*

As I write my Editor's introduction to this edition of *PCRU*, I am only too aware that by the time you read it, I will have attended (in the virtual sense at least) my final PCRS Executive, leaving the undisputed crown of longest servicing Executive member to my friend and colleague, Steve Holmes. This also means that we will be preparing to hand over the editorial helm at PCRU to the next generation. In doing so, I want to pay tribute to my predecessor, the founding editor, Hilary Pinnock, and to the impressively hard working team that brings this publication together, under the patient and dedicated leadership of Tricia Bryant, a friend, colleague, and expert nagger over many years. It has been an honour to have been involved in the society, and leave in the knowledge that it remains in safe hands.

But enough of that….let's talk asthma, the condition that started us all off in the GPiAG all those years ago. In this edition, check out Katherine Hickman's superb asthma building blocks – get those right and your asthma care would be unarguably better and more worthwhile. The piece dovetails beautifully with Frances Barrett's item, which, for those of you, like me, who want to see the picture as well as the words, adds value to our learning process. Linked again (can you see what we did here) is Georgie Herskovits' piece on asthma in schools.

Whilst we are on that subject, I want to take this opportunity to pay tribute to the late Sir David Amess MP, a stalwart member of the cross party Parliamentary Asthma Group, and a key player in establishing the availability of rescue reliever inhalers in schools. The respiratory community is poorer for his loss.

As was highlighted by Ian Pavord and Andy Bush in the *Lancet* recently, we need to get serious about recognising different phenotypes of asthma. Just as is the case in COPD, we should be able to recognise different treatable traits, and thus work out which patients will be more likely to benefit from the new treatments we now have. This means making assessment tools such as FeNO more widely available and getting into the habit of using them, along with symptoms and lung function, as part of our ongoing monitoring of patients. Carol Stonham's piece discussing the Accelerated Access Collaborative adds weight to this argument.

Oh, and as well as all that, for those of you who, like me, are still struggling with the impact of the pandemic on patients and services, check out our COVID resources included here, and also available on the PCRS website.

Finally, we have included a moving story from Wendy, giving us a patient perspective of being diagnosed (as a non-smoker) with lung cancer. Each of us may not see many patients in her shoes, but we should always keep the thought in our diagnostic minds. Anthony Cunliffe gives us food for thought in his supporting article.

I look forward to seeing many of you at PCRS conference in 2022, details of which can be found in this edition of *PCRU*, and wish you all the very best for a safe and settled 2022.

Good building blocks of an asthma review

Katherine Hickman, *General Practitioner, Leeds and PCRS Vice Chair*

Assess
Assess control, severity and risk of exacerbations using a validated or endorsed tool

Review
Review diagnosis and management including the following:

- Confirmation that the diagnosis is correct
- Clinical examination/history
- Check inhaler technique
- Managing tobacco addiction
- Drug therapy
- Compliance/adherence
- Lifestyle and social issues
- Co-morbidities
- Identify and mitigate triggers where possible

Collaborate
Work with the patient to develop, maintain and review a self-management/action plan specific to the patient's needs to encompass:

- Information on regular treatment/maintenance therapy as well as any relevant notes on technique and any repeat prescription advice
- What to do if symptoms become worse
- What to do in an emergency/defining an emergency (including information on rescue pack if appropriate) who to contact, when and how
- Information on staying well/avoiding triggers
- Other advice and information on who to contact with questions

Telephone and Video Consultations
In the wake of the COVID-19 pandemic many asthma reviews will be being carried out remotely by either telephone or video. Many patients and staff have found this not only acceptable and safe, but in many cases a preferable method. PCRS has a video discussing some top tips for virtual respiratory reviews – https://bit.ly/2YwM74D. It is important to remember that not everything can be dealt with remotely and if needs be patients should be seen face to face.

KEY COMPONENTS OF AN ASTHMA REVIEW

Assessing control to target care

National guidelines and the Quality and Outcomes Framework (QoF) recommend the use of validated assessment tests such as the Asthma Control Test (ACT) and Asthma Control Questionnaire (ACQ).[1] The Royal College of Physicians '3 Questions'[2] can also be used.[3]

Asthma control is measured by the frequency of symptoms and blue reliever inhaler use. The aim of treatment should be for no nocturnal waking or activity limitation, minimal symptoms, no side-effects and minimal blue reliever inhaler use. More than two episodes of symptoms in the past month and more than three blue reliever inhaler doses in the past week are indicators of sub-optimal control.

Review the prescribing record of relief medication and oral steroid courses and note any unscheduled visits to GP, OOH or hospital for treatment of respiratory conditions that may indicate poor control. Ask the patient about the use of SABA (or additional doses of ICS/LABA if being used as part of 'Maintenance and Reliever Therapy'). Review peak flow measurements (if available) and record the patient's best peak flow when fit and well.

It is good practice to record in the patient's notes what the ICS/LABA ratio is. If it's less than four ICS or ICS/LABA and six or more SABA in a year, then an urgent follow-up is required to monitor management and symptoms, and to see if medicine behaviour change constitutes a safer direction.

Reviewing diagnosis and management

✓ Have you checked the patient's asthma diagnosis is correct?

Check the patient's notes to see if there is evidence of objective tests demonstrating variability in airflow obstruction:

- Peak Flow diary demonstrating >20% variability would be considered abnormal
- Spirometry trace, with reversibility, demonstrating an increase of FEV1 of 200mls and 12% or greater than 400mls

If there is uncertainty, do you have access to a FeNO machine in order to demonstrate eosinophilic inflammation which may provide support for an asthma diagnosis? During the COVID-19 pandemic period spirometry has been put on hold and in many areas remains so. If there is diagnostic uncertainty. PCRS has produced a guide to support diagnostic work-up during COVID-19 - https://bit.ly/3HcyljC

✓ *Have you checked the patient's medical history?*

If a patient has all of the following typical clinical features, they are considered to have a high probability of asthma.[4] Is there a record of any or all of the following in the notes?

- Recurrent episodes of symptoms
- Wheeze confirmed by a healthcare professional
- A personal or family history of atopy
- A past record of variable airflow obstruction (see above)
- No features to suggest an alternative diagnosis

✓ *Have you checked the patient's understanding of the pathophysiology of asthma and which inhaler does what with regards to bronchoconstriction and inflammation?*

Draw a picture of the airways or use an airways model to demonstrate this. You can order airway models from neelam.zafar@Cipla.com. Use terminology such as, "asthma is like eczema on the inside, and the steroid reduces the inflammation in your airways, just like when you rub steroid cream onto eczema". Talk to the patient about where their blue reliever inhaler acts i.e. on the muscles surrounding the airway but does nothing to treat the inflammation. If you have access to a FeNO device a raised result will further demonstrate the presence of inflammation.

✓ *Have you reviewed inhaler technique or currently prescribed inhaler types?*

Poor technique may be responsible for inadequate control. Observing technique is not enough, poor technique must be corrected and appropriate coaching delivered. It is also important to ensure that there is consistency in the types of devices selected (avoiding mixing different devices such as pMDIs and DPIs).[1]

✓ *Have you discussed and reviewed adherence to therapy?*

Poor adherence to treatment may explain failure to control symptoms. Ensuring the patient understands how reliever and preventer treatment works and listening and responding to patients concerns and goals may improve adherence to treatment.[1]

✓ *Have you reviewed smoking status and offered smoking cessation advice where appropriate to do so or referred to smoking cessation services?*

Smoking reduces the effect of inhaled steroids and treatment may need to be adjusted for smokers.[1] It is also important to assess if children with asthma are subjected to passive smoking and appropriate advice and support delivered to parents and carers.

✓ *Have you reviewed lifestyle and triggers including those associated with occupation (e.g. exposure to fumes, particles), and household (e.g. pets, dust)?*

These should be reviewed and recorded, and goals set on minimising/ managing exposure.

✓ *Have you reviewed the patient for other concomitant conditions such as rhinitis and treated rhinitis accordingly?*

✓ *Have you reviewed treatment in line with evidence-based local and national recommendations, stepping up and stepping down treatment as required?*[5]

✓ *Have you reviewed the personalised asthma action plan?*

This is an opportunity to engage with the patient and discuss what is important to them in the management of their condition, and for education into what asthma is and how medication works. A good rapport is essential for supported self-management of long-term conditions.

✓ *How can you tailor the asthma action plan to meet the patient's needs, and what realistic goals are you going to agree?*

For example, reduce/stop smoking, lose weight, increase exercise, reduce unnecessary repeat prescriptions requests (e.g. unrequired SABA).

Finding that a patient may be over-reliant on their SABA should prompt you to work with them to achieve good asthma control. This is an opportunity to highlight the issues associated with SABA over-reliance and ensure patients are provided with support and help to identify a treatment and management course of action which is acceptable to the patient and their lifestyle and which provides appropriate treatment options that reduce the need for such over-reliance on SABA.

It is important to ensure that patients are kept apprised of the latest information on asthma management. For example, using SABA prior to exercise as routine practice, which may be based on old advice . Exercise related symptoms are in fact an indicator of poorly controlled asthma; or using SABA to 'open the airways' prior to using ICS.

It is also an opportunity to highlight the rebound effects of daily SABA use, such as building a tolerance to it. It's important to close this conversation with positive, supportive and clear advice to help your patient to live with well-controlled asthma. For example, a SABA canister should last a patient six months, indicating that no more than two doses a week are required, and that living without symptoms is an indicator of good asthma control. The healthcare professional should work with the patient in a collaborative, patient-centred approach to achieve good asthma control through appropriate drug and non-drug treatment.

Utilising Asthma Right Care (ARC) resources will aid the SABA over-reliance conversation.

The asthma slide rule (https://www.pcrs-uk.org/asthma-right-care) is a tool that visualises the health risks associated with SABA overreliance using a red, amber and green scale to demonstrate what good asthma control looks like in terms of puffs.

A new series of **illustrations on asthma diagnosis and management** are available to use to support patient and healthcare professional training and coaching. These are available from the PCRS website – see XXXXXXX

The Question and Challenge Cards pose questions and provide metaphors that aim to challenge both patient and clinician understanding and behaviours around what good asthma control looks like, with the aim of shifting behaviours towards regular anti-inflammatory treatment.

All ARC resources are freely available from: https://www.pcrs-uk.org/asthma-right-care.

TOP TIP

If you have 20 minutes with a patient, don't try to cover everything and rush the session.

For example, if you're trying to cover inhaler technique, co-create an asthma plan, listen to the patient's ideas, concerns and expectations, and address SABA over-reliance – it won't be possible to cover all of these.

Working with the patient, prioritise what to deal with first and arrange a follow-up to cover the other items as soon as realistically possible. Longer appointments would be ideal in these scenarios.

Also consider delegating some of the roles if time is stretched e.g. inhaler technique coaching carried out by a community pharmacist or a colleague in your practice who is trained up to run this service.

✓ *How can you support your patient to improve their care?*

For example, watch an inhaler technique video together and reassess technique (see links in the box below).

