# Primary Care Respiratory Update

Spring/Summer 2024 Issue 28

Your members' magazine packed with useful features, clinical updates, educational updates, respiratory news and opinion.

Calculating and interpreting Peak Expiratory Flow rate variability and reversibility

Asthma and Atopy in Children and Young People

Pollution and its impact on respiratory health

Tiny Habits for Big Changes

Respiratory Health, Health Inequality and Inequity

Supporting a quit attempt

Primary Care Respiratory Society

# Acepiro®
## 600 mg Effervescent Tablets
Acetylcysteine

# Prescribe Acepiro® by brand

**Acepiro®** is indicated in adults as a mucolytic agent for the treatment of respiratory tract diseases in which a reduction in bronchial secretion viscosity is required to facilitate expectoration[1].

At just £4.40 for 30 days treatment[2], prescribing **Acepiro® by brand** it is the least expensive way of prescribing a mucolytic even compared to prescribing by generic name[3]*.

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Prescribing **Acepiro®** by brand is **20% less expensive** than prescribing acetylcysteine generically[3]

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### Acepiro® 600 mg effervescent tablets – Abbreviated Prescribing Information

Please refer to the Summary of Product Characteristics (SmPC) before prescribing Acepiro® 600mg effervescent tablets.

Each tablet contains 600 mg acetylcysteine. **Uses** Acepiro® is indicated in adults as a mucolytic agent for the treatment of respiratory tract diseases in which a reduction in bronchial secretion viscosity is required to facilitate expectoration. **Dosage and Administration** One tablet daily after food. Each tablet should be dissolved in half a glass of water. Duration of therapy should be determined by the treating physician. **Special Warnings and Precautions** Hypersensitivity to the active substance or to any of the excipients. Acepiro® should not be used by adolescents or children. Use with caution in patients with a history of asthma or bronchospasm. Should bronchospasm occur Acepiro® should be discontinued immediately. Very rarely, serious skin reactions such as Stevens-Johnson syndrome and Lyell syndrome have been reported. Patients should be advised to seek immediate medical advice in the presence of new skin or mucosal lesions. Administer with caution in patients with a reduced cough reflex for example elderly or frail patients. Postural drainage and broncho-aspiration should be performed in patients unable to cough up bronchial secretions effectively. Incompletely dissolved tablets present a risk of choking and aspiration, particularly to elderly patients. Use with caution in patients with a history of peptic ulcer disease or histamine intolerance. Hepatic and renal impairment can reduce clearance and increase systemic acetylcysteine plasma levels which may result in an increase in adverse drug reactions due to drug accumulation. **Contraindications** Hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption. **Interactions with other medicinal products** In vitro tests indicate that (tetracycline, aminoglycosides and penicillin are inactivated when mixed directly with acetylcysteine. Where concomitant use of Acepiro® and oral antibiotics is required, separate administration by an interval of at least two hours. Acetylcysteine may potentiate the vasodilatory effect of nitroglycerine. Do not administer concurrently with ACE inhibitors or antitussives. Acetylcysteine may reduce the bioavailability of certain heavy metal salts and should be taken separately at different times of the day. **Pregnancy fertility and Lactation** Administration of acetylcysteine during pregnancy and lactation should take place only after a strict risk benefit assessment. **Side Effects** The following events have been reported by at least one in a thousand and less than one in a hundred patients treated with acetylcysteine – hypersensitivity reactions, headache, tinnitus, tachycardia, stomatitis, abdominal pain, nausea, vomiting, diarrhoea, pruritus, urticaria, exanthema, rash, angioedema, pyrexia and lowered blood pressure. The incidence of facial oedema has not been established. **Overdose** There have been no reports of toxic overdose with oral acetylcysteine. In the case of an overdose of Acepiro®, management should be supportive. **Effects on the ability to drive and/or operate machines** Acepiro® has no effect on the ability to drive or operate machines.

**Legal category:** POM

**Pack size:** 20 or 30 effervescent tablets in strips of laminated aluminium paper foil.

**Shelf life:** 3 years.

**NHS price:** 20 effervescent tablets = £3.65
30 effervescent tablets = £4.40

**Marketing Authorisation Holder:** Stirling Anglian Pharmaceuticals Ltd, Hillington Park Innovation Centre, 1 Ainslie Road, Hillington Park, Glasgow G52 4RU

**Marketing Authorisation Number:** PL 42582/0015

Further information is available at **medinfo@stirlinganglianpharmaceuticals.com** or via the office number **0141 585 6352**

**Date of preparation:** 23 December 2022

**Unique Code:** API-004-22-001 2.0

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0040030023 v 1.0 | Date of preparation: April 2024

**References:**
1. Acepiro SMPC available at https://www.medicines.org.uk/emc/product/13849 date accessed April 2024
2. NACSYS SMPC available at https://www.medicines.org.uk/emc/product/8576 date accessed April 2024
3. The drug tariff available at https://www.drugtariff.nhsbsa.nhs.uk/#/00853613-DD/DD00853609/Home date accessed April 2024

# Primary Care Respiratory Update

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See http://www.pcrs-uk.org/sites/pcrs-uk.org/files/files/PI_funding.pdf for PCRS statement on pharmaceutical funding.

# Luforbec now offers a 52% NHS list price saving vs Fostair pMDIs.[1]


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Luforbec 100/6 is indicated for adult asthma and COPD ($FEV_1$ <50% predicted normal).[5] Luforbec 200/6 is indicated for asthma in adults[6]

**Prescribing Information: Luforbec® 100/6 and 200/6 pressurised metered dose inhaler (pMDI) Consult the full Summary of Product Characteristics (SmPC) before prescribing. Presentation:** Pressurised inhalation solution. Luforbec 100/6 pMDI: Each dose contains beclometasone dipropionate (BDP) 100 micrograms (mcg) and formoterol fumarate dihydrate 6 mcg. Luforbec 200/6 pMDI: Each dose contains beclometasone dipropionate (BDP) 200 mcg and formoterol fumarate dihydrate 6 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*** **(Luforbec 100/6 only):** Symptomatic treatment of patients with severe COPD ($FEV_1$ <50% predicted normal) and a history of repeated exacerbations, who have significant symptoms despite regular therapy with long-acting bronchodilators. **Dosage and administration:** For inhalation in adult patients (≥18 years); not recommended for children and adolescents under 18 years. ***Asthma:*** **Maintenance therapy:** Luforbec 100/6 pMDI: 1–2 inhalations twice daily. Luforbec 200/6 pMDI: 2 inhalations twice daily. The maximum daily dose is 4 inhalations, ensuring a separate short-acting bronchodilator is available as needed. Patients should receive the lowest dose that effectively controls symptoms. **Maintenance and reliever therapy (Luforbec 100/6 pMDI only):** 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*** **(Luforbec 100/6 pMDI only):** 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 individual patient's needs. **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 during significant 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, aortic stenosis, hypertrophic obstructive cardiomyopathy, severe heart disease, particularly acute myocardial infarction, ischaemic heart disease, congestive heart failure, occlusive vascular diseases, 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. Caution is recommended in unstable asthma when a number of rescue bronchodilators may be used. 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 due to 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, 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 hence 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 hence a 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. **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, headache, dysphonia, pneumonia (in COPD patients). *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, peripheral oedema, decreased bone density, growth retardation in children and adolescents. *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:** £13.98 1x120 actuations. **Marketing authorisation (MA) No(s):** PL 35507/0204, 35507/0205 **MA holder:** Lupin Healthcare UK Ltd, The Urban Building, Second Floor, 3-9 Albert Street, Slough, Berkshire, SL1 2BE, United Kingdom. **PI Last Revised:** November 2023. 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 Yellow Card in the Google Play or Apple App store. Adverse events should also be reported to Lupin Healthcare UK Limited on +44 (0)1565 751 378 or EU-PV@lupin.com**


**Ref: 1.** NHS BSA. Drug Tariff. https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/drug-tariff Accessed: November 2023. **2.** Certifications of carbon neutrality for Luforbec 100/6 and 200/6 pMDI. **3.** Carbon Footprint Limited, Luforbec Life Cycle Assessment Report 2022. Data on File. **4.** MIMS: Inhaler Carbon Emissions. https://www.mims.co.uk/inhaler-carbon-emissions/respiratory-system/article/1739635. Accessed: November 2023. **5.** Luforbec 100/6 pMDI. Summary of Product Characteristics (SPC). Lupin Healthcare UK Limited. **6.** Luforbec 200/6 pMDI. Summary of Product Characteristics (SPC). Lupin Healthcare UK Limited. Fostair® is a registered trademark of Chiesi Ltd


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UK-LUF-2311-00007 November 2023

# Primary Care Respiratory Update

## Contents

Intended for UK Healthcare Professionals only

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**Up to 55% saving** on the cost of category C (salmeterol/ fluticasone pMDI) on the UK Drug Tariff.[4]

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- patients not adequately controlled with inhaled corticosteroids and 'as needed' inhaled short- acting β2 agonist

or

- patients already adequately controlled on both inhaled corticosteroid and long-acting β2 agonist

*Combisal® 25/50µg is licensed in children aged 4 and over. All three strengths licensed in adults and adolescents 12 years and older. †Use of an AeroChamber Plus® spacer device with Combisal is recommended in those who may have difficulties coordinating actuation with inspiration e.g. children <12 years. **Low dose fluticasone provides most of the clinical benefit for most patients with asthma. However, corticosteroid responsiveness varies between patients, so some may require medium dose or high dose fluticasone, particularly patients with severe asthma. Combisal 25µg/50µg is not appropriate for adults and adolescents with severe asthma.


**References:**
**1.** Combisal Summaries of Product Characteristics. Accessed April 2024
**2.** Seretide Evohaler Summaries of Product Characteristics. Accessed April 2024
**3.** Bioequivalence Data on File. 1010422379 v 4.0 April 2023
**4.** April 2024 UK Drug Tariff.


Combisal

Salmeterol/Fluticasone

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**Combisal (Salmeterol/ Fluticasone) Prescribing Information (please refer to the full SmPC before prescribing)**
**Indications:** Regular treatment of asthma where use of combination product (long-acting β2 agonist and inhaled corticosteroid) is appropriate: patients not adequately controlled with inhaled corticosteroids and 'as needed' inhaled short-acting β2 agonist or patients already adequately controlled on both inhaled corticosteroid and long-acting β2 agonist **Available strengths:** 25µg/50µg; 25µg/125µg & 25µg/250µg salmeterol/fluticasone per metered dose pressurised inhalation, suspension. **Dosage and method of use:** Inhalation use. Adults and adolescents 12 years and older: two inhalations twice daily. Children 4 years and older: two inhalations 25 µg/50 µg twice daily. Titrate to lowest dose at which effective control of symptoms is maintained and if long-term control maintained at lowest dose, consider testing inhaled corticosteroid alone or combination once daily. Combisal 25 µg /50 µg not appropriate for adults and children with severe asthma. Maximum licensed dose of fluticasone propionate in children is 100 µg twice daily. No data in children under 4 years. AeroChamber Plus® spacer device can be used. This may increase drug delivery to lungs with increase in risk of systemic adverse effects. Advise patients to rinse mouth out with water and spit out, and/or brush teeth after each dose of medicine to minimize risk of oropharyngeal candidiasis and hoarseness. **Contraindications:** Hypersensitivity to active substance or excipients. **Special warnings and precautions for use:** Do not use to treat acute asthma for which fast- and short-acting bronchodilator required or initiate Combisal during an exacerbation, or if asthma is significantly worsening or acutely deteriorating. Use with caution in patients with active or quiescent pulmonary tuberculosis and fungal, viral or other infections of the airway; severe cardiovascular disorders or heart rhythm abnormalities, diabetes mellitus, thyrotoxicosis, uncorrected hypokalaemia or predisposed to low levels of serum potassium. Discontinue if paradoxical bronchospasm occurs. Prolonged use of high doses of ICS may result in adrenal suppression and acute adrenal crisis. Consider additional systemic corticosteroid cover during periods of stress or elective surgery. Monitor patients transferring from oral steroids for impaired adrenal reserve. Safety and efficacy in COPD not established. Visual disturbance reported with steroid use – if blurred vision or other visual disturbances, consider referral to ophthalmologist for evaluation of possible causes e.g. cataract, glaucoma, central serous chorioretinopathy. If prolonged treatment in children, monitor height and ensure dose of inhaled steroid is lowest at which effective asthma control is maintained. Interactions: The following combinations should be avoided: Ritonavir, ketoconazole, itraconazole, cobicistat containing products or other potent CYP3A4 inhibitors, moderate CYP3A inhibitors e.g. erythromycin (if benefit outweighs risk, monitor for systemic steroid side effects); non- selective and selective β blockers; xanthine derivatives, steroids and diuretics in acute severe asthma. Other β adrenergic containing drugs can have an additive effect. **Pregnancy & Lactation:** Administer only if expected benefit to mother is greater than any possible risk to fetus. Not to be used during breastfeeding. **Side effects:** For full list of side effects consult SmPC. 'Very Common' 'Common' and 'Serious' side effects included in prescribing information. Very common (≥1/10) side effects: headache, nasopharyngitis. Common (≥1/100 to , <1/10) side effects: candidiasis of mouth and throat, pneumonia, bronchitis. <1/10) side effects: candidiasis of mouth and throat, pneumonia, bronchitis, hypokalaemia, throat irritation, hoarseness/dysphonia, sinusitis, contusions, muscle cramps, traumatic fractures, arthralgia, myalgia. Uncommon Serious (≥1/1000 to <1/100) side effects: cutaneous hypersensitivity reactions, dyspnoea, hyperglycaemia, anxiety, sleep disorders, tremor, cataract, palpitations, tachycardia, atrial fibrillation, angina pectoris. Rare serious (≥1/10,000 to <1/1000) side effects: oesophageal candidiasis, facial and oropharyngeal angioedema, bronchospasm, anaphylactic reactions including anaphylactic shock, Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation in children and adolescents, decreased bone mineral density, behavioural changes (psychomotor hyperactivity and irritability predominantly in children), glaucoma, cardiac arrhythmias, paradoxical bronchospasm. Serious side effects (unknown frequency): depression, aggression (predominantly in children), blurred vision. **MA number:** PL 36532/0001-0003. **Cost:** £13.50 for 25/50µg, £10.48 for 25/125µg, £13.99 for 25/250µg. **MAH:** Genetic S.p.A., Via G. Della Monica 26, 84083 Castel San Giorgio (SA), Italy. Distributed in the UK by: Aspire Pharma Ltd, Unit 4, Rotherbrook Court, Bedford Road, Petersfield, Hampshire, GU32 3QG. **Legal category:** POM. **Date reviewed:** March 2023 **Version number:** 1010422348 v 7.0

**Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Aspire Pharma Ltd on 01730 231148.**

10104222296 v 1. 0 April 2024

# Opening Editorial

**Katherine Hickman,** *Executive Committee Chair*

Welcome to this issue of *Primary Care Respiratory Update*. In it, we highlight several topics that reinforce our critical role in primary care in managing and improving respiratory health. The featured articles demonstrate the complex nature of respiratory conditions and the broader environmental and societal factors influencing patient outcomes.

"Asthma and Atopy in Young Children" offers an in-depth look into the interplay between environmental pollutants and respiratory health and is further examined in "Pollution and its Impact on Respiratory Health," which provides compelling evidence linking poor air quality to asthma exacerbations and other respiratory illnesses. Addressing these issues requires medical intervention, advocacy for cleaner environments, and policies that mitigate pollution. As a new government is formed in July, the respiratory world will be looking on with interest as to how they will begin addressing these problems.

This issue also tackles the social determinants of health, highlighting the disparities in respiratory health outcomes in "Respiratory Health and Health Inequality and Inequity." The article outlines the need to address these inequalities and provide equitable healthcare practices. Tiny Habits® offers practical strategies for fostering healthier behaviours, which can be particularly beneficial in supporting patients with COPD to do Pulmonary Rehabilitation exercises at home starting with something tiny, that lasts less than 30 seconds, such as one squat after turning on the kettle!

"Tobacco Dependency is a Long-term Relapsing Condition That Usually Starts in Childhood." emphasises the importance of using Very Brief Advice (VBA) to encourage quit attempts and support smokers ready to quit smoking. Given the impact of tobacco on respiratory health, every healthcare professional must be equipped to deliver effective cessation support.

As primary care providers, our engagement in these areas is essential. We must adopt a holistic approach that includes clinical care, patient education, and advocacy to foster environments conducive to optimal respiratory health.

We appreciate everybody is extremely busy and taking time out to read a journal can sometimes feel like a luxury but we hope you find some time to do just that. We also hope it ignites the flame inside of you and inspires you to explore and delve into our new resources on our website, released on World Asthma Day. These include a new set of animations, podcasts, a webinar and an online learning module highlighting the GINA approach for asthma management and a patient perspective.

Finally, we look forward to welcoming old and new delegates to our conference in Telford, 20-21 September. This is the highlight of our year at PCRS, and the programme continues to deliver cutting-edge insights and valuable networking opportunities year after year.

# Have confidence in a true picture of respiratory function.

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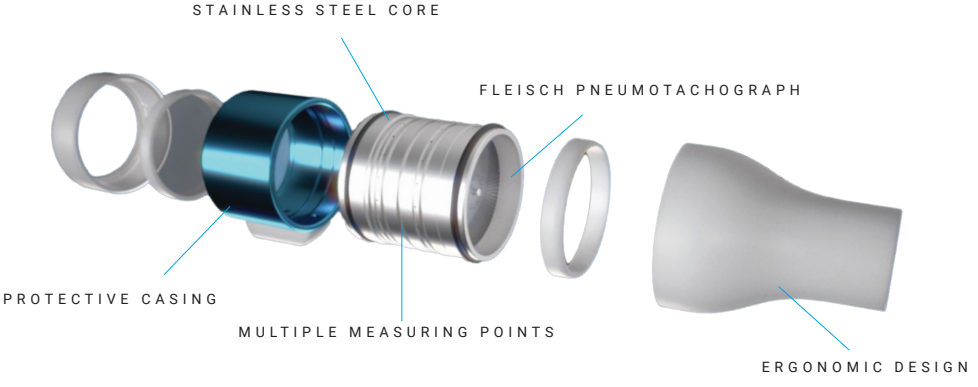


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# A PCRS consensus on how to calculate and interpret peak expiratory flow rate variability and reversibility for asthma diagnosis





**Helen Ashdown,[1] Thomas Brown,[2] Katherine Hickman,[3] Amanda Roberts,[4] Carol Stonham[5]**

*[1] GP Academic Clinical Lecturer, Nuffield Dept Primary Care Health Sciences, University of Oxford; [2] Consultant Respiratory Physician and Deputy Director of Research/Portsmouth Hospitals University NHS Trust; [3] GP, Bradford, Respiratory Lead for West Yorkshire; [4] Patient, Chair of PCRS Patient Reference Group, Nottingham; [5] Primary Care Respiratory Nurse Practitioner, Gloucestershire ICB Respiratory programme & Co-Lead NHSE Southwest Respiratory Network.*

**In this article, the authors provide a pragmatic consensus approach to calculating and interpreting peak expiratory flow rate (PEFR) variability and reversibility from peak flow diary recordings for asthma diagnosis. This guide is intended for healthcare professionals working in primary care. Please see the links in the references for more information on the evidence and value of peak flow monitoring**

## Background

This PEFR calculation and interpretation consensus has been developed as a response to queries from Primary Care Respiratory Society (PCRS) members. They have told us that they have been taught more than one way of making a calculation, how they have observed other asthma diagnosticians using varying methods, and that there is no consistent approach recommended from national and international asthma guidelines. In addition, some methods suggested are too onerous and time-consuming for time-pressured clinicians.

## The role of PEFR in asthma diagnosis: summary of national and international clinical guidelines

There is no single gold standard test that can rule in or rule out an asthma diagnosis. To arrive at a diagnosis requires the accumulation of evidence from many sources over time. This paper does not cover the entirety of how to make a diagnosis, but PCRS has primary care-focused resources that we encourage you to explore further[1].

Two key features that should be assessed to confirm an asthma diagnosis are ***reversibility*** and *variability* (Table 1).

**Table 1.** Global Initiative for Asthma (GINA)[2] definitions of reversibility and variability.

| Reversibility | Variability |
|---|---|
| Generally, refers to rapid improvements in Forced Expiratory Volume ($FEV_1$) or PEFR measured within minutes after inhalation of a rapid-acting bronchodilator such as 200-400mcg of salbutamol or more sustained improvement over days or weeks after the introduction of treatment such as inhaled corticosteroids (ICS) | Refers to improvement and /or deterioration in symptoms and lung function. Excessive variability may be identified over the course of one day (diurnal variability), from day to day, from visit to visit, or seasonally. |

**Table 2. NICE and GINA recommendations on the use of PEFR variability and reversibility for diagnosis**

| | 2017 NICE guidelines (Last updated 2021)[3] | 2023 GINA guidance[2] |
|---|---|---|
| **General principles** | Diurnal variability of 20% should be demonstrated. | Diurnal variability of >10% in adults and >13% in children should be demonstrated.<br>Use the highest of 3 readings.<br>Use the same PEFR meter each time as a 20% variation has been shown from meter to meter[2,4,6].<br>Use of PEFR is possible from age 5 years. |
| **In relation to an acute asthma attack** | Use PEFR to assess variability.<br>The use of PEFR to demonstrate reversibility is not described. (NICE recommend using $FEV_1$ to measure reversibility) | PEFR reversibility (response to 200-400mcg salbutamol after 15 minutes) of 20% is consistent with asthma |
| **Peak flow diary (adults)** | Monitor PEFR variability for 2 to 4 weeks (aged 17 and over) if diagnostic uncertainty after initial assessment and a FeNO test and they have either:<br>**Scenario 1:**<br>• normal spirometry or<br>• obstructive spirometry with reversible airways obstruction but a FeNO level of 39 ppb or less.<br>**Scenario 2:**<br>• obstructive spirometry with<br>• irreversible airways obstruction and<br>• a FeNO level between 25 ppb and 39 ppb. | Gather daily data over 1-2 weeks in order to make a diagnosis of asthma. |
| **Peak flow diary (5 to16)** | Monitor peak flow variability for 2 to 4 weeks if diagnostic uncertainty after initial assessment and a FeNO test and they have either:<br>• normal spirometry or<br>• obstructive spirometry with irreversible airways obstruction and a FeNO level of 35 ppb or more. | Gather daily data over 1-2 weeks in order to make a diagnosis of asthma. |

History, examination, and review of what has previously been recorded in a patient's notes can all be used to consider whether variability and reversibility have been demonstrated. However, all guidance now also recommends at least one more objective measure to support any subjective findings.

PEFR recordings taken during the management of acute asthma attacks (that can show reversibility) and diary readings taken over a number of days or weeks (that can show both reversibility and variability) can be used to provide data to aid in the diagnosis of asthma. Using PEFR to demonstrate ***variability*** is considered to be a suitable objective test by both the National Institute for Health and Care Excellence (NICE)[3] and the Global Initiative for Asthma (GINA)[2] (Table 2).

NICE does not make a recommendation about the use of PEFR for measuring ***reversibility***. The preferred test for reversibility recommended by NICE and GINA is spirometry which is defined as bronchodilator reversibility of 12% (children and adults) including a 200ml improvement in volume (in adults). GINA, however, also suggests that a reversibility of 20% using PEFR is consistent with asthma provided a good effort is made on each blow.

PEFR variability assessment sits in a secondary (GINA) and tertiary (NICE) position in relation to the other preferred objective measures which are spirometry and Fractional Exhaled Nitric Oxide (FeNO) testing. Timely access to spirometry and FeNO, however, varies between services across the UK and peak flow can add useful information, particularly if one of the other two tests is normal or shows borderline results. PEFR diaries are also particularly useful where FeNO and spirometry will not be usually available such as in occupational or other situationally triggered asthma situations.

When considering the relative benefits of a spirometry or peak flow test, it is important to remember that asthma, by its nature, is a variable disease, and so spirometry undertaken at a snapshot in time without symptoms may well be normal (and therefore no airway obstruction to reverse) whereas PEFR monitoring captures a longer period over which symptoms may present. In an ideal world with no resource limitation, data from all

**Table 3. NICE and GINA recommendations on calculating diurnal PEF variability**

| | 2017 NICE guidelines (Last updated 2021)[3] | 2023 GINA guidance[2] |
|---|---|---|
| **Diurnal (within a day) PEFR variability** | No guidance on calculation method<br><br>No guidance on frequency or timing of daily measures. | • Twice per day readings (Best of 3)<br>• Calculate daily score using: (Highest - Lowest) / mean of (highest +lowest) x 100<br>• Add up each daily score (1-2 weeks) and calculate the mean. |

three sources should be sought as they each provide different information.

The use of peak flow meters that can be issued on an NHS prescription is well established, low cost, and readily available within primary care and can be used outside the clinic setting. However, these portable meters results are susceptible to error and are not calibrated as with spirometry and FeNO. Therefore, it is important to coach the user to get the best readings. This can be done by checking that the patient uses the device consistently and correctly; and ensuring the same measurements are all from one device[4]. More information about how to obtain an accurate recording is detailed in a resource published in the Primary Care Respiratory Update in May 2023[5].