Update the patient's asthma action plan taking into account what you have discussed and agreed together. Asthma UK provides an action plan, available at: https://www.asthma.org.uk/advice/manage-your-asthma/action-plan/. Action plans are also available to download direct through EMIS WEB, see https://www.asthma.org.uk/for-professionals/professionals/emis-action-plans/ for guidance. Patients may wish to download Asthma UK's booklet 'Make the most of your asthma review' available at: https://www.asthma.org.uk/5070072f/globalassets/health-advice/resources/adults/your-asthma-review-booklet.pdf.

Tobacco Dependency and Smoking Cessation Support

Smoking increases use of healthcare services and reduces the effectiveness of inhaled medicines in asthma. Intensive and evidence-based stop smoking support should be part of essential treatment and progress reviewed regularly.

Only 5% of smokers who want to quit smoking actually access a stop smoking service each year, yet we know that support increases the likelihood of quitting. Become a quit catalyst with support from the PCRS, available at: https://www.pcrs-uk.org/resource/become-quit-catalyst.

It is a key role of primary care to "Make Every Contact Count" (MECC), through clinicians offering very brief advice (VBA), the practice displaying posters and videos in reception, and well-trained reception staff facilitating access to opportunities for supportive engagement.

Further information
Making every contact count https://www.makingeverycontactcount.co.uk/
Very Brief Advice https://elearning.ncsct.co.uk/vba-stage_1
Smoking cessation training https://www.ncsct.co.uk/

INHALER TECHNIQUE

Patients should be taught how to use their inhaler when they are first prescribed inhaled medication and their technique should be reviewed at subsequent consultations with coaching to improve technique if necessary. The healthcare professional must be appropriately trained themselves on the techniques and able to train users. Generic prescribing of inhalers, or mixing inhaler device types should be avoided as this might lead to people with asthma being given an unfamiliar inhaler device which they are not able to use properly. [1] Placebo inhalers can be useful to demonstrate correct technique and it may be helpful to support education with training videos.

Asthma UK inhaler training videos and information at
https://www.asthma.org.uk/advice/inhalers-medicines-treatments/using-inhalers/
Right Breathe www.rightbreathe.com
PCRS Video on inhaler techniquehttps://vimeo.com/462186592/f7275a2613

Further Useful Information

- PCRS Asthma Guidelines in Practice https://www.pcrs-uk.org/resource/asthma-guidelines-practice
- Asthma Right Care https://www.pcrs-uk.org/arc
- PCRS Consensus guide for the use of FeNO testing to support asthma diagnosis https://www.pcrs-uk.org/resource/feno-testing-asthma-diagnosis
- Primary Care Respiratory Academy Asthma Videos, Podcasts and CPD modules https://respiratoryacademy.co.uk/clinical/resources/
- Poorly controlled and severe asthma: triggers for referral for adult or paediatric specialist care – a PCRS pragmatic guide https://www.pcrs-uk.org/resource/triggers-referral-poorly-controlled-and-severe-asthma
- PCRS – Inhaler devices - https://www.pcrs-uk.org/resource/inhaler-devices

Acronyms

- GP – General Practitioner
- FEV1 – Forced expiratory volume in 1 second
- ICS – Inhaled corticosteroid
- LABA – Long-acting beta-agonist
- MART – Maintenance and reliever therapy
- OOH – Out of hours
- SABA – short-acting beta-agonist

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NOTICE This article has been created as a summary of a range of material from PCRS tools and encompasses the basics of a good respiratory review. It is not a tick box template – all consultations with patients should be approached holistically and tailored specifically to the patient's needs, requirements and other co-morbidities and situations.

ASTHMA RIGHT CARE

PCRS

This resource has been produced as part of the PCRS Asthma Right Care (ARC) initiative, which is part of a wider global social movement initiated by the IPCRG.

Asthma Right Care – How to optimally use the asthma infographics to 'Support patients to steer clear of the cliff edge': From Reactive asthma management to Proactive asthma management

Frances Barrett, *Respiratory Nurse Specialist, Northern Ireland* and **Katherine Hickman,** *General Practitioner, Leeds and PCRS Vice Chair*

When a patient is diagnosed with asthma they are starting on a journey; a journey that for the majority will last a lifetime. If that patient starts off on the wrong foot and travels down the wrong path it is unlikely to be a smooth one. They may feel alone, confused, scared and unsupported. The information they received at diagnosis may have been minimal and they leave with no idea on how to manage their asthma outside of the GP surgery or A&E. Equally, they may have been bombarded with untailored information, given leaflets, access to videos on inhaler technique, signposted to Asthma UK, the RightBreathe app and handed a Personal Asthma Action Plan (PAAP).

In order to support patients and clinicians to start off on the right path from the outset of diagnosis the Asthma Right Care working group commissioned the development of three infographic storyboards. These depict the potential journey any asthma patient may travel during their lives.

1. The first story board (Figure 1) considers 'how' to gain an accurate asthma diagnosis and incorporates all the relevant subjective and objective assessments required to confirm an asthma diagnosis.
2. The second story board (Figure 2) explores the various 'management paths' that a patient can choose to travel or be guided along – 'the reactive management path' depicted on the left side of the picture as a grey, scary road consisting of numerous reminders of all the potential negative outcomes associated with poor management choices – conversely 'the proactive treatment path' depicted as a bright optimistic path – with optimal asthma outcomes.
3. The overarching infographics (Figures 3 and 4) are a comprehensive overview of the many facets of asthma care in conjunction with both the potential negative and positive patient outcomes. This dramatic infographic demonstrates some of the potential negative outcomes with many of the associated contributary factors on the 'dark' left side of the picture whilst the positive outcomes in conjunction with relevant contributary factors are pictorially represented on the brighter right hand side of the picture – there are a number of signs scattered throughout this infographic – which are hyperlinks to relevant advice, supporting material and pre-recorded presentations to support clinicians navigate their way along the most effective treatment path for their individual asthma patients – keeping them safely away from the dangerous 'cliff edge' and on the path towards optimal health outcomes – asthma utopia

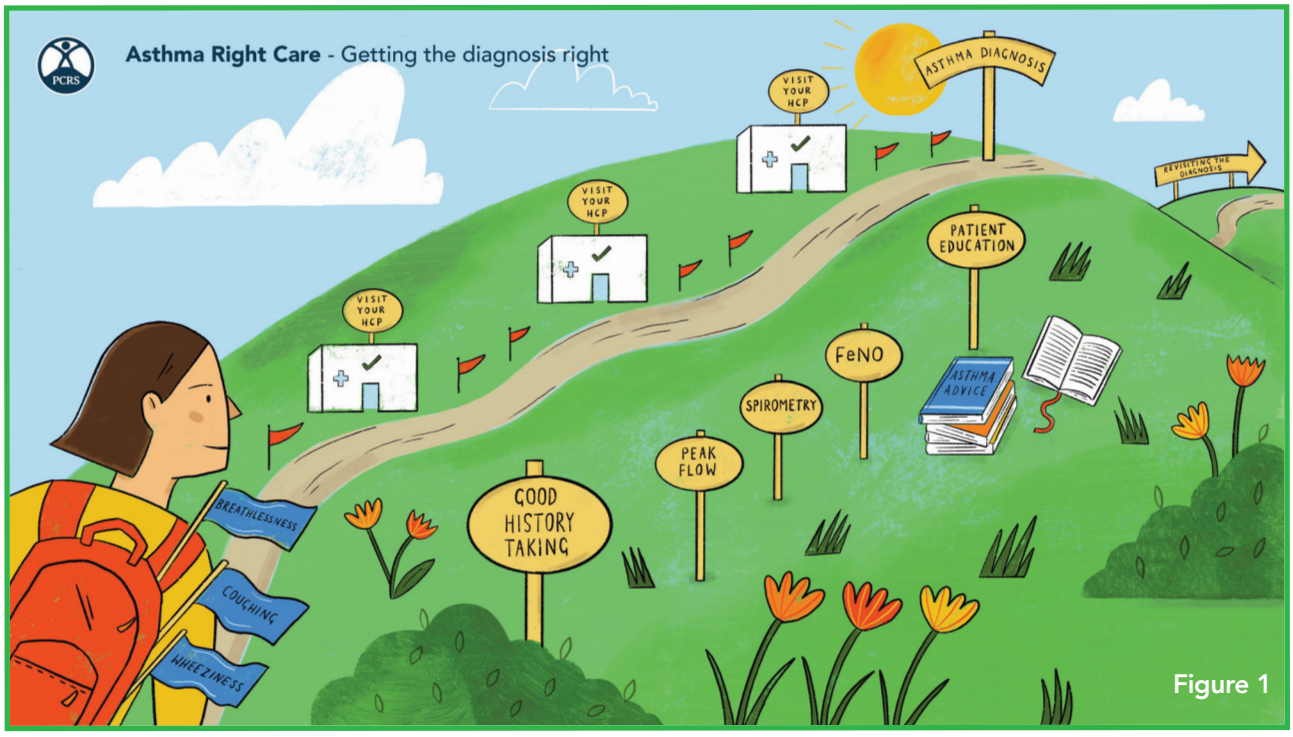

Figure 1

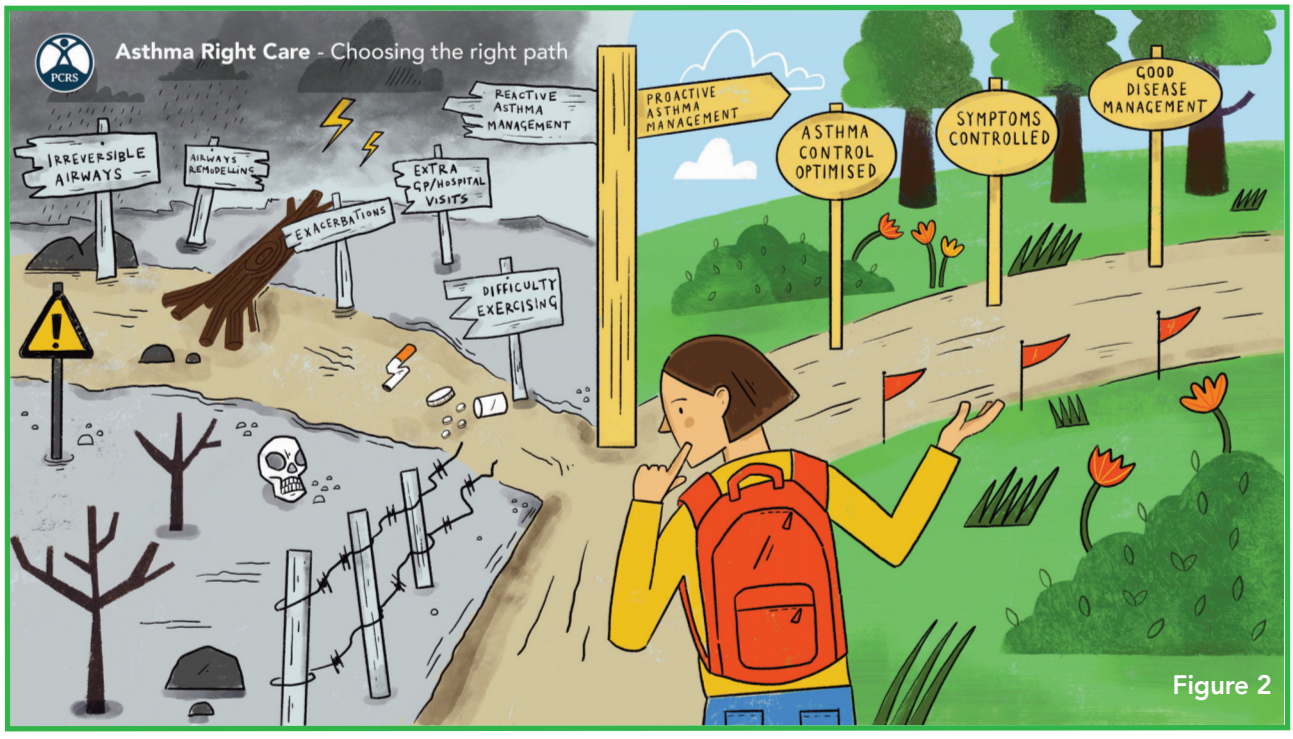

Figure 2

Ultimately education is a key component to ensure understanding around the underlying disease aetiology of asthma and how it is responsible for inducing the variable and intermittent symptoms of cough, wheeze, dyspnoea, chest tightness and chest pain, which are the hallmark of asthma. Clinicians and patients must be able to make well-informed treatment decisions towards safe and effective management contributing to optimal long-term outcomes for this long-term condition.

Living with asthma is rarely a smooth journey but it can

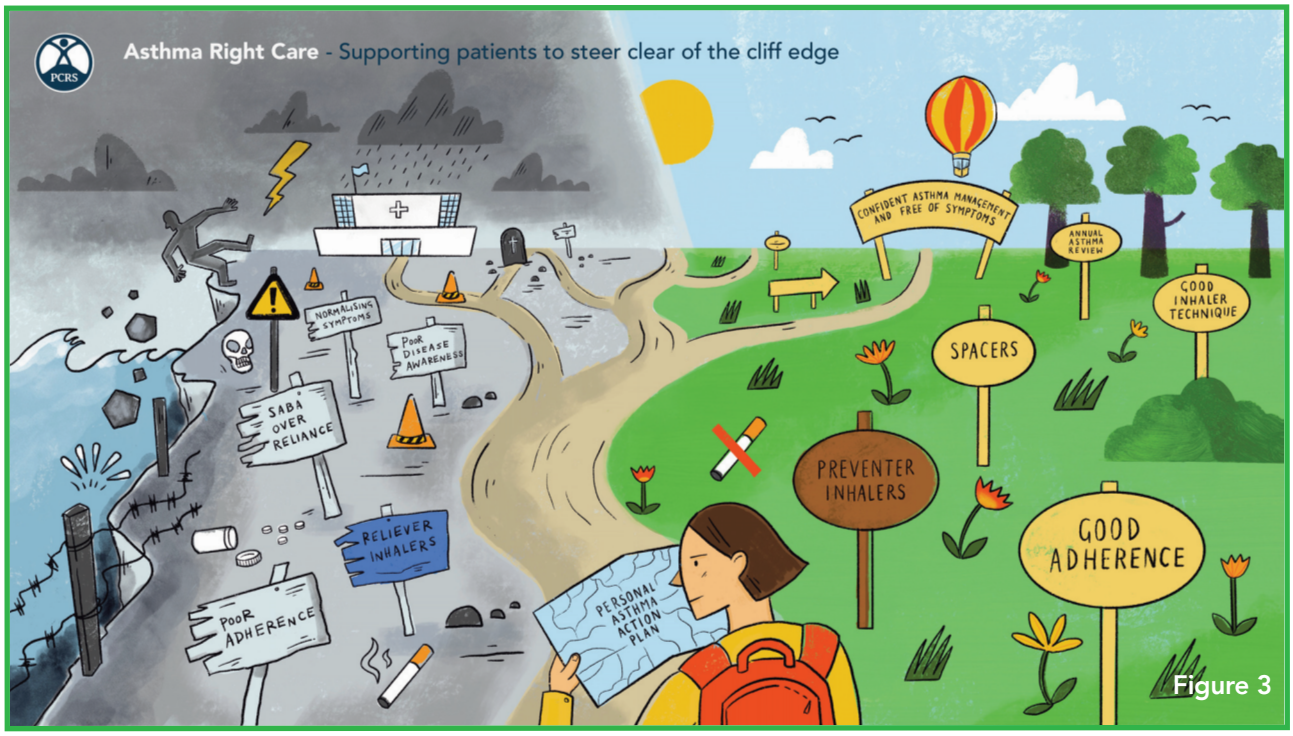

Figure 3

Figure 4

and should be a lot smoother for our patients. It is our duty of care to ensure it is as smooth a journey as possible. We must minimise the speed bumps and the potholes, steer them away from the cliff edge, keep them on the right path and guide or carry them when they need us most.

The Asthma Right Care story board illustrations are available from the PCRS website to download in your practice and use with staff as teaching aids and with patients to illustration the right path to navigate good asthma control and management of symptoms.

Intended for UK healthcare professionals only.

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Tiogiva
tiotropium

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- requires the **same inhaler technique** as other LAMA capsule inhalers, so no need for patients to change technique[6–10]

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So next time you give a LAMA, give a LLAMA

Tiogiva (tiotropium bromide) 18 mcg inhalation powder
Please refer to the Summary of Product Characteristics (SmPC) before prescribing.
Presentation: Delivered dose: 10 mcg of tiotropium per capsule (the dose that leaves the mouthpiece is 12.1 microgram tiotropium bromide). Each capsule contains 21.7 mcg of tiotropium bromide, equivalent to 18 mcg of tiotropium. **Indications:** Maintenance bronchodilator treatment to relieve symptoms of patients with chronic obstructive pulmonary disease (COPD). **Dosage and administration:** For inhalation only. Must not be swallowed. Inhalation should be at the same time each day. *Adults:* Inhalation of the contents of one capsule once daily with the dry powder inhaler. To get a full daily dose, the patient must breathe out completely. The patient should also inhale a second time from the same capsule. See SmPC for administration and instructions for use. *Children:* Not to be used in children or adolescents <18 years of age. *Elderly:* No special requirements. *Renal Impairment:* Mild (creatinine clearance >50 ml/min): no special requirements. Moderate to severe (creatinine clearance ≤50 ml/min): Use only if expected benefit outweighs the potential risk. There is no long-term experience in patients with severe renal impairment. *Hepatic Impairment:* No special requirements. **Contraindications:** Hypersensitivity to the active substances or to any of the excipients, or to atropine or its derivatives, e.g. ipratropium or oxitropium. **Precautions:** Not to be used for the initial treatment of acute episodes of bronchospasm, i.e. rescue therapy. Immediate hypersensitivity reactions may occur. Use with caution in patients with narrow-angle glaucoma, prostatic hyperplasia or bladder-neck obstruction. Inhaled medicines may cause inhalation-induced bronchospasm. Use with caution in patients with recent myocardial infarction <6 months; unstable or life-threatening cardiac arrhythmia; cardiac arrhythmia requiring intervention or a change in drug therapy in the past year; hospitalisation for heart failure (NYHA Class III or IV) within past year. Avoid getting the powder into eyes (may result in precipitation or worsening of narrow-angle glaucoma, eye pain or discomfort, temporary blurring of vision, visual halos or coloured images in association with red eyes from conjunctival congestion and corneal oedema. Should any combination of these eye symptoms develop, patients should stop using Tiogiva and consult a specialist immediately). Dry mouth, which has been observed with anti-cholinergic treatment, may in the long term be associated with dental caries. Tiogiva should not be used more frequently than once daily. Contains lactose; patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption should not take this medicine. The excipient lactose monohydrate may contain small amounts of milk proteins which may cause allergic reactions. **Interactions:** No formal drug interaction studies have been performed. Co-administration with other anticholinergic drugs not recommended. **Adverse reactions:** *Common:* dry mouth. *Uncommon:* dizziness, headache, taste disorders, vision blurred, atrial fibrillation, pharyngitis, dysphonia, cough, gastro-oesophageal reflux disease, constipation, oropharyngeal candidiasis, rash, dysuria, urinary retention. *Rare:* insomnia, glaucoma, intraocular pressure increased, supraventricular tachycardia, tachycardia, palpitations, bronchospasm, epistaxis, laryngitis, sinusitis, intestinal obstruction, including ileus paralytic, gingivitis, glossitis, dysphagia, stomatitis, nausea, urticaria, pruritus, hypersensitivity (including immediate reactions), angioedema, urinary tract infection. *Frequency not known:* dehydration, dental caries, anaphylactic reaction, skin infection, skin ulcer, dry skin, joint swelling. Please consult the summary of product characteristics for further information. **Marketing Authorisation Number:** PL 25258/0370. **Marketing authorization Holder:** Glenmark Pharmaceuticals Europe Limited Laxmi House, 2B Draycott Avenue, Kenton, Harrow, Middlesex, HA3 0BU, UK. **Distributer:** As above. **Legal classification:** POM. **Price:** 30 capsules + inhaler £19.99, 30 capsules £19.20, 60 capsules £38.40. **Job code:** PP-UK-TIO-0055. **Date of preparation:** September 2021

Adverse events should be reported.
Reporting forms and information can be found at https://yellowcard.mhra.gov.uk.
Adverse events should also be reported to Glenmark Pharmaceuticals Europe Ltd medical_information@glenmarkpharma.com or call 0800 458 0383

References: 1. Tiogiva Summary of Product Characteristics. **2.** Public Assessment Report PL25258/0370. **3.** BNF. September 2021. (See NHS indicative price). **4.** Data on file TIO/2021/08/005. August 2021. **5.** Data on file TIO/2021/08/003. August 2021. **6.** Tiogiva Patient Information Leaflet. **7.** Spiriva® HandiHaler® Patient Information Leaflet. Available at www.medicines.org.uk/emc/product/1693/pil. **8.** Braltus® Zonda® Patient Information Leaflet. Available at www.medicines.org.uk/emc/product/4446/pil. **9.** Seebri® Breezhaler® Patient Information Leaflet. Available at www.medicines.org.uk/emc/files/pil.2840.pdf. **10.** Data on file TIO/2021/04/001. April 2021.

PIP codes: Tiogiva dry powder inhaler and capsules 18 mcg (30) – 4178752, Tiogiva inhalation powder, hard capsules 18 mcg (30) – 4178729, Tiogiva inhalation powder, hard capsules 18 mcg (60) – 4178711.