## Calculating the diurnal variability score: summary of guidance (NICE/GINA)

The focus of this paper is to describe how to calculate peak expiratory flow rate variability for asthma diagnosis once the patient has returned with their completed diary. We have looked at both NICE and GINA and the evidence each used for their approaches and this is summarised in Table 3.

The 2017 NICE guideline does not provide a method to calculate a variability score. However, within Appendix C of the underlying guidance evidence[7], the criteria used to explore accuracy and cost-effectiveness of PEFR variability in the diagnosis of asthma described the calculation as: "*usually expressed as amplitude (highest – lowest reading) as a percentage of the mean or the highest reading. PEFR variability values should be recorded as the mean over at least 3 days*".

GINA recommends a diurnal variability calculation also known as 'within-day' variability and the method selected is described as the 'daily amplitude percent mean'. GINA notes that there are multiple ways of making the diurnal variability calculation[4]. The scoring approach recommended by GINA has been used by researchers to describe normal ranges of diurnal variability and from this, agreed cut-off levels for abnormal variation have been decided. The GINA approach describes abnormal variability as >10% in adults and >13% in children which differs from that described by NICE where >20% is considered to be consistent with asthma.

The other common method of calculating PEFR variability is the 'between-day' method. Here, the lowest recorded PEFR recorded over a 1 to 2-week episode is divided by the highest PEFR in the same period. This is not recommended for use in diagnosis by either authority. Elsewhere it is suggested as an easier method to use once diagnosis has been established for the purposes of monitoring[8]. However, whilst the 'between day' method is a much faster calculation to perform, it is not considered the best method for diagnosis.

When comparing the two approaches, though, NICE does not recommend a calculation method for diurnal variation it seems the studies reviewed for the guideline were included if they used the 'daily amplitude percent mean' method and therefore aligns with GINA. However, despite suggesting the same method there is a question as to why NICE suggests a higher threshold of 20% variability as indicative of asthma. A review of the underlying literature used by NICE reveals that a range of values, most between 15% and 20% could be used as indicative of asthma but the final figure selected depends on the levels of sensitivity and specificity that could be tolerated[9,10]. The underlying literature used by both also generally notes that four times a day testing, with an attempt to capture an early morning (when PEFR is usually lowest) and late afternoon reading (when PEFR is usually highest) will provide a significantly more reliable result, though GINA finally recommends twice per day readings.

## The PCRS approach to calculating and interpreting PEFR variability and bronchodilator reversibility for diagnosis of asthma

### *Calculating PEFR bronchodilator reversibility*

To calculate % increase i.e. the bronchodilator reversibility %. The equation is:

(Post-bronchodilator best of 3 – Pre-bronchodilator best of 3) / pre-bronchodilator best of 3 x 100

E.g.

Pre-bronchodilator 3 readings (best): 210, 210, (220)

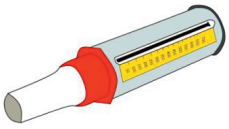
Post-bronchodilator 3 readings (best): 270,280, (290)

(290-220)/220 x 100 = **32%**

Scan QR code to download sample

**Figure 1.** Patient peak flow diary record and patient instructions

# MY PEAK FLOW DIARY



**It is important for us to see these results to help us access your breathing.**

**Please complete this for 2 weeks and then either send us the charts or bring it to your next appointment.**

**To send us your peak flow results:**

- Please take a photograph of your peak flow diary and email the photograph to (INSERT E-MAIL)
- Please include your name and date of birth in the email.
- If you are unable to email us, please either drop it into (INSERT

**What is Peak Flow?**

- Peak Flow is a measurement of how quickly you can blow air out of your lungs.
- If you manage to blow out quickly and forcefully you should get a high score.
- If your airways are tight and inflamed you won't be able to blow out so quickly and your score will be low.

**You need to check your peak flow:**

- ✓ Every day, twice a day for 2 weeks to get a useful pattern
- ✓ At the same times of day, in the morning and in the evening
- ✓ Before you take your asthma medicine
- ✓ Using your best effort each time you blow into the meter so you are comparing like for like
- ✓ Using the same peak flow meter each time

**How to use your peak flow meter and diary:**

- Put the pointer back to the first line on the scale
- Stand, or sit upright (choose what's easiest for you and always do it the same way)
- Take a deep breath
- Make sure your mouth makes a tight seal around the mouthpiece
- Blow as hard and as fast as you can into the meter
- Write down your score
- Do this 3 times in a row so you get 3 scores, and use the highest of these scores to fill in your diary

Name: .....

Date of birth: .....

| Date | | Am | Pm | Extra readings | Comments |
|---|---|---|---|---|---|
| | Day 1 | | | | |
| | Day 2 | | | | |
| | Day 3 | | | | |
| | Day 4 | | | | |
| | Day 5 | | | | |
| | Day 6 | | | | |
| | Day 7 | | | | |

| Date | | Am | Pm | Extra readings | Comments |
|---|---|---|---|---|---|
| | Day 1 | | | | |
| | Day 2 | | | | |
| | Day 3 | | | | |
| | Day 4 | | | | |
| | Day 5 | | | | |
| | Day 6 | | | | |
| | Day 7 | | | | |

This Word document can be downloaded and edited so that you can add your practice details

Scan QR code to download sample

**Figure 2.** Excel Table variability calculator and a graph showing diurnal variation

Insert Name and Hospital Number

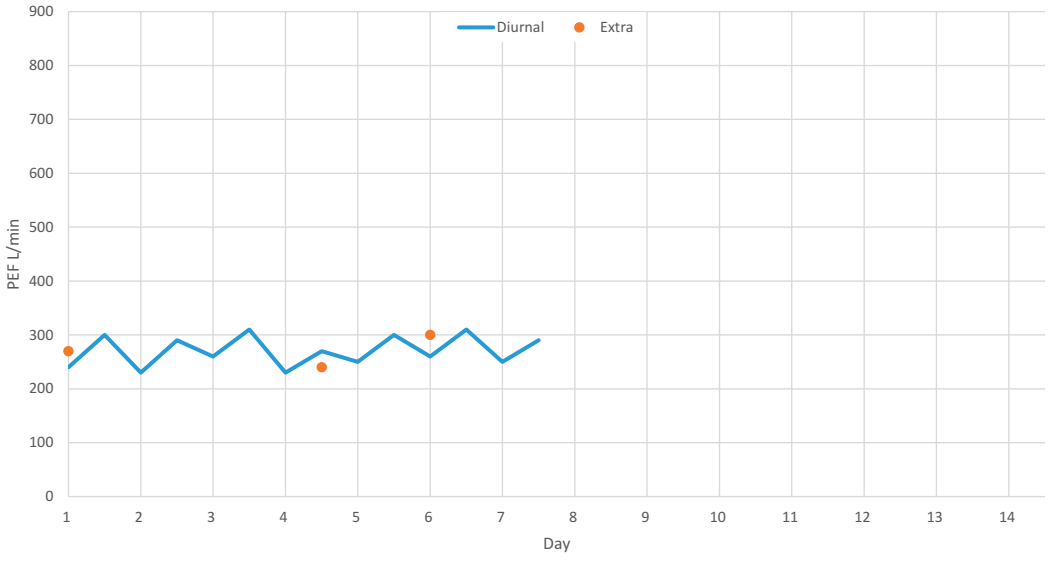
Portsmouth Severe Asthma Service

## Diurnal PEF Variability

| | Morning | Evening | Extra 1 | Extra 2 |
|---|---|---|---|---|
| **Day 1** | 240 | 300 | 270 | |
| **Day 2** | 230 | 290 | | |
| **Day 3** | 260 | 310 | | |
| **Day 4** | 230 | 270 | | 240 |
| **Day 5** | 250 | 300 | | |
| **Day 6** | 260 | 310 | 300 | |
| **Day 7** | 250 | 290 | | |
| **Day 8** | | | | |
| **Day 9** | | | | |
| **Day 10** | | | | |
| **Day 11** | | | | |
| **Day 12** | | | | |
| **Day 13** | | | | |
| **Day 14** | | | | |

| Daily PEF Variability |
|---|
| 22% |
| 23% |
| 18% |
| 16% |
| 18% |
| 18% |
| 15% |
| |
| |
| |
| |
| |
| |
| |

| Overall PEF Variability | 18% |
|---|---|




This Excel file for you to download provides a table for your patient's results to be entered. It automatically calculates the variability score and creates a graph for you to visualise any diurnal variation. It will work as long as at least 7 days of data overall is provided. It will account for any extra readings but these are plotted separately in the graph as the main value is to demonstrate the diurnal variation. It will accept values over 50 – 1000 inclusive but will otherwise flag a potential error in data entry.

*Calculating PEFR variability*

Evidence and guidance point towards the use of the 'daily amplitude percent mean' method as the best to calculate diurnal variation when collating information to make an asthma diagnosis. This method can be onerous and is more likely to include data entry errors when more tests per day are required and a longer the period of data collection is requested. Taking these factors into consideration PCRS recommends:

- A 14-day collection period as the basic standard to have sufficient data points.
- Two data points per day as a basic standard with early morning and late afternoon measures being optimal.

To calculate PEFR variability using the daily amplitude percent mean method, you work out the variability for each day and then use that to find the average over the recording period.

**Daily variability** = Difference between highest and lowest peak flows / Average of highest and lowest
**Overall variability** = Total of daily variabilities / Number of days
E.g. Using the data from Figure 2 and using the equation:
**[(Highest - Lowest) / (Highest + Lowest) / 2] x 100 = Percentage variability**
Day 1 - (300-240) / (540/2) x 100 = 22%
Day 2 - (290-230) / (520/2) x 100 = 23%
Day 3 - (310-260) / (570/2) x 100 = 18%
Day 4 - (270-230) / (500/2) x 100 = 16%
Day 5 - (300-250) / (540/2) x 100 = 18%
Day 6 - (310-260) / (540/2) x 100 = 18%
Day 7 - (290-250) / (540/2) x 100 = 15%
Diurnal variability score for 1 week of data -
(22+23+18+16+18+18+15) / 7 = **18%**

To make the process easier, we recommend material developed by the Portsmouth severe asthma service that is available to download from the PCRS website. See Figures 1 and 2.

## Smartphone Apps

There are also several smartphone apps available that allow patients to enter their peak flow readings and can generate a pdf of results to share with a healthcare professional, and this method may suit some patients. Digital peak flow meters have also been developed which output results directly to a smartphone app and these are commercially available for purchase, but NICE has advised that further evidence is needed before they can be widely recommended[11].

## What is the right cut-off for diurnal variability?

As was described at the outset of this paper, there is no gold standard test for asthma. Every piece of evidence gathered whether subjective or objective has a 'cut-off' that is determined by what is considered to be an acceptable level of:

- Sensitivity – a higher sensitivity score gives more confidence in ruling out a diagnosis if the test finding is negative
- Specificity – a higher specificity score gives more confidence in ruling in a diagnosis if the test finding is positive

The PCRS consensus is that significant variability lies in a range between 10% (13% for children) and 20% based on available guidance and review of current evidence. The closer the value is to 20% and the greater number of data points used to make the calculation, the more confident you can be in using this information to support a diagnosis of asthma.

PEFR variability should never be used alone to make a diagnosis but analysed along with other subjective and objective evidence that accumulates over time.

Acknowledgements
We would like to thank our PCRS member, Margot Kneen, Nurse Practitioner, for making the case that there was a pressing need for primary care asthma practitioners to have a consensus approach to PEFR diary calculation. We would also like to thank Milan Chauhan for his work in creating the electronic peak flow diary.

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# Asthma and Atopy in Children & Young People (CYP)

**Lisa Cummings,** *Queens Nurse, CYP Specialist Asthma Practitioner and PCRS Education Committee member*

**In this article Lisa discusses the management of asthma and atopy in children and young people focusing on perennial and allergic rhinitis, it's impact on asthma and top tips for reducing symptoms and improving control.**

Asthma is characterised by inflammation of the airways and includes symptoms of wheeze, cough, breathlessness, and a tight chest. It is the most common long-term condition in children, affecting 1.1 million in the United Kingdom (UK), this is approximately 3 children in every classroom. Atopy refers to the genetic disposition to develop allergic reactions such as eczema and allergic rhinitis, atopic children are at an increased risk of developing asthma.

There is a strong link between asthma and allergy, and we must manage both conditions to reduce the burden on children and their families. Around 90% of children and 60% of adults with asthma are estimated to be sensitive to at least one allergen. Allergic asthma is the most common phenotype in children and young people therefore it is essential that we educate CYP and families on the connection between asthma and allergy, and the importance of treating both conditions.

Worsening asthma control can be caused by exposure to allergens, particularly if these are not identified or understood by the child or family. Educating patients on recognising their triggers is a cost-effective and relatively easy process for clinicians to cover in the annual review reducing the need for pharmacological interventions.