Date of preparation: September 2021 PP-UK-TIO-0080

GLENMARK Respiratory

Glenmark
A new way for a new world

NHS Accelerated Access Collaborative: Implications and opportunities to improve care for patients with severe asthma

Carol Stonham, *MBE, Executive Chair, Primary Care Respiratory Society, UK* and **Steve Holmes**, *GP, Shepton Mallet, Somerset, UK.*

Improving outcomes for patients with respiratory disease is a clinical priority in the NHS Long-Term Plan and a focus of efforts of the NHS Accelerated Access Collaborative (AAC) under their Rapid Uptake Products (RUP) programmes. Two key priorities have been identified as the evaluation of fractionated exhaled nitric oxide (FeNO) in the diagnostic process and monitoring of patients with asthma and the use of biologics for the treatment of patients with severe asthma. Here we describe the role of the AAC and the RUP programme in relation to these priorities and how primary care colleagues can access materials and tools to support them in prioritising these activities into their own daily practice.

Introduction

Asthma is a chronic respiratory condition and around 5.4 million people in the UK are currently receiving treatment to control their symptoms.[1] The severity of asthma symptoms can fluctuate during a patient's lifetime and even over shorter periods. This is sometimes in response to triggers (seasonal, occupational) but may be for no apparent reason. For this reason, asthma is a condition that requires ongoing monitoring and flexible adjustment of treatment to ensure symptoms remain well controlled and the risk of an asthma exacerbation is minimised. Poor control of asthma symptoms is not only debilitating, preventing people from living their daily lives in the way they would wish, but places them at risk of potentially life-threatening exacerbations. In 2017, 1484 people died from an asthma exacerbation in the UK and it's estimated that someone in the UK experiences an exacerbation every 10 seconds.[1] The UK has one of the highest rates of death due to asthma exacerbations in Europe and it is imperative that we ensure that patients with asthma receive the best care and treatment available to them and are monitored regularly so their treatment can the adjusted to ensure optimal symptom control.

Accelerating access to care for patients with asthma

The NHS Accelerated Access Collaborative (AAC) was formed in response to the Accelerated Access Review published in 2016.[2] The review was undertaken to identify ways to speed up access to innovative drugs, devices, diagnostics and digital products for the benefit of patients. The aim of the AAC is to bring together patients, clinicians, industry and investors to ensure new treatments and technologies reach patients faster. Much of the work of the AAC focuses on supporting and accelerating research and development of new drugs and technologies in order to make them available to patients as quickly as possible. The Rapid Uptake Products (RUP) programme looks at supporting the uptake of underutilized drugs and technologies that already have NICE approval that support the priorities of the NHS Long-Term Plan. Improving outcomes for patients with respiratory disease is a clinical priority in the NHS Long-Term Plan and so is a priority for the AAC. Specific areas of

current relevance for respiratory care include the evaluation of fractionated exhaled nitric oxide (FeNO) in the diagnostic process and monitoring of patients with asthma and the use of biologics for the treatment of patients with severe asthma.

Fractionated exhaled nitric oxide measurement

FeNO provides an indication of the level of Type 2 (eosinophilic) inflammation in the lungs by measuring the amount of nitric oxide in exhaled breath.[3] This test is a useful tool that can provide important information when diagnosing a patient with suspected asthma as well as being considered as part of the annual review all patients with asthma should undergo. The test is perhaps most useful in situations where there is diagnostic uncertainty with elevated nitric oxide (NO) levels supportive of an asthma diagnosis.[4] FeNO testing may also be useful for monitoring patients with poor symptom control by providing an objective measure of response to steroid therapy, although this is not yet included in clinical practice guidelines.

Integrating FeNO testing in the primary care setting

Encouraging the use of FeNO as part of the diagnostic process for patients with suspected asthma was identified by the AAC as a key target under their RUP programme. The aim is to support early and accurate diagnosis of patients presenting with respiratory symptoms to ensure they receive timely access to the correct treatment to control their symptoms. As the vast majority of patients with asthma are diagnosed in the primary care setting, the AAC has worked with the Wessex Academic Health Science Network to create a toolkit and a range of supporting resources for NHS organisations (Integrated Care System/Clinical Commissioning Group/Primary Care Network) to enable them to integrate FeNO testing into their service (Figure 1).[5] They have also funded FeNO projects in primary care across the country to accelerate adoption and availability.

Box 1: How to access the FeNO toolkit and associated resources

To access the FeNO toolkit and associated resources visit the Wessex AHSN website at https://wessex-ahsn.org.uk/resources.

Additional information and support is available:
Telephone: 023 8202 0840

Biologics for severe asthma

The standard approach to controlling the symptoms of asthma consists of daily inhaled corticosteroids (ICS), with short-acting bronchodilators (SABA) for occasional use.[4,6] For those with persistent symptoms treatments may be added such as long acting bronchodilators, leukotriene receptor antagonists (LTRAs) or theophylline. For a small group of patients, however, the standard approach to treatment is not sufficient to control

Figure 1. FeNO WAHSN resources. Reproduced by kind permission of the Wessex Academic Health Science Network.[5]

Figure 2. SPECTRA primary care resources.

Patients with:

- Serious exacerbations[1]
- 2 or more issues of systemic corticosteroids[1]
- 6 or more reliever inhalers in the last 12 months[2,3]
- Poor symptom control[1]

A referral extract template, to facilitate automated collection of data and medication as part of the referral process

*EMIS/SystmOne/Vision

Practice level and local health economy dashboards.

Downloadable baseline and follow-up PDF reports (if required) to measure continual review and impact of the service

1. Chung et al. International ERS/ATS guidelines on definition, evaluation and treatment of severe asthma. Eur Respir J 2014;43:343-373. Available from: https://erj.ersjournals.com/content/43/2/343 (Last accessed: July 2021)
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3. Crowther L, Pearson M, Faruqi S, Xu Y, Morris T, Crooks M. "The Sentinel Project: experience-based co-design of an implementation-ready intervention to improve adult asthma care in primary care". 10th IPCRG World Conference, May 2021.

PRECISION

their daily symptoms even with good inhaler technique and adherence to prescribed medication regimens. These patients are at the highest risk for severe, life-threatening exacerbations.[7-9] These are patients with severe asthma whose disease may be driven by different inflammatory pathways that are not responsive to the standard treatments. These patients require a more comprehensive assessment to consider other complicating factors and potentially a different approach to treatment which may include biologic therapy, bronchial thermoplasty or immunosuppressant therapy.[4] Access to biologic agents for patients with severe asthma was identified by the AAC as a key target for their RUP programme.

Role of primary care in identifying patients with severe asthma

Biologic agents are prescribed in tertiary and some secondary care settings. However, before this can happen patients with severe asthma must be identified and referred to the appropriate specialist service.[9] For this reason a key aim of the AAC is to optimise pathways of care to ensure early identification of people with uncontrolled asthma and identification of the subgroup with severe asthma not controlled with optimal standard combinations of medication, and their prompt referral for specialist evaluation. The role of primary care is to identify patients whose asthma is not well controlled and to determine whether this is due to poor adherence, incorrect inhaler technique, exposure to avoidable triggers, smoking or the effects of co-morbid conditions which can be optimised with current treatments. Once these reasons for poor symptom control have been ruled out those patients with possible severe asthma should then be referred for further evaluation.

In 2021, recommendations were made to improve referral process from primary to specialist care (Jackson *et al* 2021).[10] These include the direct referral of patients with suspected severe asthma to a severe asthma network (or service) by both primary and secondary care teams.

To support and facilitate the timely referral of patients with suspected severe asthma from primary care the AAC has worked with AstraZeneca to create the SPECTRA Primary Care Clinical System resource (Figure 2). The resource facilitates the search of practice databases to identify patients with risk factors that may indicate severe asthma including patients who have had serious asthma exacerbations, two or more prescriptions for systemic corticosteroids in the last 12 months, six or more reliever inhalers in the last 12 months, or who have poor symptom control. The system then generates a report identifying two groups of patients. The first group includes those with asthma already on high strength ICS and with one or more of the four risk factors. The second group includes patients with asthma on any strength ICS and with one or more of the four risk factors. The patients in each group can then be reviewed and symptom control and adherence and other non-pharmacological effects to treatment assessed and addressed (e.g. using the Asthma Control Test [ACT] or assessing inhaler technique). Patients with suspected severe asthma can then be referred to specialist centres and the sys-

tem includes integrated generation of referral documentation as well as guidance on coding and recording those patients diagnosed with severe asthma and prescribed biologics.

Box 2: How to access the SPECTRA Clinical System resources

To access clinical system resources and reporting you can register via the website at www.suspected-severe-asthma.co.uk.

Additional information and support is available:
Telephone: 01332 546 909
Email: support@suspected-severe-asthma.co.uk

Conclusions

Diagnosing and caring for patients with asthma is a significant part of daily primary care practice. The AAC RUP programme has identified two strategies with the potential to improve outcomes for patients with asthma – uptake of FeNO testing as part of the diagnostic process for asthma and access to biologic therapies for patients with severe asthma. To support primary care colleagues, the AAC is working with companies to create tools and resources to enable the implementation of these strategies into routine practice.

Acknowledgements

The authors would like to acknowledge the editorial support provided by Dr Tracey Lonergan funded by PCRS. Funding for this publications has been provided by AstraZeneca and the PRECISION programme.

The SPECTRA Clinical System and associated resources have been developed by AstraZeneca in collaboration with the Accelerated Access Collaborative. The resources and information provided by AstraZeneca are offered as part of the SPECTRA Medical Educational Good and Services (MEGS) programme initiated and funded by AstraZeneca and offered as a resource to support primary care; AstraZeneca do not support implementation of the tool, for example review patients.

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PCRS-UK News Round-Up

PCRS WELCOMES NEW COMMITTEE MEMBERS

Dr Andy Dickens and Dr Maisun Elftise were welcomed as new conference organising committee members. We'd like to thank Nicola Standring-Brown and Claire Ellis who stood down from this committee in 2021. Their contribution to the past few conferences has been invaluable.

Dr Steve Holmes and Andrew Booth have also welcomed to the Primary Care Respiratory Update editorial board.

How can primary care help schools manage asthma better?

Georgie Herskovits, *Programme Manager (Children and Young People) at Healthy London Partnership*

One in 10 schoolchildren have asthma – that's three in every classroom. Having asthma gets in the way of a child's schooling; it affects their immediate safety, long-term well-being and how well they can learn and take part in other school activities. Whilst some older children may be fully independent in managing their asthma, younger children, children with learning difficulties or those newly diagnosed are likely to need support and assistance from school staff during the school day, to help them to manage their condition in the absence of their parents.

How do we ensure that any asthma care that happens at school is communicated to the child's healthcare professional? Do we know those children who use their reliever inhaler more frequently than they should be? Are children missing school due to poor asthma control?

Healthy London Partnership has launched a practical guide (https://bit.ly/30cJSnL) to help school staff by increasing their awareness of asthma as a medical condition and the needs of asthmatic pupils in school. It encourages the school to work closely with children, parents and health colleagues to ensure it has robust procedures in place in relation to the management of children with asthma, recording of information and safe storage of asthma inhalers.