The most common causes of allergic reactions in asthma are

- Tree and grass pollen
- House dust mite
- Pet dander

Common symptoms of allergy include

- Wheezing
- Sneezing
- Blocked nose
- Itchy eyes, lips, throat, and mouth
- Swelling
- Rashes or hives
- Sinus Pain

Perennial rhinitis is triggered by indoor allergens including pets, house dust mites and mould spores, this can be worse during the winter months as more time is spent indoors. Seasonal rhinitis is triggered by grass, tree and weed pollen this can make spring and summer months challenging as children want to play outside with friends or family.[1] Children and Young People with perennial and seasonal rhinitis may have symptoms all year round which worsen during allergy season.

Allergic Rhinitis (hayfever) is a common condition affecting around 10-15% of children and young people in the UK and is very closely linked with asthma.[2] Allergic Rhinitis can lead to poor quality of life for those children and young people affected due to feelings of low self-esteem and embarrassment. Poor asthma control and allergic rhinitis can also impact a young person's academic performance due to symptoms, fatigue and poor concentration.

Following the principle of 'one airway, airway, one disease' and including allergy management during asthma assessment and review can improve overall control.[3] Healthcare professionals should ensure that before new treatments are initiated, they have checked adherence, inhaler technique and trigger avoidance.[4]

**Trigger awareness is a simple and important part of annual reviews. Remember this will be individual to each patient to avoidance/reduced exposure.**

### Non-Pharmacological Management

It is estimated that asthma-related hospital admissions could be reduced by 45% by reducing exposure to allergens.[5] If it is possible to avoid the allergen then it can be very effective if not simple measures to avoid allergens include,

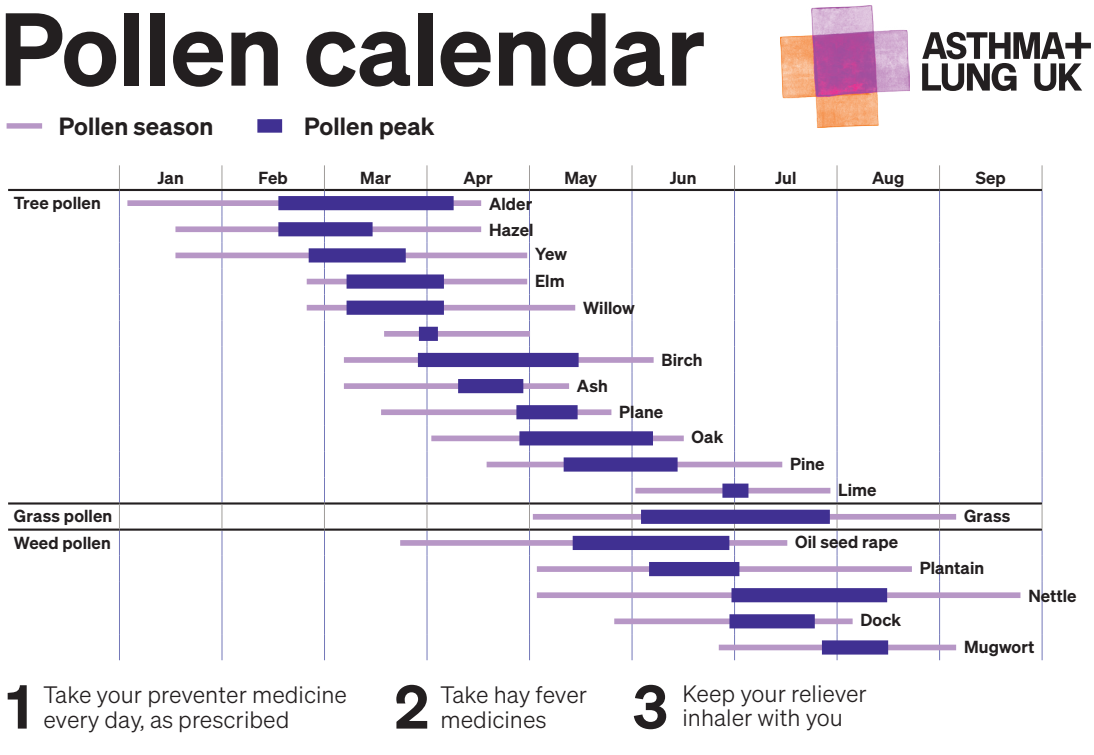
- Keeping windows closed during peak pollen season
- Avoiding exposure to pets
- Avoiding exposure to cigarette smoke or vapes
- Using hypoallergenic pillow and mattress protectors
- Wearing sunglasses
- Applying ointment to the nose when outdoors
- Damp dusting.
- Consider replacing carpets with hard flooring where possible, if not then regular hoovering of carpets.
- Limiting soft furnishings such as cushions and throw overs

The pollen calendar (figure 1) can help support when to initiate treatment as this should be before symptoms start. Patients should be encouraged to start antihistamines BEFORE symptoms - most take 4-6 hours to have optimum efficacy. Providing information can prevent a delay in starting treatments.

Nasal rinsing with a saline solution is a cheap and easy-to-perform treatment that may reduce symptoms and the need for further pharmacological treatments.[7]

**If patient has hayfever, encourage them to start antihistamine and nasal spray earlier in the year.**

**Figure 1. Pollen Calendar**[6] https://www.asthmaandlung.org.uk/pollen-calendar



### Pharmacological Management

This condition is often self-managed with over-the-counter medications. Support from healthcare professionals can improve outcomes for children and young people.

Antihistamines are the recommended first-line treatment for allergic rhinitis, these may be oral, intranasal, or ocular. Cetirizine or Loratadine are the first choice for treating children, daily treatment is recommended, and it should be started weeks before symptoms are expected.

**Start antihistamines BEFORE symptoms - most take 4-6hrs to have optimum efficacy**

Intranasal corticosteroids reduce inflammation in the nose decreasing swelling and congestion, they are effective in treating allergic rhinitis. They are generally safe to use in children when used as directed by their healthcare professional. It is, however, important that the opportunity to discuss concerns with parents is taken and sufficient information provided. All intranasal steroids are effective, but drug bioavailability varies; mometasone and fluticasone have the lowest systemic bioavailability (2) – this is an important consideration for children taking other steroids, e.g. for asthma and/or eczema (1).

**Nasal steroids can improve both rhinitis and asthma control**

A combination of oral antihistamines and intranasal corticosteroids may be required to achieve optimum control.

Nasal spray technique is as important as inhaler technique so patients must be educated on how to use it properly. There are different brands of nasal spray, and they are all held and used in slightly different ways to help the absorption and reduce side effects, so it is important to check the instructions as well as using the Asthma and Lung UK demonstration videos.

**Ensure both inhaler technique and nasal spray technique are checked when first prescribed and at annual or post attack reviews. You can also send a link to the Asthma and Lung UK videos as a reminder, but this does not replace a face-to-face check.**

Triggers must be identified to avoid worsening asthma control. All patients with asthma should have a written personalised asthma action plan (PAAP) which includes their current treatment plan and known triggers. The National Review of Asthma Deaths (2014)[8] found that despite knowing that atopy can lead to poor asthma control, only 51% of patients had their triggers identified or documented.

**Ensure Patients PAAP is updated with any new treatments or identified triggers** https://shop.asthmaandlung.org.uk/collections/health-advice-resources/

Steroids can be used to treat several health conditions in children including asthma, rhinitis and eczema. The steroids used for the treatment of allergies are corticosteroids and are almost identical to the natural hormone cortisol, which is produced by the body's adrenal glands. If a child is on steroids for a continued period, they may need a steroid information card that notes the steroid dosage, when the treatment was started, and what condition they are being treated for. An increased steroid load can lead to adrenal suppression, this can be minimised by increased awareness and early recognition.[9] Healthcare professionals must review regularly to ensure the lowest dose of inhaled corticosteroids to achieve maximum control.

**If on ICS and nasal steroid and topical steroid for atopic eczema then overall intake of corticosteroids systemically needs to be monitored. You will also need to consider if a steroid information card is needed.**

Anaphylaxis is a severe allergic reaction that can be life-threatening if not treated promptly. Common triggers for anaphylaxis include food allergies, insect stings, and certain medications. Patients with asthma and a food allergy are at an increased risk of anaphylaxis these children are also more likely to have severe asthma.[10] In cases of severe allergic reactions, carrying an epinephrine auto-injector is essential for immediate treatment. Patients will also need an Allergy Action Plan in addition to their PAAP. Paediatric Allergy Action Plans can be found using this QR code

**TOP TIP**

**Consideration of management if patient has anaphylaxis too, ensure the patient has an in date auto injector.**

For more information on asthma and allergic rhinitis visit our website via the following QR code, which features a range of tools and resources including webinars, documents and podcasts.

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# Pollution its impact on Respiratory Health

**Ren Lawlor,** *PCRS Vice Chair and Education Lead*

**This article explores the impact of the environment on the health of people with asthma and COPD and focuses on two key areas, indoor (home) and outdoor pollutants and severe weather extremes such as heat waves or very cold weather.**

## Indoor Air Pollution

Most people spend about 90% of their time inside. This might be within their own homes, in the office where they work, in schools, or shops and restaurant environments. Poor indoor air quality has been linked for some time to lung diseases, particularly asthma and allergies, chronic obstructive pulmonary disease (COPD) and even lung cancer.[1] People who already have a lung disease are more likely to be affected by indoor air pollution and those with severe disease, are also more likely to spend additional time indoors due to poor health and reduced mobility, increasing their exposure.

Indoor air pollution can come from many places, including open fires and heaters, certain building materials and furniture, as well as the use of cleaning products – all of which release chemicals into the air – and cooling systems. Mechanical ventilation, the ventilation that is provided by an outdoor vented fan or an air conditioning system will allow external pollution to infiltrate. Further outside air contamination will infiltrate through cracks in the building walls, floors, or ceilings, and windows and doors.

The effects of pollution on people's health can be clearly observed. Irritant effects such as a dry or tickly throat, sore eyes, nasal discharge, or an increased cough, can be felt quite quickly after exposure to indoor air pollution and these effects can last for days or even weeks. The effects of longer-term exposure to indoor pollutants, however, may not be apparent for many years when lung cancer or other conditions can develop. Pollutants can impact an individual in different ways depending on the demographic. Children tend to be more sensitive to other people's tobacco smoke, for example. The lungs are still developing so they are more vulnerable and more reactive, cigarette and cannabis smoke in the home can remain at harmful levels for up to five hours. The vapour from e-cigarettes, though thought to be less harmful than tobacco smoke, can still trigger asthma in some patients who are sensitive to it. Women in general are more likely to suffer from dry throat and dry eyes, and people who are atopic and live with allergies, particularly to dust mites and or pet dander will suffer more when they're exposed to them indoors.

When exposure is very high, almost every person will suffer. Levels of outdoor pollution are measured and recorded in almost every country in Europe, and there are maximum levels that countries have to aim to adhere to.[2] However, setting maximum levels of indoor air pollution is very difficult. There is a certain amount of individual choice in, and control over, what is used in personal homes and how people choose to ventilate them. Laws introduced to improve indoor air quality outside of the home have had positive effects on some population groups, an obvious example being the ban on smoking in public areas, which has reduced the risk to non-smokers, bar workers and others exposed in such work environments.

**Two key exploratory questions can help determine if indoor pollution may be a factor or risk to someone's health:-**

- **Are there any signs of a problem in the indoor environment, such as mould or smells?**
- **Do you feel that you have symptoms that improve when you're away from a certain indoor environment?**

The answers to these questions do not prove that there is an issue with air quality indoors, but they do allow for a discussion about the risks and how to reduce exposure and reduce harm. People often have little or no awareness of indoor pollutants, or underestimate the impact exposure and duration of exposure can have. The more common modifiable risks are highlighted below:


## Indoor Cooking and Heating

Gas and electric cookers release particulate matter. This particulate matter can make some symptoms of lung conditions, in particular asthma, much worse. Electricity is seen as the cleanest energy to use for heating and cooking, as it releases fewer particles than gas, individuals who find they're having flare-ups of symptoms from using gas cooking, if possible, should consider switching to an electric cooker.

Those with lung conditions are advised to avoid wood-burning stoves as these appliances release more particulate matter air pollution than road traffic. If this is not possible, however, individuals should be advised to make sure that chimneys are regularly cleaned and maintained professionally, and alarms to detect smoke and carbon monoxide installed. It is also recommended that only dry and untreated wood is burned and that users avoid burning refuse, rubbish or packaging as this can lead to the formation of toxic substances within the home.