Effective partnership working within a primary care network supports communication between schools and primary and community care staff. The school nurse has a pivotal role to play in asthma care with children and young people at school. This could include liaising and signposting to the appropriate asthma services in their locality. Developing a close working relationship between the school nursing team and asthma Clinical Nurse Specialist (CNS) will support school staff as well as students.

The guide recommends that each school has an asthma lead or asthma champion who can ensure that medication use in school is monitored. For any salbutamol inhaler use during the school day), parents should be informed and encouraged to seek a clinical review. If a pattern of regular use is emerging at school for example, if a child uses their reliever inhaler three times a week – it is best practice for the school nurse (or asthma CNS if the family already has links) to be informed. The school nurse can then liaise with the child's GP/practice nurse or specialist to determine whether a clinical review is required.

A school with an effective asthma policy will be monitoring children's absence. If a child or young person is often absent due to their asthma, or they are identified as being constantly tired in school, staff can make contact with the parent to work out how they can be supported. The school may need to speak with the school nurse or other primary care health professional to ensure the child's asthma control is optimal.

Poor asthma control is not a reason for missing school or being late; it is a red flag for intervention through referral to the school nursing team and possibly the safeguarding lead at the school. No child should miss out on school because of their asthma.

Managing COVID in Primary Care – PCRS Simple Infographics

COVID-19

Identifying and managing COVID-19 in the community

SNOMED Codes

SNOMED and EMIS/System 1 codes are available:

- Acute COVID-19 Infection (up to 4 weeks) - 1325171000000109
- Ongoing symptomatic COVID-19 (4-12 weeks) - 1325181000000106
- Post-COVID-19 syndrome (>12 weeks and not explained by an alternative diagnosis) - 1325161000000102

"Long COVID" is commonly used to describe signs and symptoms that continue or develop after acute COVID-19 and includes both ongoing symptomatic COVID-19 and post-COVID-19 syndrome

Key signs and symptoms of acute severe COVID-19

- Severe dyspnoea
- Reduced oxygen saturation levels measured by pulse oximetry where O2 saturation is <94% at rest
- Haemoptysis
- Cyanosis
- Cold and clammy with pale or mottled skin
- Collapse or syncope
- New confusion
- Difficult to rouse
- Reduced urine output

Assessing people with new or ongoing post-COVID-19 symptoms

- Use a holistic, person-centred approach to evaluate physical, cognitive, psychological and psychiatric symptoms as well as functional ability
- Include a comprehensive clinical history including history of confirmed/suspected SARS-CoV-2 infection, nature and severity of symptoms, timing and duration since start of COVID-19, other concomitant conditions and previous medical history
- When investigating possible causes of gradual decline/deconditioning in frail/vulnerable patients consider that these could be signs of ongoing SARS-CoV-2 infection
- Assess for cognitive impairment if patients report cognitive symptoms
  Ensure urgent referral or hospital admission for patients with ongoing or post-COVID syndrome if they have symptoms that could be caused by acute life-threatening complications such as hypoxaemia, signs of severe lung disease, cardiac chest pain or multisystem inflammatory syndrome (in children)

Assessing people with new or ongoing post-COVID-19 symptoms continued..

- Use selective tests and investigations based on history and appropriate examinations to rule out acute/life-threatening complications or other new diagnoses
- Offer blood tests which may include FBC, LFTs, U&Es, CRP, ferritin, D-dimer, BNP and TFTs
- Assess level of breathlessness by undertaking exercise tolerance test (which may indicate 'silent hypoxia) and record heart rate, oxygen saturation and level of breathlessness
- Assess for worsening fatigue which may indicate 'silent hypoxia'. If evident, assess oxygen saturation
- For people with postural symptoms, carry out lying and standing BP and heart rate
- Offer a CXR if symptoms are caused by suspected COVID-19 or to exclude other causes.
- If the patient has ongoing symptoms at 12 weeks a further CXR would be suggested (NOTE: a plain CXR may not be sufficient to rule out lung disease)
- Patients with acute or severe psychiatric symptoms should be referred for urgent psychiatric assessment Follow local/national guidelines for those experiencing anxiety or mood disorders
- Consider referral to more specialist care if symptoms persist after four weeks from infection even if SARS-CoV-2 infection was not confirmed with a positive test - see PCRS referral guidelines by Dr Vince Mak (https://bit.ly/2Y7R8Qy)

Assessing breathlessness by telephone or video

The Centre for Evidence-Based Medicine found no validated test for assessing breathlessness remotely. They recommend the following:

1. Ask the patient to describe the problem with their breathing in their own words and assess the ease and comfort of their speech. Ask open-ended questions and listen to whether the patient can complete their sentences.
   - "How is your breathing today?"
2. Align with NHS111 symptom checker, which asks three questions:
   - "Are you so breathless that you are unable to speak more than a few words?"
   - "Are you breathing harder or faster than usual when doing nothing at all?"
   - "Are you so ill you've stopped doing all your usual daily activities?"
3. Focus on change. A clear story of deterioration is more important than whether the patient is currently short of breath. Ask questions like:
   - "Is your breathing faster, slower, or the same as normal?"
   - "What could you do yesterday that you can't do today?"
   - "What makes you breathless now that didn't make you breathless yesterday?"
4. Interpret the breathlessness in the context of the wider history and physical signs. For example, a new, audible wheeze and a verbal report of blueness of the lips in a breathless patient are concerning

https://www.cebm.net/covid-19/are-there-any-evidence-based-ways-of-assessing-dyspnoea-breathlessness-by-telephone-or-video/

Adapted from
National Institute for Health and Care Excellence Guideline NG188, COVID-19 rapid guideline: managing the long term effects of COVID-19. December 2020 and National Institute for Health and Care Excellence. COVID-19 rapid guideline: managing COVID-19. 2021.

COVID-19

Identifying acute severe COVID-19
Managing long term effects of COVID-19

NEWS2 Tool – An assessment tool to determine how to better identify patients who are at immediate risk of serious clinical deterioration

The NEWS2 tool may be used in adults in addition to clinical judgment to assess a person's risk of deterioration. Note that use of NEWS2 is not advised for children or pregnant women. Although the NEWS2 tool is not validated for predicting the risk of clinical deterioration in prehospital settings, it may be a helpful adjunct to clinical judgement in adults. A face-to-face consultation should not be arranged solely to calculate a NEWS2 score.

Find out more about NEWS2 where you can sign up for free to undertake the NEWS2 training online training

NEWS2
National Early Warning Score

Common symptoms of ongoing COVID-19 and post-COVID-19 syndrome

Symptoms will differ between patients and may change over time to include:

Breathlessness	Fever	Peripheral neuropathy	Diarrhoea	Anxiety
Cough	Pain	Dizziness	Anorexia	Tinnitus
Chest tightness	Cognitive impairment	Delirium	Reduced appetite	Earache
Chest pain	Headache	Abdominal pain	Joint pain	Sore throat
Palpitations	Sleep disturbance	Nausea	Muscle pain	Loss of taste/smell
Fatigue			Depression	Skin rashes

COVID-19 management in the community

For patients with acute COVID-19 illness, put treatment escalation plans in place in the community after sensitively discussing treatment expectations and care goals with people with COVID-19, and their carers and families

Encourage people with cough to avoid lying on their backs if possible, because this may make coughing less effective. Use simple measures first, including advising people over 1 year old with cough to take honey (1 tsp). Consider short-term use of codeine linctus or codeine phosphate tablets in people 18 years and over to suppress coughing if it is distressing. Seek specialist advice for people under 18 years of age.

Advise people with COVID-19 and fever to drink fluids regularly to avoid dehydration. Support their families and carers to help when appropriate. Communicate that fluid intake needs can be higher than usual because of fever.
Advise people to take paracetamol (for people 18 years and over, the paracetamol dosage is 1g orally every 4 to 6 hours [maximum 4 g per day]) or ibuprofen if they have fever and other symptoms that antipyretics would help treat. Tell them to continue only while both the symptoms of fever and the other symptoms are present.

COVID-19 management in the community continued...

Identify and treat reversible causes of breathlessness, for example, pulmonary oedema, pulmonary embolism, chronic obstructive pulmonary disease and asthma.

- When significant medical pathology has been excluded or further investigation is inappropriate, the following may help to manage breathlessness as part of supportive care:
  - keep the room cool
  - encourage relaxation and breathing techniques, and changing body position
  - encourage people who are self-isolating alone to improve air circulation by opening a window or door
- If hypoxia is the likely cause of breathlessness consider a trial of oxygen therapy; discuss with the person, their family or carer possible transfer to and evaluation in secondary care

- Address reversible causes of anxiety by exploring the person's concerns and anxieties and explaining to carers how they can help
- Assess reversible causes of delirium - see the **NICE guidance on delirium: prevention, diagnosis and management**
- Consider trying a benzodiazepine to manage anxiety or agitation

When supporting people with symptoms of COVID-19 who are having care in the community delivered by social care, follow the **NICE guideline on managing medicines for adults receiving social care in the community.** This includes processes for ordering and supplying medicines, and transporting, storing and disposing of medicines

Provide advice to patients on what they might expect following COVID-19 illness

Provide advice on common new or ongoing symptoms after suspected or confirmed SARS-CoV-2 infection including:

- Direct the patient to the NHS Your COVID Recovery website
- Recovery time is different for everyone but for most people symptoms will resolve within 12 weeks
- Likelihood of ongoing symptoms of of developing post-COVID-19 syndrome is not thought to be linked to severity of their acute episode of COVID-19 illness
- New symptoms can occur and may change unpredictably affecting people in different ways
- Provide information on how to self-manage symptoms including setting realistic targets, appropriate sources of advice and information, who to go to if they are worried about symptoms, other social support such as housing, support with managing employer expectations, financial support etc.
- Provide information on symptoms to look out for and which should prompt them to alert their healthcare professional and also provide information on who to contact if they are worried
- Use shared decision making to discuss if further assessment is required
- Patients who have been hospitalised with COVID-19 should be offered a secondary care follow-up consultation at six weeks after discharge to check for new symptoms/complications

PCRS Peer Support Programme

Bringing healthcare professionals together

PEER SUPPORT NETWORKS
PART OF THE PCRS LIFE LONG LEARNING PROGRAMME

Whether you are a practice nurse or locality lead, being responsible for improving respiratory care for patients can be both daunting and frustrating, especially when you're juggling workloads and trying to keep up-to-date with the latest developments.

A local network is the ideal way to bring colleagues together in your area providing a forum to keep up to date, share best practice with local colleagues and benefit from peer support.

There are around 50 local peer support networks that are affiliated to PCRS – Find your nearest network at https://bit.ly/3zz8wvZ.

If you participate in a local network that is not affiliated to us – contact us now at info@pcrs-uk.org for information on how your group can affiliate so that you can access the benefits below.