## Burning Incense or Scented Candles

The use of scented materials within closed or poorly ventilated environments such as incense, candles and aerosol-based commodities has increased in popularity. Some of these products are designed to release scent into the air at regular intervals and all of these emit particles and other pollutants when they burn or are in use. Incense sticks can give out over a hundred times more fine particles than scented candles. Candles are less of a health risk, but some fragranced candles may contain volatile organic compounds (VOCs). Individuals who use these products should be warned of the risk of increased indoor air pollution and to only burn these products in a larger space with open windows as opposed to smaller spaces such as a bathroom.

## Mould Formation

**Individuals can be advised to reduce moisture levels and reduce the risk of damp and the development of mould by:**

- **Controlling moisture: Use dehumidifiers, fix leaks, and ensure proper ventilation.**
- **Cleaning regularly: Especially in areas prone to dampness like bathrooms and kitchens.**
- **Using air purifiers: With EPA filters to reduce airborne spores.**

Moulds are fungi that grow in the form of multicellular filaments called hyphae. They reproduce via spores, which can be airborne, and they thrive in moist and warm environments. When mould spores are inhaled, they can cause various respiratory issues, particularly in individuals with pre-existing health conditions or compromised immune systems.[3] Exposure can trigger allergic reactions, infections, exacerbations of conditions such as asthma and COPD, and in rare cases toxicity. Where the level of risk cannot be modified, optimisation of treatment for known conditions is essential and individuals may require support to instigate improvements when in social housing or private rental.

PCRS has template letters for healthcare professionals to adapt to support patients to seek support from landlords to address pollutants at home - as shown via these QR codes

Asthma

COPD

## Radon Exposure

Radon is a naturally occurring radioactive gas that results from the decay of uranium in soil, rock, and water. It is colorless, odorless, and tasteless, and can accumulate to dangerous levels indoors, particularly in lower areas such as basements and crawl spaces. It enters buildings through cracks in foundations, walls, and floors, or gaps around pipes and cables. Exposure to high levels of radon gas can significantly increase the risk of lung cancer. Individuals who live in a high radon area, which is usually the west of the UK, where many houses are built on granite can have an increased risk of radon exposure. More information on Radon including a Radon Address search option is available at https://www.ukradon.org/information/risks. Individuals living in high radon areas should seek advice on getting tested.

## Outdoor air pollution

There are many pollutants in the air and the level of exposure varies from one area to another. Some pollutants are more closely monitored in the environment than others because they are known to cause significant damage.[4] The primary known pollutants include ozone, nitrogen dioxide, particulate matter and sulphur dioxide.

Nitrogen dioxide is a toxic gas in the air. Levels are higher on busy roads - particularly on roads with heavy vehicles like lorries or where traffic is moving slowly – around industrial sites like factories, building sites, and again where fossil fuels like coal and oil are burned. Although there has been a drive towards electric vehicles in recent years which are better for the environment, they still produce particulate matter from brake and tyre wear, and road dust.

Ozone is produced when sunlight combines with nitrogen dioxide, particulate matter and other gases. Particulate matter is made up of tiny pieces of varying sizes of solids or liquids in the air, for example, dust, dirt or smoke. Particulate matter levels increase at different times of the year, one example of this is in early November around bonfire night. People should be made aware of this and advised to avoid spending a long time outside during these days. The smoke from fireworks and bonfires can create what's known as winter smog, which can be worse on cold still days. Particulate matter can also be produced naturally from volcanoes, sea spray, pollen and soil.

You'll also see higher levels of ozone in the spring and the summer and in the afternoons. Ozone levels are also often higher in the countryside rather than in towns. This is sometimes called the 'ozone paradox'. Ozone can be degraded by the compounds (NOx) by which it is also formed. Lower ozone levels tend to occur in the winter and the mornings so people should be advised that if they need to go out during the day go in the morning when these levels are lower, particularly if they are sensitive to high pollution levels.

Sulphur dioxide is mainly produced by burning fuels like coal and oil. This includes domestic heating, factories, petrol refineries and building sites, sulphur dioxide can also be a primary cause of smog.

The effects of these pollutants on health depend on the type and the mix of pollutants, their concentration in the air, the amount of time of exposure and how much of the pollutant can penetrate the lungs. Lung health symptoms such as wheezing, cough, chest tightness, and shortness of breath in people with asthma can be seen straight after exposure to high pollution levels, increasing the risk of somebody having an exacerbation of their asthma. Being exposed to air pollutants for long periods has also been shown to increase the occurrence of lung diseases including cancer and so advising individuals who are exposed to both indoor and outdoor pollutants of the additional more avoidable risk of smoking is important.

People with existing lung disease and other vulnerable groups such as children and the elderly should be advised to check the air pollution alert for the day in their area using the Department for Environment, Food and Rural Affairs UK Air Information also known as DEFRA in order that they can make informed choices about travel and outdoor activity plans.

### How polluted is your street?

**The BBC has a webpage in which you can enter your postcode to find out how polluted your street is on a scale of 1-6 – see https://www.bbc.co.uk/news/science-environment-42566393**

## Climate Change

Climate change disproportionately affects the most vulnerable in societies including older people, children, disadvantaged socioeconomic groups and those living in the most fragile of countries.

Climate change has a direct impact on extreme weather, forest fires, flooding and heat waves. Extreme heat can trigger asthma symptoms for some people. The exact causes are not completely clear, but breathing in hot air can cause the airways to narrow, leading to coughing and shortness of breath. Secondly, when temperatures are higher in the summer, there are also often higher levels of pollutants and pollens in the air. During pollen season windy conditions caused by thunderstorms can blow pollen high up into the air. The moisture higher up breaks the pollen down into much smaller pieces, which are then settled back down in the atmosphere where they can be breathed in, irritating the smaller airways of the lungs and causing inflammation.

According to the Lancet Countdown Report,[5] heat-related deaths in the elderly have increased by more than 50 % in the past two years.

In extreme cold, breathing in dry cold air irritates the airways and this causes them to be constricted, causing difficulty in breathing. Cold air also increases mucus production and, the risk of infections such as influenza, and it forces people to stay

indoors more often, increasing their exposure to indoor air pollution.

In February 2019, NICE issued its Quality Standard on outdoor air quality and health for England and Wales (QS181).[6] The statement recommends that clinicians provide patients with chronic respiratory conditions with advice on what to do when outdoor air quality is poor. This advice should be offered at routine appointments and enable patients and their families or carers to protect themselves and prevent their respiratory condition from worsening.

The emphasis of treatment for patients with respiratory disease is to minimise and modify where possible exposure to both indoor and outdoor pollutants. Ensure that they are adhering to the inhaler regime they are prescribed, keep their inhalers in a cool place and out of direct sunlight to ensure they continue to work well, and that they know they can request a review, even if not due their annual overview if they remain symptomatic. Warnings of the impact of weather conditions should be included in the personalised action plans so your patients know what to do if hot or cold weather triggers any symptoms. Advise them to monitor pollution and pollen forecasts so they can anticipate any worsening or deterioration in their symptoms and ensure that your patients with pollen-related atopy utilize antihistamines in advance of symptoms worsening.

### Advice for patients on mitigating the effects of climate change include:

- Avoiding or reducing strenuous activity outside, especially in highly polluted locations such as busy streets, and particularly if experiencing symptoms such as sore eyes, a cough or sore throat
- Using an asthma/COPD reliever inhaler more often, as needed
- Closing external doors and windows facing a busy street at times when traffic is heavy or congested to minimise the amount of polluted air coming into the home
- Being aware of expected outdoor air quality in the days ahead so that time outside the home can be planned or minimised as appropriate.

### Sources of information on national and local air pollution levels

- **Government monitoring services:**
  - UK-wide: Department for Environment, Food and Rural Affairs Daily Air Quality Index (https://uk-air.defra.gov.uk/)
  - Scotland: http://www.scottishairquality.scot/
  - Wales: https://airquality.gov.wales/
  - Northern Ireland: https://www.airqualityni.co.uk/
- **Text messaging services:**
  - London: https://www.airtext.info/
  - Hertfordshire and Bedfordshire https://www.airqualityengland.co.uk/local-authority/knr-subscription
  - Manchester https://cleanairgm.com/data-hub/forecast-and-alerts/text-sign-up/
  - Sussex: https://airalert.info/Splash.aspx
  - Scotland: http://www.scottishairquality.scot/know-and-respond/

Pollution, both indoor and outdoor, can have a negative effect on respiratory health particularly those with pre-existing respiratory conditions, the frail and vulnerable. People need support and guidance as to how best to reduce risk and exposure.

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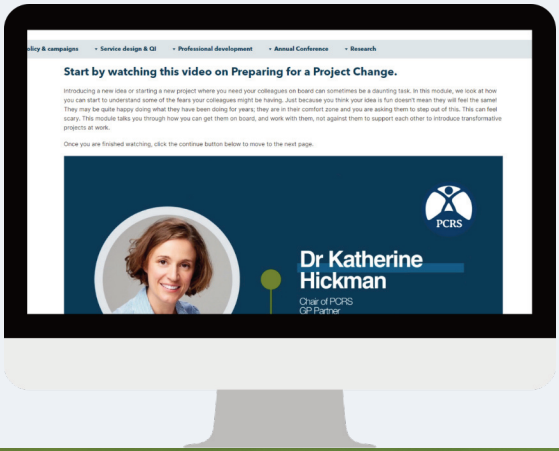


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# Tiny Habits

**Dr Katherine Hickman,** *Executive Committee Chair*

**In this article, Katherine discusses how small changes can have big impacts on creating new habits and supporting health.**

Ten years ago I suffered a period of burnout. It was a feeling of complete exhaustion when I struggled to muster the energy to open a can of beans to feed my kids. As a GP I knew what I should be doing. I should have been eating healthily, sleeping, exercising, goal-setting, meditating, and socialising with my friends and family. But I didn't know where to start. I didn't permit myself to start small, to meet myself where I was: exhausted, overwhelmed, and burnt out.

I came across the Headspace app amid a period of social media doom scrolling and downloaded it. I knew I had to start somewhere. Each morning, I came downstairs, turned the kettle on, and opened the app. It was a while before I tried 10 minutes of meditation. I didn't feel anything and certainly didn't feel any better, but I continued to persevere - turning on the kettle, opening up the app, and, when I felt like it, doing 10 minutes of meditation. I started to heal. My kids noticed when I hadn't meditated as I was snapping at them. By starting my day with something small, something positive, and something for me I created a ripple effect: I started to eat and sleep better, I was exercising again, thinking about my future, and socialising.

We are all human regardless of our jobs, education, or knowledge of what we 'should be doing' but adopting and sustaining healthy lifestyle changes is a perpetual challenge. How often do we consider this when telling patients to take their preventer inhaler morning and night without forgetting or to keep up their pulmonary rehabilitation exercises daily? When we tell them they should be exercising 30 minutes 5 times a week, and eating five pieces of fruit and vegetables a day, do we ever stop and consider if we are doing the same? We are no different from our patients and the daunting prospect of overhauling our habits can lead to resistance and inertia.

Amidst this complexity, there exists a simple, yet profound approach pioneered by behaviour change scientist BJ Fogg: Tiny Habits®. This paradigm shift in behaviour change offers a promising option for us as healthcare professionals to guide our patients, and let's face it ourselves, toward sustainable transformations. In this article, we delve into the principles of Tiny Habits® and explore practical strategies for implementing them with our patients.

## Understanding Tiny Habits

At its core, Tiny Habits® is rooted in the belief that lasting change begins with tiny behaviours that last less than 30 seconds and can be performed even when we are at our lowest ebb and unmotivated. In fact, it takes motivation out of the equation altogether as it is unreliable and inconsistent. BJ Fogg, director of the Behaviour Design Lab at Stanford University, developed this framework based on his extensive research in behavioural change psychology. Central to the Tiny Habits® methodology are three key components:


**1. Anchor:** Identifying existing routines or prompts that can act as anchors for our new habits. These anchors are already part of our routine, they are solid and automatic. Very often we aren't even aware of them. They can be daily activities, such as brushing teeth, getting in and out of bed, putting the dishwasher on, or turning on the kettle. These are our new Post-it notes or reminders to do our new behaviour NOW.