If you don't have a local network close to you, why not consider setting one up? Coordinating a peer support network is incredibly rewarding and can be a lot of fun! Running a group can also help to grow leadership skills – great if you are seeking to develop your professional portfolio. We know that running a network can seem daunting but with our support, and recent advances in technology it is easier than you think – if you affiliate your group to PCRS we can support you all the way and we can provide:-

Free membership for group/network leader

Access our speaker and video bank for presentations for your group/network

Lead your group with confidence with our supportive free training programme for group/ network leaders

Access our resources to support you to manage your network

Promote your group/ network's events on the PCRS website and in mailings to local PCRS members

Access other affiliated group/ network leaders to share information, tips and advice with our dedicated WhatsApp group and through our exclusive group/network leader events

HSF The Hospital Saturday Fund

SIMPSON MILLAR

PCRS is grateful to HSF and Simpson Millar for the provision of grants to support the activities of the Peer Support Network programme. The programme has been solely organised by PCRS.

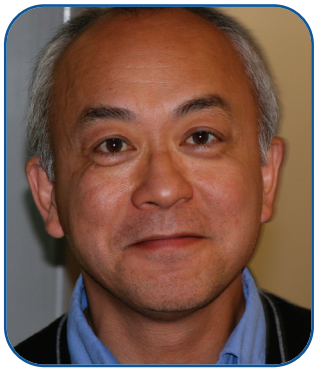
PCRS

THE GREENER RESPIRATORY PATHWAY
A PCRS Initiative

The PCRS interactive respiratory pathway tool aims to help clinicians work with patients to identify a greener approach to delivering high quality, patient centred respiratory care.

https://www.pcrs-uk.org/greener-respiratory-pathway

Post COVID syndrome referral pathways



Dr Vince Mak, *Consultant Physician in Respiratory Integrated Care at Imperial College Healthcare Trust*

We are now preparing to enter a third wave of SARS-CoV-2 infections whilst we continue to deal with the backlog of patients who have had their treatments and assessments delayed by the pandemic. However, what is challenging the NHS even more are the long-term effects following SARS-CoV-2 infection – so called "long COVID". Ongoing symptoms following an acute COVID-19 illness may encompass two scenarios: first, ongoing symptomatic COVID-19 illness with signs and symptoms persisting for between 4–12 weeks described as post-acute COVID-19; and second, post-COVID syndrome (PCS), a clinical scenario where signs and symptoms that develop during or after an infection consistent with COVID-19 illness continue for more than 12 weeks and are not explained by an alternative diagnosis. Both post-acute COVID-19 and PCS can have a significant effect on people's quality of life and are adding increased pressures to the NHS.

Almost 6% of adults in England have reported at least one lingering symptom persisting for at least 12 weeks after an acute infection with SARS-CoV-2 in research performed by Imperial College, London recently.[1] Extrapolating this to the whole adult population in England, this proportion equates to over 2 million people with at least one persistence COVID-19-related symptom persisting for more than 12 weeks after the acute infection and just under one million with three or more persistent symptoms.[1] Alarmingly, it is estimated that for nearly 400,000 people, their post-COVID symptoms may persist for over a year following the initial infection.[1]

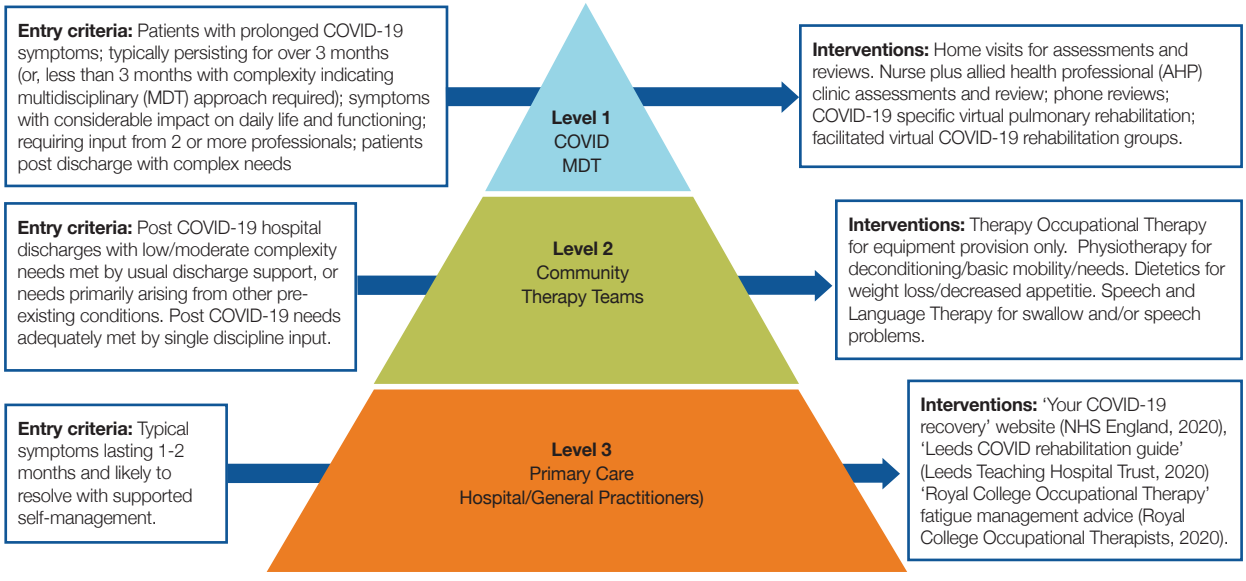
The presence of PCS does not appear to be related to the severity of the initial acute COVID illness and affects both hospitalised and non-hospitalised patients, and even those who may have had asymptomatic infection. In the REACT-2 cohort, PCS seemed to affect females slightly more often than males and predominantly those of middle-age. PCS may be more common among those with a pre-existing chronic health condition.

PCS usually presents as a cluster of symptoms, often overlapping, which can fluctuate and change over time and can affect any system in the body. The most commonly reported symptoms are fatigue, breathlessness, cognitive dysfunction ("brain fog", including problems concentrating, disorientation and difficulty finding the right words) and persistent cough. However, there is a long list of other symptoms reported by patients including: chest pain, palpitations, fevers, generalised aches and pains, headaches, pins and needles and numbness in the limbs, dizziness, persistence of loss of smell or taste, diarrhoea, rashes and psychological problems such as anxiety and depression. These symptoms can emerge during the acute infection of after resolution of the initial symptoms during the acute phase and they can change unpredictably, affecting patients in different ways and at different times.

PCS is different from the complications of SARS-CoV-2 infection which have an identifiable pathological basis, such as lung fibrosis, myocarditis. PCS is also distinct from the side effects and complications that may arise as a consequence of the acute treatment of COVID-19 illness for hospitalised patients, such as post ICU neuropathy. Thus examination and investigations should be performed to exclude these conditions before considering a diagnosis of PCS, although it is important to recognise that these conditions can co-exist with PCS.

Patients can be considered to have PCS irrespective of whether they were hospitalised or had a positive or negative COVID test (many were infected before routine testing in the community was available). Most patients who were

Figure 1 - Tiered pathway of input needs[4]



admitted to hospital with severe COVID-19 should have had a review at 12 weeks or sooner post discharge by secondary care colleagues to assess recovery and initiate onward referral for any emergent complications or ongoing symptoms. Patients can also be assessed formally using recognised scoring systems such as the COVID-19 Yorkshire Rehabilitation Screening Tool (C-19 YRS).[2] In primary care, initial assessment is aimed at excluding identifiable causes that can be treated. This should include a comprehensive clinical history and appropriate examination that involves assessing physical, cognitive and psychological symptoms, as well as functional abilities. Investigations should include blood tests (including FBC, U&E, TFT, CRP, ferritin, LFTS, D-dimer and BNP) chest X-ray and ECG. Patients identified with low oxygen levels at rest or on exercise, persistent abnormalities on the chest X-ray, cardiac sounding chest pain or ECG abnormalities and suspected multisystem inflammatory syndrome in children should be referred for urgent review by the relevant secondary care service.

Once identifiable causes have been ruled out, patients with persistent symptoms can be considered to have PCS. A holistic approach to their management is important and there are several options for the ongoing management of their symptoms. Firstly, patients should be offered reassurance that most do recover with time and should be offered advice on self-management including setting realistic goals. Patients can be directed to sources of advice and support,[3] including support groups, social prescribing, online forums and websites including the NHS Post COVID website: www.yourcovidrecovery.nhs.uk, and www.rcot.co.uk/recovering-covid-19-post-viral-fatigue-and-conserving-energy. Patients should be encouraged and supported to discuss their clinical situation with their employer, school or college and make plans for a phased return to work or education. Anxiety and depression may be an issue, especially for patients who were previously well and active. In England, patients who have anxiety or depressive symptoms can be referred to a local Improving Access to Psychological Therapies (IAPT) service or to a liaison psychiatric service if they have more complex mental health needs – (similar systems apply across other UK nations). Local rehabilitation services and community multidisciplinary teams may be available to help patients with fatigue or breathlessness issues where no underlying cause can be identified. These patients may have a form of breathing pattern disorder and may be helped by respiratory physiotherapists. Patients whose symptoms can be managed by a single discipline are suitable for community management.

Patients with more severe, persistent or unusual and complex problems severely impacting on their daily lives should be considered for referral for a specialist integrated multidisciplinary assessment in the newly set up post COVID assessment clinics where they are available. These clinics offer services to guide management including physical and psychological aspects of rehabilitation, working with the patient to develop a personalised rehabilitation and management plan and onward referral to other specialists if needed. These clinics should work in conjunction with services in primary and community care settings to provide a comprehensive programme to aid recovery. NICE has produced guidance on the management and provision of services for patients with PCS.[4] This three-tiered approach of self-

management, community therapy teams and specialist multidisciplinary teams is now being set up throughout the UK (Figure 1).[5] Referral to IAPT should occur at Level 2 if required.

In conclusion, PCS affects a significant proportion of people following acute COVID illness. The most common symptoms are fatigue, breathlessness, exertional malaise (mental and physical) and cognitive dysfunction. Patients presenting with these symptoms need a thorough assessment to exclude any treatable long-term complications following an acute COVID-19 illness. In the absence of identifiable causes, patients may be supported to self-manage with a variety of face to face and online resources. More severe and complex cases should be referred on to have a multidisciplinary assessment in the newly formed post COVID assessment clinics.

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Not all lung cancer is a result of smoking

Dr Anthony Cunliffe, *National Lead GP Adviser at Macmillan Cancer Support*

Lung cancer is England's biggest cause of cancer deaths; around 28,100 people die from lung cancer in England each year.[1] Out of this total, it is estimated that 6000 people who have never-smoked die of lung cancer each year – greater than the numbers of people who die of cervical cancer, lymphoma, leukaemia, and ovarian cancer.[2] Smoking remains the largest modifiable risk factor for lung cancer but if considered as a separate entity lung cancer in never-smokers is the eighth most common cause of cancer related death in UK and the seventh most prevalent cancer in the world.[3,4]

While the proportion of people who smoking is declining, the relative number of never-smokers developing lung cancer is increasing and there is also evidence that the absolute numbers and rate of lung cancer in never-smokers is increasing.[5] Despite this, most people who have never smoked do not realise they may still be at risk of developing the disease and, unfortunately, stigma around a diagnosis of lung cancer is often experienced by patients.