**2. Behaviour:** Once you have decided what behaviour you want to introduce into your life i.e. drinking 2 pints of water every morning, reading for 30 minutes before bed, or walking for 30 minutes 5 times a week you distill this down into a tiny behaviour i.e. something that takes less than 30 seconds - One sip of water, opening up a book or putting on your walking shoes. You attach this new behaviour to your Anchor

**3. Celebrate:** And then you Celebrate. This is immediate and needs to be authentic to you. It can be as simple as feeling good inside or as fun as dancing on the spot; whatever works for you. The Celebration releases a burst of dopamine in your brain telling it that this is something good, something that you want to do more of, and over time the tiny behaviour grows organically into something bigger

### Implementing Tiny Habits® in Patient Care

Tiny Habits® offers a pragmatic approach to supporting patients in adopting healthier behaviours. Whether it's managing chronic conditions, improving nutrition, or increasing physical activity, integrating Tiny Habits® into patient care can facilitate sustainable lifestyle changes. Here's how we can leverage the Tiny Habits® framework:

1. Personalised Assessment
   Begin by conducting a comprehensive assessment of the patient's current lifestyle, including their habits, routines, and areas for improvement. This personalised approach ensures that Tiny Habits are tailored to the individual's unique circumstances and preferences.
2. Identifying Anchors
   Collaborate with the patient to identify existing Anchors that can serve as the foundation for new habits. For instance, if a patient regularly drinks tea in the morning, the routine of turning on the kettle can be leveraged as an anchor for introducing a new habit, such as doing a squat or a deep mindfulness breath.
3. Introducing Tiny Habits
   Encourage patients to start small by introducing tiny habits that align with their health goals. Emphasise simplicity, ensuring that each tiny habit is easily achievable within their daily routine. For example, a patient aiming to drink more water could start by drinking a sip of water after cleaning their teeth.
4. Cultivating Consistency
   Highlight the importance of consistency in building habits. Encourage patients to practice their tiny habits consistently, ideally at the same time and context each day. Consistency reinforces neural pathways associated with the behaviour, making it more automatic over time.
5. Celebrating Progress
   Encourage patients to celebrate their achievements, no matter how awkward it might make them feel. Work with them, to find a celebration that feels natural and authentic. Encourage them to acknowledge and appreciate their efforts, whether it's with a verbal affirmation, a fist pump, or a simple moment of reflection. Celebrating progress reinforces positive behaviour and strengthens motivation for continued action.
6. Iterative Adaptation
   Recognise that behaviour change is an ongoing process that may require adjustments along the way. Regularly reassess the effectiveness of the tiny habits and be prepared to modify or introduce new habits as needed. There is considerable overlap with Quality Improvement methodology – Plan, Do, Study, Act. Flexibility and adaptability are essential components of sustainable behaviour change.

## Case Study: Supporting Martha in Managing Her COPD

Martha, a 65-year-old woman, has been living with COPD for several years. Despite receiving education on the importance of pulmonary rehabilitation, she struggles to incorporate the prescribed exercises into her daily routine. Martha's GP, recognising the need for personalised support, implements the Tiny Habits framework to facilitate behaviour change:

### Personalised Assessment

Martha's GP conducts a comprehensive assessment of her COPD management, including her current exercise habits, medication adherence, and challenges she faces in her daily life.

#### Identifying Anchor Behaviours

Through collaborative discussion, Martha and her GP identify existing anchors that can serve as triggers for new habits. They discover Martha consistently takes her inhalers after preparing breakfast, making this routine an ideal anchor for introducing new habits.

Tiny Habit 1: After taking her inhalers, Martha will perform two squats and celebrate.

Tiny Habit 2: After Martha sits down to eat her breakfast she will take two deep mindfulness breaths, focusing on deep inhalation and controlled exhalation then celebrate.

Tiny Habit 3: After Martha sits down to watch TV she will pick up her phone and text a friend from her Pulmonary Rehabilitation class.

#### Cultivating Consistency

Martha commits to practicing her Tiny Habits consistently, aiming to complete them at the same time and context each day. Her GP emphasises the importance of repetition in building habits and encourages Martha to persevere, even on challenging days - 'Practise Makes Better'.

#### Celebrating Progress

Martha celebrates her achievements by acknowledging her efforts after completing each tiny habit. She finds happiness in the sense of accomplishment and uses positive self-talk to reinforce her commitment to improving the management of her COPD.

### Iterative Adaptation

As Martha progresses in her COPD management journey, her GP regularly assesses the effectiveness of the Tiny Habits and makes adjustments as needed. They explore additional strategies to support Martha's adherence and address any barriers that may arise.

### Impact and Outcomes

Over time, Martha experiences significant improvements in her COPD management through the consistent practice of Tiny Habits. By integrating squats and breathing exercises into her morning routine and proactively keeping in touch with friends to reduce her isolation, Martha feels more in control of her condition and experiences fewer exacerbations. She reports feeling more confident in her ability to manage her COPD.

### Conclusion

The case of Martha illustrates the transformative potential of Tiny Habits in respiratory care. By focusing on small, manageable actions and leveraging existing routines, we can give patients agency to initiate and sustain healthy behaviours essential for managing respiratory conditions. Through personalised assessment, targeted intervention, and ongoing support, Tiny Habits offer a practical and effective approach to improving adherence to treatment plans and enhancing respiratory outcomes. As healthcare continues to evolve, integrating the principles of Tiny Habits into clinical practice holds promise for revolutionising respiratory care and giving patients the agency to live better.

# Respiratory Health and Health Inequality and Inequity

**In February 2020, the Institute of Health Equity published its landmark report, Marmot Review 10 Years On.[1] It highlighted that for the first time in 100 years, life expectancy has failed to increase across the country, and for the poorest 10% of women it has actually declined. The report went on to state that in the last decade, health inequalities have widened overall, and the amount of time people spend in poor health has increased since 2010.**

**In this, the first in our series on respiratory health, health inequality, and inequity we will be exploring some of the health inequalities that impact respiratory health, and in this issue we'll cover tobacco smoking.**

Under the Equality Act 2010,[2] there are 9 protected characteristics. However, there are 'other' inequalities that are constantly evolving and changing according to the environmental, social and political issues of the time, both within the UK and globally. Healthcare professionals in primary and community care will often see these new challenges first as they are the closest in the health system to the experiences of entire communities.

**The nine protected characteristics under the Equality Act 2010(2)**

- Age
- Disability
- Marriage and civil partnership
- Pregnancy and maternity
- Gender reassignment
- Race
- Religion or belief
- Sex
- Sexual orientation

Sometimes an inequality may be hidden or a patient may not be sure how or whether to share their situation. It is within the remit of the primary care health practitioner to utilise their consultation skills to create a safe space to elicit such a disclosure.

For example, in a respiratory consultation attending to diagnosis or review of asthma or COPD, there are several ways in which a patient may give a cue either voluntarily or involuntarily. There are also opportunities during non-respiratory consultations to explore respiratory health.

In general practice, there are also opportunities to explore potential hidden inequalities during other consultation scenarios. For example, a wound that is not healing may suggest poor housing, poor nutrition, tobacco or drug use and general enquiries about the broader daily experience can reveal what is happening. The same wound review can also be an opportunity to talk about general health including respiratory health with questions about breathlessness and cough.

### Achieving equity as well as equality

The Equality and Human Rights Commission[3] describes equality as " Ensuring that every individual has an equal opportunity to make the most of their lives and talents." Equity, however, is about giving people what they need to make things fair and help them reach that same level of opportunity.

Much has been implemented in the last two decades to try and give every citizen equal access to healthcare. In the respiratory sphere, standards of care and quality in asthma and COPD have been developed by UK national guideline bodies such as the Scottish Intercollegiate Guidelines Network (SIGN) and the National Institute for Health and Care Excellence (NICE) to address variation between practices, localities, and regions. These standards have been translated into 'targets' for practices to achieve within the Quality and Outcomes Framework (QOF)[5] and these remain in some areas of the UK. In reflecting on the impact of asthma and COPD standards it can be said that every practice in the UK now has a register of people with asthma or COPD and as a consequence, there is a single system by which respiratory long-term condition care can be organised so that people are offered current standards of diagnosis and treatment.

**Did the QOF standards provide equal access to respiratory diagnosis and management?**

Whilst we have a defined, measurable and comparable system that could ensure all have equal access to a basic standard of diagnosis and subsequent care, the reality is that not everyone receives the correct diagnosis and care. Variation remains[6] and the challenge is to understand why.

**Table 1.** Consultation cues for exploring additional support due to inequalities and personal characteristics

| Scenario | Consultation cues | Potential problems and additional support needs |
|---|---|---|
| At Diagnosis | Patient unable to complete a peak flow diary, symptom score questionnaire | Poor literacy<br>Financial support - Unable to afford PEFR meter prescription<br>Learning disability<br>Visual impairment<br>Cognitive loss e.g. dementia<br>Home testing not carried out due to cultural / peer group shame of having asthma |
| | Repeated failures to achieve a successful spirometry or FeNO trace | Poor coordination<br>Cognitive loss<br>Physical impairment |
| At review | Inhalers not brought to consultation review | Financial support - Unable to afford inhalers |
| | Not responding to treatment | The SIMPLES[3] process was designed for all people with asthma but may have particular application for people experiencing inequality |
| | Frequent exacerbations of asthma or COPD | Inhaled substance misuse |
| During therapies | Does not attend PR assessment or subsequent classes | Geographic isolation / transport poverty<br>Literacy and understanding<br>Fear of not fitting into group due to race, sexuality, gender reassignment |
| | Declines flu, pneumococcal or COVID immunisation | Cultural beliefs |

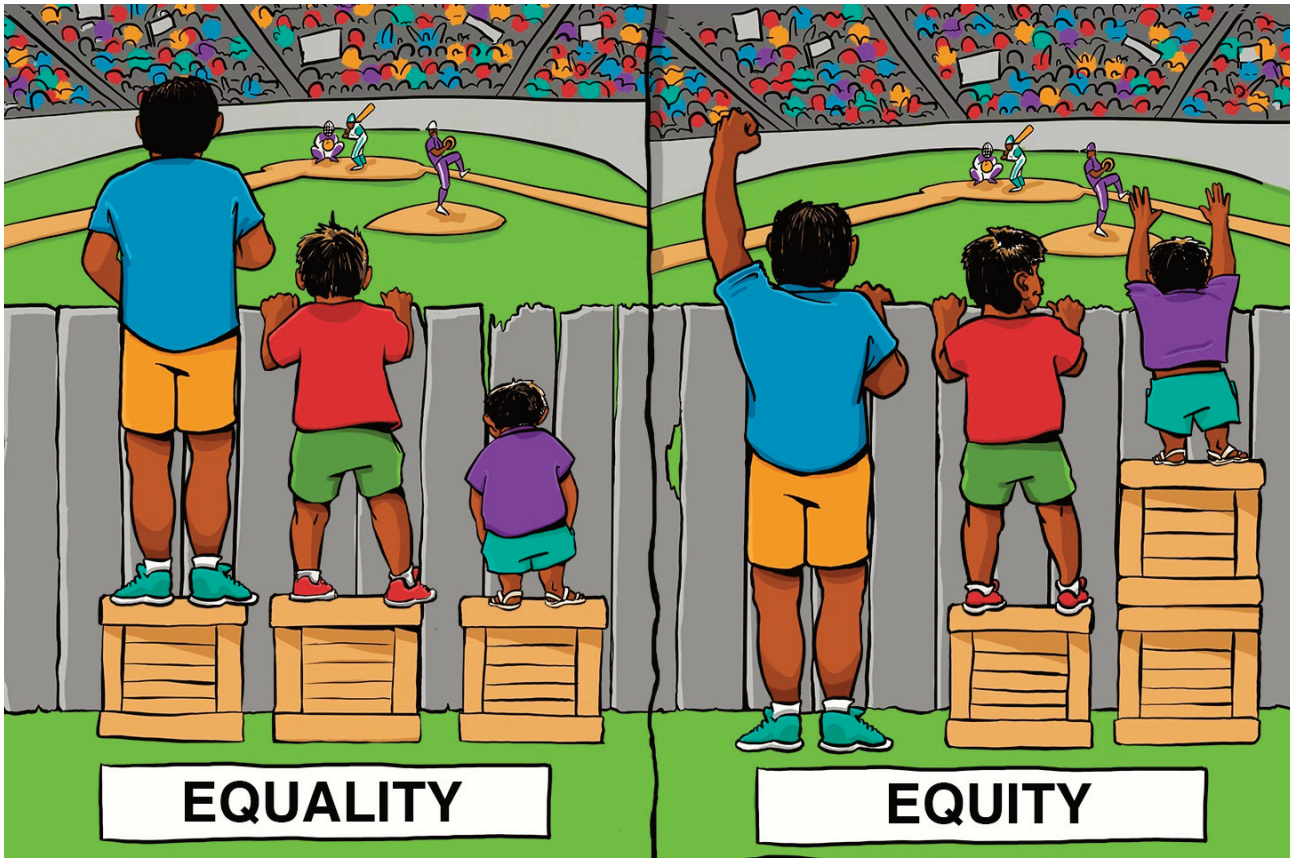



Image Credit: Interaction Institute for Social Change | Artist: Angus Maguire – see interactioninstitute.org and madewithangus.com respectively