'Never-smoker' generally refers to patients who have smoked less than one hundred cigarettes in their lifetime. A higher proportion of lung cancers in women occur amongst never-smokers compared to men. Current estimates of risk factors in the UK include second-hand smoke, radon exposure, occupational carcinogen exposure and outdoor pollution. Other studies suggest previous lung disease, family history, alcohol intake, hormonal factors, and infectious diseases such as HPV and pneumonia.

Diagnosis can be a challenge for general practitioners as awareness of the risk in never smokers can be low. However, it is crucial that as primary care clinicians we still consider a diagnosis of lung cancer even when a patient has never smoked. Over 57% of lung cancer patients in the UK are diagnosed at stage 3 or 4,[6] too late for curative treatment and data from patient organisations suggests that in the never-smoking population this rises to nearly 90%.[7]

Symptoms of lung cancer are the same in never smokers and so we need to be alert to these and have a low threshold for investigation and not be falsely reassured by a person presenting as a non-smoker.

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A personal story

I'm Wendy and I live in Southampton with my husband and two daughters. I have been living with lung cancer for almost five years since my diagnosis in January 2017.

I experienced severe chest pains 36 hours before flying off to New York for a family holiday in December 2016 when I was 49. A chest X-Ray at A&E revealed an 'area of concern'. Within 10 hours of returning from New York (we had an amazing holiday!) I was being told that there was a possibility that I had lung cancer – this is where my cancer journey started.

The next few weeks felt like a roller coaster of tests. Surgery was the first course of action, but unfortunately it only resulted in an investigation where it was discovered that the cancer was stuck to my windpipe and had spread to the lining of my chest wall and lymph nodes. Then I was diagnosed with EGFR mutation positive lung cancer,

Why me? I don't smoke, I don't drink much, I eat a very healthy diet, I'm not overweight, I'm not very fit, but I'm certainly active. It's not fair, what on earth could I have done to prevent this!

Treatment started with afatinib. I experienced substantial tumour reduction over the first 6 month. I had minor side effects but had a long-term infection in my nose that caused a permanent nasal perforation. At this point I switched to osimertinib as it became apparent that it was available to me privately. The cancer still continues to be stable and I have almost no side effects.

I am grateful that I am very well and have no pain. My cancer and medication don't limit me other than reducing my energy. I continue to work part time as the technician in the Design Faculty of a local secondary school, where my colleagues are very supportive. I spend my time gardening, sewing, knitting, creating textile art. I love coastal walks, gigs, cinema, theatre and exhibitions. I've never had so many holidays! I make every effort to do the things I want to do, not just talk about them

I fully intend to be a 'radical survivor', I'm going to live into my 80's!

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PCRS-UK News Round-Up

PCRS CONFERENCE 2021

This year's conference was once again held virtually on 24/25 September 2021. There were 444 delegates and it proved to be a fantastic success.

If you did not attend take a sneak peak at one of the sessions you missed out on, the opening plenary of this year's conference – a panel discussion on "What's getting in the way of respiratory health" which you can view at https://bit.ly/3wAoDZ5. Make sure you don't miss out on next year's conference which takes place, hopefully, in person on 23/24 September 2022 at Telford International Centre.

There were 50 abstracts accepted for presentation at the conference and these are available to view at https://www.pcrs-uk.org/conference-abstract-gallery. Congratulations to K Lee *et al* for their abstract, "Poor adherence in exacerbating COPD patients: magnitude and related factors at baseline in the MAGNIFY pragmatic trial (ID 346)" which won the overall best abstract. Best patient centred poster was awarded to Viv Marsh *et al* for their poster, "Kickstarting the #RightInhalerImage Campaign (ID 313)".

The best scientific research poster was awarded to E Kinley *et al*, "Delivery of supported self-management in remote asthma reviews: a systematic rapid realist review (ID 274)" and best practice poster was awarded to JA Moore *et al*, "Is an innovative digital breathing & energy management programme effective in reducing symptoms of Long COVID? (ID 309)".

Here is just a taster of some of the feedback from this year's conference:

A thoroughly enjoyable conference with a varied programme of topics covered. Standard of speakers was once again excellent. All the sessions I attended were well-pitched, extremely informative with plenty of practical ideas, tips, suggestions to take away. These were very relevant and will be extremely helpful in my role, also to share with colleagues who were unable to attend the conference. Thank you PCRS!

Excellent speakers and chairs, sessions thought provoking, it felt more interactive this year than last. Well done all, time well spent!

Fantastic breadth of topics this year and so pleased to be able to watch some on catch up!

Will definitely be attending again!

Excellent content, easy to understand language, informative. I have learned so much today and will be back. The ability to watch/stream is invaluable please, please, please do this every year. A patients perspective is an enlightenment they know more than we do and need to be listened to and included much more.

Fantastic conference, relevant to to any primary care clinicians, I've learnt a lot and inspired by the work of many. Despite being virtual I still felt the buzz of being there, twitter was our way of chatting in the corridor and between sessions, Excellent support team AJ, Tricia and Jen. The amount of contents and the duration was just right. I am definitely going to watch the other parallel sessions in the next 4 weeks.

Thanks to everyone who has been involved in putting this conference together.

I really enjoyed the conference, good choice of topic but not too much going on that I felt I was missing stuff or pressured to watch it all. I also think it was a good length.

I have already implemented some changes in my prescribing practice regarding inhaler therapy.

I look forward to watching the sessions which I missed. Thank you so much for an excellent conference renewing my passion for the work that I do with Asthma and COPD patients.

It's useful as a respiratory consultant to understand community and primary care management of respiratory LTCs. I attended the 2019 conference for the first time, and found it invaluable. I will be a regular attendee from now onwards, whether it is virtual or face to face. I haven't tried to network virtually, as I think this is not as good as the face to face variety.

PCRS National Respiratory Conference

22nd-24th September 2022

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>
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Prescribing information for Stalpex (salmeterol xinafoate/ fluticasone propionate) 50 microgram/500 microgram/dose inhalation powder, pre-dispensed. Please refer to the Summary of Product Characteristics (SmPC) before prescribing. **Indications:** Asthma: Stalpex is indicated for use in patients with severe asthma 12 years of age and older only. Indicated in the regular treatment of patients with **severe** asthma where use of a combination product (long-acting ß2 agonist and inhaled corticosteroid) is appropriate: patients not adequately controlled on a lower strength corticosteroid combination product, or patients already adequately controlled on an inhaled corticosteroid in a high strength and a long-acting ß2 agonist. Chronic Obstructive Pulmonary Disease (COPD): Stalpex is indicated for the symptomatic treatment of patients with COPD, with a FEV_1 <60% predicted normal (pre-bronchodilator) and a history of repeated exacerbations, who have significant symptoms despite regular bronchodilator therapy. **Dosage and administration:** Use daily for optimum benefit, even when asymptomatic. **Titrate to the lowest dose at which effective control of symptoms is maintained.** Stalpex is only available in one strength therefore when titrating down, change to an alternative lower fixed-dose combination of salmeterol and fluticasone propionate. Asthma: Adults and adolescents 12 years and older: One 50 micrograms salmeterol and 500 micrograms fluticasone propionate inhalation twice daily. Once asthma is controlled, consider stepping down to a lower dose inhaled corticosteroid/ LABA combination or ICS alone. In general, inhaled corticosteroids remain the first line treatment. Stalpex is not intended for the initial management of mild or moderate asthma. Children: Limited data are available. COPD: Adults: One inhalation of 50 micrograms salmeterol and 500 micrograms fluticasone propionate twice daily. Elderly: no dose adjustment required. Renal impairment: no dose adjustment required. Hepatic impairment: no data are available for use of Stalpex in patients with hepatic impairment. **Contraindications:** Hypersensitivity to the active substances or to any of the excipients. **Precautions:** For severe asthma only; not for acute treatment, during an exacerbation or worsening asthma. Increased use of, or decreased response to, reliever medication indicates deterioration warranting physician review. Sudden and progressive deterioration is potentially life-threatening and the patient should undergo urgent medical assessment; consider increasing corticosteroid therapy. Once asthma symptoms are controlled, consideration may be given to gradually reducing the dose of the inhaled corticosteroid and therefore a change to an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose. The lowest dose of inhaled corticosteroid should be used. Treatment with Stalpex should not be stopped abruptly in patients with asthma due to risk of exacerbation. Therapy should be down-titrated under physician supervision. For patients with COPD, cessation of therapy may also be associated with symptomatic decompensation and should be supervised by a physician. Caution in patients with active or quiescent pulmonary tuberculosis and fungal, viral or other infections of the airway. Stalpex should be used with caution in patients with severe cardiovascular disorders or heart rhythm abnormalities and in patients with diabetes mellitus, thyrotoxicosis, uncorrected hypokalaemia or patients predisposed to low levels of serum potassium. Caution in diabetes mellitus (some reports of hyperglycaemia). If paradoxical bronchospasm develops, Stalpex should be discontinued immediately, the patient assessed and alternative therapy instituted if necessary. Ensure regular review of patients on long term or high dose treatment to obtain lowest effective dose. Prolonged treatment of patients with high doses of inhaled corticosteroids may result in adrenal suppression and acute adrenal crisis. Triggers of acute adrenal crisis include trauma, surgery, infection or any rapid reduction in dosage. Additional systemic corticosteroid cover should be considered during periods of stress or elective surgery. Caution in patients transferring from oral steroids as they may remain at risk of impaired adrenal reserve for a considerable time. An increase in the incidence of pneumonia has been observed in patients with COPD receiving inhaled corticosteroids. If a patient presents with symptoms such as blurred vision or other visual disturbances, the patient should be considered for referral to an ophthalmologist for evaluation. Adolescents <16 years taking high doses of fluticasone propionate (typically ≥ 1000 micrograms/day) may be at particular risk. Systemic effects such as Cushing's syndrome, Cushingoid features, adrenal suppression, acute adrenal crisis and growth retardation in adolescents and more rarely, a range of psychological or behavioural effects including psychomotor hyperactivity, sleep disorders, anxiety, depression or aggression may occur, particularly at high doses prescribed for long periods. Consider referring adolescents to a paediatric respiratory specialist. Regularly monitor the height of adolescents receiving prolonged treatment. Interaction with fluticasone: ß adrenergic blockers. Avoid non-selective and selective ß blockers. Potentially serious hypokalaemia may result from ß2 agonist therapy. Particular caution is advised in acute severe asthma as this effect may be potentiated by concomitant treatment with xanthine derivatives, steroids and diuretics. Avoid ritonavir (can greatly increase plasma concentration of fluticasone propionate). Combinations with CYP3A inhibitors should be avoided unless the benefit outweighs the potential increased risk of systemic corticosteroid side-effects, in which case patients should be monitored for systemic corticosteroid side-effects. Interaction with salmeterol: Avoid potent CYP3A4 inhibitors. **Adverse reactions:** Common and very common: Candidiasis of the mouth and throat, pneumonia (in COPD patients), bronchitis, hypokalaemia, headache, nasopharyngitis, throat irritation, hoarseness/dysphonia, sinusitis, Contusions, muscle cramps, traumatic fractures, arthralgia, myalgia. Uncommon, rare and unknown frequency serious reactions: Oesophageal candidiasis, hypersensitivity reactions with the following manifestations; cutaneous hypersensitivity reactions, angioedema (mainly facial and oropharyngeal oedema), respiratory symptoms (dyspnoea), respiratory symptoms (bronchospasm), anaphylactic reactions including anaphylactic shock, Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation in adolescents, decreased bone mineral density, hyperglycaemia, anxiety, sleep disorders, behavioural changes, including psychomotor hyperactivity and irritability (predominantly in adolescents), depression, aggression (predominantly in adolescents), tremor, cataract, glaucoma, blurred vision, Palpitations, tachycardia, cardiac arrhythmias (including supraventricular tachycardia and extrasystoles), atrial fibrillation, angina pectoris, Paradoxical bronchospasm. Please consult the summary of product characteristics for a full list of adverse reactions. **Marketing authorization number:** PL: 25258/0296. **Marketing Authorization Holder:** Glenmark Pharmaceuticals Europe Limited, Laxmi House, 2B Draycott Avenue, Kenton, Middlesex, HA3 0BU, United Kingdom **Distributor:** As above. **Legal classification:** POM. **Price:** £16.37. **Job code:** PP-UK-STAL-0047 **Date of preparation:** April 2021