**Table 2.** Examples of the challenges of delivering UK respiratory standards due to inequity

| UK Standards | Challenges to achievement |
|---|---|
| Quality and Outcomes Framework (asthma/COPD) [5] | **AST 005/COPD 015 - Register**<br>Ability to register with a practice (PEH, asylum seeker)<br>**AST 011/COPD015 - Objective Diagnosis**<br>Ability to afford a PEFR meter or purchase salbutamol for a reversibility test.<br>Ability to keep appointments (PEH, Mental illness)<br>Ability to follow instructions (Dementia, LD)<br>**AST 007/COPD 010 - Annual review including questionnaire and PAAP (asthma), exacerbation and MRC breathlessness assessment (COPD)**<br>Ability to receive a recall / appointment (Digital exclusion, Geographic exclusion, PEH)<br>Ability to comprehend / record questionnaire or PAAP (LD, Dementia, Mental Illness, Race, Language, Sensory Impairment)<br>**AST 008 - Smoking status/exposure in children and young people**<br>Ability of service to engage with teenagers<br>Perceived openness of service to parents from deprived settings<br>**COPD 014 / BTS QS 1&4 - Referral to Pulmonary Rehabilitation / Attend regular programme**<br>Ability to travel to a venue on a regular basis for 6 weeks (Geographic exclusion, transport poverty, financial poverty<br>Perceived acceptance/rejection in a group setting (Race, Sexuality, Age, Gender reassignment) |
| BTS Pulmonary Rehabilitation Quality Standards 2014[7] | **BTS QS 3 - Referral after hospitalisation for COPD**<br>Ability to receive and act on an appointment letter (PEH, Asylum Seeker, Sensory Impairment, Race, Dementia)<br>**BTS QS 5 - Progressive exercise including aerobic and resistance**<br>Ability to stand and walk (Physical disability)<br>**BTS QS 6/7 - Education programme / Written plan for discharge activity**<br>Ability to comprehend, pay attention, hear, see and find relevant the educational content (Sensory impairment, cognitive impairment, mental illness, race, age)<br>Ability to travel to and pay for exercise programmes (Poverty, geographic exclusion, digital exclusion) |

It is important for those of us working in primary care to reflect on practice respiratory performance through the lens of inequality. We must consider whether we are addressing inequity within our practice population. How can we identify patients who are most likely to suffer from health inequity? Are we doing anything about it?

Whilst primary care cannot re-house or re-school children exposed to traffic pollution and while bigger system and policy change is awaited, there is a role for primary care in recognising the problems and providing evidence-based advice and interventions to help manage the risk.

## Focusing on respiratory health risks that overlap the inequalities – smoking

Smoking is responsible for half the difference in life expectancy between the most and least advantaged in society and is the single largest driver of health inequalities in England. It is associated with economic poverty and it is more likely to sustain through generations where families already smoke. The expense of smoking makes an escape from poverty even harder. Smoking is also more prevalent in people with mental illness, those in contact with the justice system, looked after children (LAC) and LGBT+ people.[8]

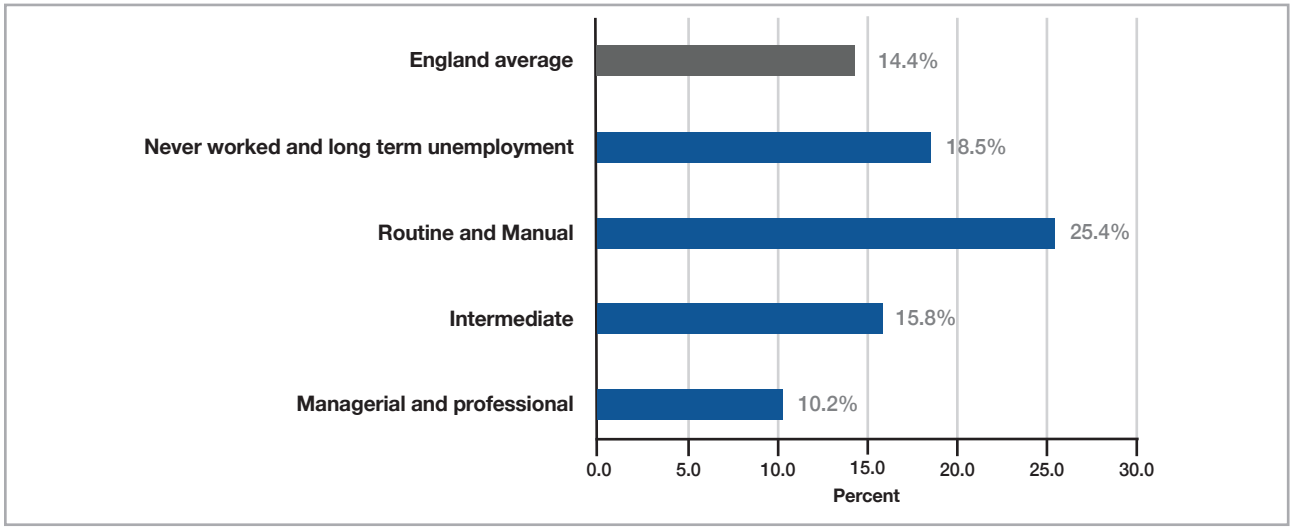
Tobacco smoking remains, by far, the predominant cause of COPD,[9] and continued smoking increases exacerbation risk. The risk of an asthma exacerbation is also increased with exposure to active and passive tobacco smoking.[10]

Quitting tobacco is effective in reducing COPD exacerbations, asthma attacks and improves asthma control.[11,12] Quitting reduces the rate of decline of FEV1 in COPD in ex-smokers[13] and the earlier someone quits the better, though it is never too late.

## Smoking prevalence by socio-economic group, 2019 (Public Health England)

Smoking is associated with greater absolute mortality risk for individuals in lower socioeconomic groups. This suggests greater public health benefits of smoking prevention or cessation in these groups. However, it is important to highlight that tobacco use as a risk for early mortality exceeds the risk of having a lower socio-economic status. A long-term, 28-year cohort Scottish study of 15,400 people showed that smokers in the highest socio-economic group were more likely to die earlier than non-smokers in the lower SEG.[14]

In 2016, PCRS published its *Pragmatic Guide to Diagnosis and Management of Tobacco Dependency*. In this document, it was noted that there was significant underuse and under-dosing of the highly effective pharmacotherapies during quit attempts. To provide that step-up for people who find it harder to quit and who tend to suffer from inequality primary care must ensure




appropriate and adequate prescription to manage the higher nicotine withdrawal that these people experience when trying to quit.

The expert group who devised this guide concluded that with the utilisation of guideline and evidence-based tobacco cessation care, there could be a significant impact on 1. improved individual health outcomes and quality of life; 2. equitable socioeconomic and geographical distribution of healthcare resources; and 3. improved long-term population health outcomes including reducing health inequalities.

The Public Mental Health and Smoking Report[15] has several recommendations some of which are relevant and could be used by primary care as part of a step-up approach to addressing inequity:

- Maximise existing professional contacts to motivate **more quit attempts**.
- Connect people to **dedicated support**, to improve quit success.
- Maximise the uptake of **alternative sources of nicotine**, to increase quit success.
- **Improve skills and knowledge** of mental health professionals, to enable them to **motivate** and support quit attempts.

Read our article on the following pages to help you to support patients to quit tobacco. It includes information on the most recent treatments available and advice on supporting patients to instigate a quit attempt. You can also visit our tobacco dependency pages using the QR code shown.

Further articles covering pollution, poverty, poor nutrition, health literacy, and more will follow in future issues. You can find more information, tools, and resources on our campaign page using the QR code shown.

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# Tobacco dependency is a long-term relapsing condition that usually starts in childhood

## Knowing how to use Very Brief Advice to instigate a quit attempt and supporting smokers who are ready to quit is the business of every healthcare professional

**Treating tobacco dependency systematically and effectively will have a significant impact on the triple aim:**

- **improved individual health outcomes and quality of life**
- **equitable socioeconomic and geographical distribution of healthcare resources; and**
- **improved long-term population health outcomes including reducing health inequalities.**

**A range of evidence-based pharmacological treatments exist to support smokers facing the difficulty of behaviour change and breaking nicotine addiction. Stop smoking support, across the board, is a clinically and highly cost-effective long-term intervention for people with smoking-related long-term disease.**

### 30 seconds to save a life

Tobacco Very Brief Advice (VBA) is a basic healthcare competency that has to be learned – it is not a chat – it is an evidence-based intervention.[1] For more information on how to deliver effective VBA visit the National Centre for Smoking Cessation and Training (NCSCT) website at https://elearning.ncsct.co.uk/vba-stage_1. You can also access online training materials via the Medthority learning portal at https://bit.ly/3RwUe9U

Patients expect to be asked about their smoking by a clinician. In England, around 60% of smokers want to quit, 10% of whom intend to do so within 3 months.[2] Now, there's never a been better time to stop with so many options available to support quitting.

*"The evidence is clear - if you take the foot off the pedal, smoking rates don't continue to fall."*

(Source ASH[3])

**The cost of smoking to society is far broader than health and the environment.**
See what it costs in your local area (England only) scan the QR code

Make sure you have accessible information, backed up by trained reception staff or counter assistant staff in pharmacies, who can facilitate access to the right stop-smoking interventions and healthcare professionals who are trained and confident to help those ready to quit.

**Are you prepared to support your patients to quit?**

Be ready with Very Brief Advice, a simple and powerful approach designed to be used opportunistically in less than 30 seconds in almost any consultation with a smoker.

**ASK-ADVISE-ACT**

Have the tools you need on your desk and in your room:

- Examples of stop-smoking medicines – demonstrate their use and consider them as treatments
- A health and wealth wheel
- Details of online resources and local stop-smoking services where available. The SMOKEFREE campaign website is a good place to start: https://www.todayistheday.co.uk/
- https://campaignresources.dhsc.gov.uk/campaigns/better-health-quit-smoking/

## ASK

and record smoking status

***"Do you smoke?"***

## ADVISE

on the most effective way of quitting

***"Did you know that the best way of stopping smoking is with a combination of specialist support and medication or e-cigarettes?"***

***"I can refer you to our friendly local stop smoking service that many of my patients have found useful."***

or ***"You can receive support right here in our clinic/hospital/local pharmacy."***
**or** add any other support options available locally.

## ACT

on patient's response

### INTERESTED

Build confidence.
Give information. Prescribe.

**Refer to:** local Stop Smoking Service
**OR** in-house stop smoking support
**OR** any other support options locally available.

**Patients are three times more likely to quit with support and medication.**

**FOLLOW-UP**
**Make a note of the referral and ask about smoking status next time you see the patient.**

### NOT INTERESTED

*"It's your choice of course. Help will always be available. You can always return to see me, contact the smokefree helpline or your GP if you change your mind."*

**Ensure patient understands where to find support.**

**REASSESS**
**Repeat VBA at future visits and at least once a year.**

# Treatments available

**Tobacco dependence treatment options, both pharmacological and advisory, are inexpensive and judged by the National Institute of Health and Care Excellence (NICE) to be highly cost-effective in terms of life years gained.[1] Behavioural support alongside a stop-smoking tablet or nicotine replacement therapy (NRT) is the most effective approach for most people wishing to quit. When using NRT, ensure you are prescribing enough to manage the nicotine withdrawal symptoms. The best way to do this is often by giving more than one delivery system – ideally a long-acting combined with a short-acting form – so patients can fit it into their daily life. Like inhaler devices, coaching on technique is important and ideally should be done in person (video or F2F). NICE recommends that combination NRT should be considered as a viable option for smokers wanting to quit.[1]**

**Cochrane evidence synthesis reveals nicotine e-cigarettes (vaping devices), varenicline and cytisine are the stop-smoking aids most likely to help people quit smoking.[4,5,6] The data showed around 14 in 100 quitting vs 12 in 100 quitting via combination NRT vs 6 in 100 via no aid (cold turkey) based on a 6-month minimum cessation period.[6]**

**The act of stopping smoking itself may alter the liver metabolism of insulin, theophylline and warfarin, for example. Psychoactive medication requirements may change for the same reason, so extra monitoring is usually required in those with more serious mental health problems and on certain medicines.**

## Medication Options to Support Smoking Cessation

### Cytisine

- Cytisine, like varenicline, works in the brain as a partial agonist of the α4β2 nicotinic acetylcholine receptor, this may help reduce the urge to smoke by blocking the actions of nicotine.
- It has been used in parts of Europe for several decades.
- Cytisine is contraindicated in the under 18s and over 65s, people who have had a hypersensitivity reaction to the drug, pregnant or lactating women, unstable angina; recent MI or stroke; clinically significant arrythmia and those with renal and hepatic impairment.
- The duration of treatment is 25 days and dosing is quite complicated. It is recommended to use alarm reminders and a dosing chart which is supplied.
- See SPC for further information.
- https://www.ncsct.co.uk/publications/category/cytisine

### Varenicline tartrate

- Varenicline, like cytisine, works in the brain as a partial agonist of the α4β2 receptor.
- Varenicline tartrate is contraindicated in the under 18s, people who have had a hypersensitivity reaction to the drug, pregnant or lactating women and those with end-stage renal disease.
- Varenicline can be used in people with stable mild, moderate and severe mental illness.[7,8]
- Varenicline tartrate has no known clinically meaningful drug interactions (for full details please see the summary of product characteristics at (http://emc.medicines.org.uk). The main side effect is nausea which affects about a third of patients, so warning of this before prescribing is a good idea.
- There are supply disruptions because of elevated nitrosamine levels.
- A nitrosamine-compliant, unlicensed varenicline is available in the UK
- https://www.ncsct.co.uk/publications/category/varenicline

### Bupropion

- Bupropion's mode of action is unclear, but it is thought to work as a dopamine re-uptake inhibitor, reducing the need for the next cigarette because of the fall in dopamine levels.
- Side effects include insomnia, headache, dry mouth, and nausea. It is reported to cause seizures in one per 1,000 people and medicines that lower the seizure threshold should be avoided.[9]
- It has a larger number of drug interactions than cytisine and varenicline (hepatic metabolism) and cautions – please refer to the latest product information sheet at https://www.medicines.org.uk/emc/product/3827
- It should be avoided in under 18s, pregnancy and lactation. Please refer to the latest product information sheet for details at https://www.medicines.org.uk/emc/product/3827
- Some patients express a preference for bupropion if they have used it before or if it has been recommended by a friend.