Adverse events should be reported.
Reporting forms and information can be found at https://yellowcard.mhra.gov.uk.
Adverse events should also be reported to Glenmark Pharmaceuticals Europe Ltd
medical_information@glenmarkpharma.com

PIP code: Stalpex 50/500 mcg - 4098661

References: 1. Stalpex Summary of Product Characteristics. **2.** BNF. July 2021. (See NHS indicative price). Available at: https://bnf.nice.org.uk/medicinal-forms/fluticasone-with-salmeterol.html. Accessed July 2021. **3.** MHRA April 2019 Public Assessment Report: Stalpex 50/500 Mcg UK/H/6498/003/DC. Available at: https://mhraproducts4853.blob.core.windows.net/docs/77c1424dd55258e03d0555b648ea3eecbb92fc03. Accessed July 2021. **4.** Seretide® Accuhaler® Summary of Product Characteristics.

Date of preparation: July 2021 PP-UK-STAL-0049 V2

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Luforbec is indicated for the treatment of adult asthma and for the symptomatic treatment of COPD (FEV_1 <50% predicted normal)[3]

Prescribing Information: Luforbec® 100 micrograms/6 micrograms/actuation (beclometasone dipropionate/ formoterol fumarate dihydrate) pressurised inhalation solution. Consult the full Summary of Product Characteristics (SmPC) before prescribing. Presentation: Luforbec 100/6 pMDI: Pressurised inhalation solution. Each metered dose (ex-valve) contains beclometasone dipropionate (BDP) 100 mcg and formoterol fumarate dihydrate 6 mcg. This is equivalent to a delivered dose (ex-actuator) of beclometasone dipropionate 84.6 mcg and formoterol 5.0 mcg. **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 short-acting $beta_2$-agonist, or patients already adequately controlled on both ICS and LABA. ***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 inhalation in adult patients (≥18 years). Luforbec is not recommended for children and adolescents under 18 years. ***Asthma:*** **Maintenance therapy:** Luforbec 100/6 pMDI: 1–2 inhalations twice daily. The maximum daily dose is 4 inhalations. Luforbec may be used as maintenance therapy, together with a separate short-acting bronchodilator available for rescue at all times. Patients should receive the lowest dose that effectively controls their symptoms. **Maintenance and reliever therapy:** Luforbec can be taken as a regular maintenance treatment and as needed in response to asthma symptoms: 1 inhalation twice daily (morning and evening) plus 1 additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation is recommended. The maximum daily dose is 8 inhalations. Patients should be advised to always have Luforbec available for rescue use. Close monitoring for dose-related adverse effects is needed in patients who frequently take high numbers of Luforbec as-needed inhalations. ***COPD:*** 2 inhalations twice daily. Luforbec pMDI can be used with the AeroChamber Plus® spacer device. BDP in Luforbec is characterised by an extrafine particle size distribution which results in a more potent effect than formulations of BDP with a non-extrafine particle size distribution (100mcg of BDP extrafine in Luforbec are equivalent to 250mcg of BDP in a non-extrafine formulation). When switching patients from previous treatments, it should be considered that the recommended total daily dose of BDP for Luforbec is lower than that for non-extrafine BDP containing products and should be adjusted to the needs of the individual patient. **Contraindications:** Hypersensitivity to the active substances or to any of the excipients. **Warnings and precautions:** Not intended for initial management of asthma. Treatment should not be initiated during an exacerbation, or if they have significantly worsening or acutely deteriorating asthma. Treatment should not be stopped abruptly. Medical attention should be sought if treatment is ineffective. Patients should be advised to take Luforbec every day even when asymptomatic. Treatment should be discontinued immediately if the patient experiences a paradoxical bronchospasm. Use with caution (which may include monitoring) in patients with cardiac arrhythmias, especially third degree atrioventricular block and tachyarrhythmias (accelerated and/or irregular heart beat), idiopathic subvalvular aortic stenosis, hypertrophic obstructive cardiomyopathy, severe heart disease, particularly acute myocardial infarction, ischaemic heart disease, congestive heart failure, occlusive vascular diseases, particularly arteriosclerosis, arterial hypertension, aneurysm, thyrotoxicosis, diabetes mellitus, phaeochromocytoma and untreated hypokalaemia. Caution should be used when treating patients with known or suspected prolongation of the QTc interval (QTc > 0.44 seconds). 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). Particular caution is advised in severe asthma as this effect may be potentiated by hypoxia. Formoterol may cause a rise in blood glucose levels. Luforbec should not be administered for at least 12 hours before the start of anaesthesia if halogenated anaesthetics are planned as there is risk of arrhythmias. Use with caution in patients with pulmonary tuberculosis or fungal/viral airway infections. An increase in pneumonia and pneumonia hospitalisation in COPD patients receiving ICS has been observed. Clinical features of pneumonia may overlap with symptoms of COPD exacerbations. Systemic effects of ICS may occur, particularly at high doses for long periods e.g. Cushing's syndrome, Cushingoid features, adrenal suppression, decrease in bone mineral density, cataract and glaucoma and more rarely, a range of psychological or behavioural effects including psychomotor hyperactivity, sleep disorders, anxiety, depression and aggression. Consider referral of patients reporting blurred vision or visual disturbances to an ophthalmologist as causes may include cataract, glaucoma or rare diseases such as central serous chorioretinopathy. Prolonged treatment with high doses of ICS may result in adrenal suppression and acute adrenal crisis. **Interactions:** Possibility of systemic effects with concomitant use of strong CYP3A inhibitors (e.g. ritonavir, cobicistat) cannot be excluded and therefore caution and appropriate monitoring is advised. Beta-blockers should be avoided in asthma patients. Concomitant administration of other beta-adrenergic drugs and theophylline may have potentially additive effects, therefore exercise caution. Concomitant treatment with quinidine, disopyramide, procainamide, phenothiazines, antihistamines, monoamine oxidase inhibitors (MAOIs) and tricyclic antidepressants can prolong the QTc interval and increase the risk of ventricular arrhythmias. L-dopa, L-thyroxine, oxytocin and alcohol can impair cardiac tolerance towards $beta_2$-sympathomimetics. Concomitant treatment with MAOIs including agents with similar properties (e.g. furazolidone, procarbazine) may precipitate hypertensive reactions. 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. There is a small amount of ethanol in Luforbec pMDI. There is theoretical potential for interaction in particularly sensitive patients taking disulfiram or metronidazole. **Pregnancy and lactation:** Use only during pregnancy or lactation if the expected benefits outweigh the potential risks. A risk/benefit decision should be taken to discontinue/abstain from therapy in the mother or discontinue breastfeeding. **Effects on driving and operating machinery:** Unlikely to have any effect on the ability to drive and use machines. **Side effects:** ***Common:*** Pharyngitis, oral candidiasis, pneumonia (in COPD patients), headache, dysphonia. ***Uncommon:*** Influenza, oral fungal infection, oropharyngeal candidiasis, oesophageal candidiasis, vulvovaginal candidiasis, gastroenteritis, sinusitis, rhinitis, granulocytopenia, allergic dermatitis, hypokalaemia, hyperglycaemia, restlessness, tremor, dizziness, otosalpingitis, palpitations, electrocardiogram prolonged QTc interval, ECG change, tachycardia, tachyarrhythmia, atrial fibrillation (in COPD patients), hyperaemia, flushing, cough, productive cough, throat irritation, asthmatic crisis, 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 (in COPD patients). ***Rare:*** Ventricular extrasystoles, angina pectoris, paradoxical bronchospasm, angioedema, nephritis, increased blood pressure, decreased blood pressure. ***Very rare:*** Thrombocytopenia, hypersensitivity reactions, including erythema, lips, face, eye and pharyngeal oedema, adrenal suppression, glaucoma, cataract, dyspnoea, exacerbation of asthma, growth retardation in children and adolescents, peripheral oedema, decreased bone density. ***Unknown frequency:*** Psychomotor hyperactivity, sleep disorders, anxiety, depression, aggression, behavioural changes (predominantly in children), blurred vision. Refer to SmPC for full list of side effects. **Legal category:** POM **Price and Pack:** £20.52 1x120 actuations **Marketing authorisation (MA) No:** PL 35507/0204 **MA holder:** Lupin Healthcare UK Ltd, The Urban Building, Second Floor, 3-9 Albert Street, Slough, Berkshire, SL1 2BE, United Kingdom. **PI Last Revised:** August 2021. AeroChamber Plus® is a registered trademark of Trudell Medical International.

Adverse events should be reported. Reporting forms and information can be found at https://yellowcard.mhra.gov.uk or search for MHRA Yellowcard in the Google Play or Apple App store. Adverse events should also be reported to Lupin Healthcare Limited on +44 (0)1565 751 378 or email us at EU-PV@lupin.com

Ref: 1. NHS BSA. https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/drug-tariff. Accessed September 2021. **2.** UK General Practice Prescribing Data June 2020 - May 2021 (http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3). **3.** Luforbec Summary of Product Characteristics. Lupin Healthcare UK Limited.

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