## Behavioural support

**Local stop smoking service**
Minimum of six sessions of behavioural support from a trained stop smoking practitioner

**In-house stop smoking service**
Behavioural support from a trained stop smoking professional such as a GP, practice nurse, maternity care provider or community pharmacist

**Proactive telephone-based support**
Behavioural support from the Smokefree helpline service or a trained stop smoking practitioner by telephone

**Single intervention**
Advice and behavioural support from a trained health care professional (eg. GP, nurse, maternity care provider or community pharmacist)

**Digital support**
Advice, tips and information and remote support from a stop smoking app and/or text messages

**Self-help**
Print or digital self-help material and/or contact information for Smokefree helpline

## Medication and/or e-cigarette

### First choice

- Varenicline or Cytisine
- Combination NRT (patch + faster-acting product)
- E-cigarettes (vapes)

### Second choice

- Nicotine replacement therapy (single product)
- Bupropion

## Nicotine replacement therapy (NRT)

- NRT is available in dermal patches, gum, lozenge, sublingual tablets, inhalators, mouth sprays and nasal sprays.
- Discuss patient preference, highlighting the benefits and disadvantages of each option. The patch is easy to use and available in different strengths but does not offer replacement activity for smoking whereas the gum, inhalator, lozenge, microtabs and nasal spray can all be titrated to nicotine needs and offer a replacement activity for smoking when there's an urge to smoke (the sprays act the fastest working within 60 seconds). Good technique is important to reduce side effects. Patients can possibly expect some skin irritation with the patch, hiccups with the mouth spray, sneezing and watery eyes with the nasal spray, mouth or throat irritation with the oral products for example.
- The degree of nicotine addiction and therefore the required dosage of NRT is best decided by asking how long after waking the first cigarette is smoked, the so-called "Time To First Cigarette" (TTFC). If the TTFC is less than 30 minutes, the maximum dose should be used.
- NRT can be prescribed in pregnancy, breastfeeding and in children from the age of 12 years.
- Swallowed nicotine may exacerbate symptoms in patients suffering from oesophagitis, gastritis, or peptic ulcers and oral NRT preparations should be used with caution in these conditions.

## Vaping Devices (E-cigarettes)

- Based on the current evidence, PCRS-UK supports electronic nicotine delivery systems (ENDS), including vaping devices (e-cigarettes), as a positive option available to support people to quit tobacco smoking.[10]
- Good technique is important to optimise nicotine delivery. The main side effects reported include throat and mouth irritation, and a dry cough which usually subside over time.
- According to NICE, vaping is far less harmful than smoking, but is not risk free. The hazard to health arising from vapour inhalation from vaping devices when used to support a quit attempt is considered to be substantially less harmful than smoking tobacco.
- Vaping to support smoking cessation is supported by Public Health England,[11] the Royal College of Physicians[12] and the Royal College of General Practitioners[13]
- The MHRA is the competent authority for the UK's vapes.
- Adverse events should be reported via the yellow card scheme - https://yellowcard.mhra.gov.uk/
- Swap to Stop scheme (England)[14]: Almost 1 in 5 of all smokers will be provided with a vape starter kit alongside behavioural support to help them quit.

**IF YOU DON'T SMOKE, DON'T VAPE**

**CHILDREN SHOULD NEVER VAPE.**

### SOME MYTHS AND FACTS ABOUT VAPING:

**The NHS provides some helpful advice about vaping myths and the facts - scan QR code**

***For transparency, it's important to be aware some products are owned by tobacco companies.***

**Children and vaping:**

- 1 in 5 children have tried vaping. The number of children using vapes has tripled in the last three years (2021 to 2024)[15]
- Around 400,000 children aged between 11-17 vape in 2023, ¼ of these children have never smoked[16]
- Disposable vapes are clearly linked to the rise of vaping in children[15]
- They are cheap and easy to use, with 69% of current vapers aged 11 to 17 in Great Britain using them.[15]
- They are also incredibly harmful to the environment. Five million disposable vapes are either littered or thrown away in general waste every week.[17]

The active ingredient in most vapes is nicotine, which when inhaled, is a highly addictive drug. The addictive nature of nicotine means that a user can become dependent on vapes, especially if they use them regularly. In April 2024, the UK Government published a blog on creating a smoke-free generation and tackling youth vaping – see https://bit.ly/tacklingyouthvaping. The Royal College of Paediatrics and Child Health has produced a detailed policy briefing on vaping in young people which can be accessed at https://www.rcpch.ac.uk/resources/policy-briefing-vaping-young-people.

## Nicotine pouches

Nicotine pouches are small, porous, teabag-like products that users place in the mouth, between the upper lips and gums. They contain nicotine, flavourings and other fillers, but they don't contain tobacco. The nicotine is absorbed through the gums via a parking technique (buccal absorption).

Oral nicotine pouches are used similarly to snus (smokeless tobacco) – an oral pouch containing shredded tobacco leaf – but unlike snus, they contain nicotine powder instead of tobacco leaf.

Most brands recommend using their pouches for up to an hour. The pouches come in a variety of flavours and strengths, generally varying in strength between 3mg and 12mg.

In the UK, these products are not captured by regulation of either tobacco or vaping devices and as such are only regulated under general consumer product safety regulations. This means that access to under-18's is possible. It is estimated that one in five professional footballers are using smokeless tobacco or nicotine pouches and it is being promoted by social media influencers.

**PCRS is concerned about the rise in popularity of this unlicensed product. PCRS does not recommend the use of nicotine pouches as a treatment for tobacco dependency.**

**WARNING**

**Parents should be made aware of the dangers of nicotine poisoning to children and young adults. Ill-advised statements regarding the safety of nicotine in never smokers/ users need to be challenged.**

**In adolescence, the first symptoms of nicotine dependence can appear within days to weeks of the onset of occasional use of nicotine[20]**

## Impact on the Environment – Tobacco, Nicotine and Vapes

The harmful impact of the tobacco industry on the environment is vast and growing, and has thus far received relatively little attention from researchers and policy-makers.[18]

Production and consumption of tobacco contribute to global warming, releasing 80 million tonnes of $CO_2$ into the environment each year.

Disposable vapes are incredibly harmful to the environment. Five million disposable vapes are either littered or thrown away in general waste every week.[17] This has quadrupled in the last year.

Disposable vapes are difficult to recycle because they're made from a mixture of materials – including plastic, copper, and a lithium battery.[19] They're designed as one unit, which means the batteries can't be easily separated from the plastic shell and other materials. This makes disposable vapes difficult and expensive to recycle.

ABOUT
**4.5 TRILLION**
DISCARDED CIGARETTE BUTTS PRESENT A DANGER TO THE ENVIRONMENT, AS WELL AS THE MILLIONS OF TONNES OF GREENHOUSE GAS EMISSIONS THEY PRODUCE

THE ANNUAL WASTE GENERATED BY TOBACCO PRODUCTS COMPRISES
**680,388 TONNES**
OF PRODUCT WASTE FROM CIGARETTE BUTTS,
**907,184 TONNES**
FROM TOBACCO MANUFACTURING AND APPROXIMATELY
**25 MILLION TONNES**
FROM THE OVERALL TOBACCO LIFE CYCLE.

PCRS is keen to:-

- Advocate for a cleaner environment free of tobacco product waste to protect the ecosystem.
- Encourage tobacco users to quit by educating them on the negative environmental impacts of tobacco; quitting tobacco benefits people's health as well as the environment.
- Urge policymakers to ban the use of disposable vapes and encourage manufacturers to produce refillable devices

### Useful Stop-Smoking Resources

- Visit the Public Health England Resources page and search for 'smoking' to access a range of downloadable materials including the 'Health and Wealth Wheels': https://campaignresources.phe.gov.uk/resources/
- Signpost to the free NHS app to help motivate smokers to stop and stay stopped
- https://www.nhs.uk/better-health/quit-smoking/

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# Frailty and respiratory disease in primary care

**Primary care should seek to identify and provide proactive support to older people living with frailty. An extended consultation should be considered that should ideally include the patient's usual carer to enable a comprehensive review, confirmation of current diagnoses, and review of all medications. Appropriateness of self-administered medication should be considered if dexterity or cognitive issues are present. Patients should have a clear, concise management plan that is available to and understood by all those providing care. Exercise, including pulmonary rehabilitation, should be encouraged where appropriate.**

## Background

Frailty is a health state in which a person's body systems gradually lose their in-built reserves.[1] An individual can be considered to be frail if they exhibit three or more of the five frailty markers:[2]

- Slow walking speed
- Impaired grip strength
- Declining physical activity levels
- Exhaustion
- Unintended weight loss.

Around 10% of those over 65 years of age – a chronological cut-off often used to define the transition from middle aged to elderly – are thought to be living with frailty, a figure that rises to up to half of those aged >85 years.[3] The frail elderly patient is more likely to be poorly nourished, have reduced mobility, be receiving multiple medications, be depressed, have impaired cognition and be functionally dependent on others to meet their daily physical needs.

Frailty impairs an individual's ability to cope with apparently minor health-related events. As a result, minor illness in frail elderly patients may progress into serious threats to their overall health and wellbeing. These vulnerabilities extend to the medications they take. Frail elderly patients are more susceptible to the side effects of medicines. People with respiratory conditions who are frail are at increased risk of exacerbations of their condition and frailty contributes to the increased risk associated with COVID-19 infection among those with chronic obstructive pulmonary disease.[4]

## Caring for the frail elderly patient

While a proportion of frail elderly patients will receive care on a specialist Frailty Unit or a Geriatric Medicine Ward, many will be cared for in the community setting, either in nursing homes or perhaps even in their own home. The ongoing respiratory health care of these patients therefore comes under the purview of their primary care team and specifically their primary care physician (PCP).

## Evaluating frailty in the elderly patient

Not all elderly patients are frail. However, for those that are a holistic approach is necessary to understand the full range of their medical needs and ensure all treatments and interventions remain harmonised so patients remain symptomatically controlled with the best quality of life that can be achieved for them.

Repeated falls and incontinence are red flags for the possibility of frailty in elderly patients as are delirium or dementia and prolonged immobility. Under the NHS Long Term Plan patients with frailty presenting in the emergency room must be identified within 30 minutes of arrival so that the frailty team can be alerted. However, in the community setting, frailty may remain unrecognised until a medical event or even crisis occurs and intervention from the PCP is required.

Consider frailty among elderly patients with respiratory disease, especially those with multiple chronic physical and mental health problems and those with poor compliance with respiratory medication. When frailty is suspected it should be evaluated as it will impact on all subsequent clinical decision making and the involvement of or referral to other medical specialties. This may require an extended consultation and should ideally include the patient's usual carer. The NICE Guideline NG56 (Multimorbidity: clinical assessment and management)[5] recommends the following for the assessment of frailty in the community setting:

- An informal assessment of gait speed (for example, time taken to answer the door, time taken to walk from the waiting room)
- Self-reported health status (this is, 'how would you rate your health status on a scale from 0 to 100?', with scores of 6 or less indicating frailty
- A formal assessment of gait speed, with more than 5 seconds to walk 4 metres indicating frailty
- The PRISMA-7 questionnaire, with scores of 3 and above indicating frailty.

Frailty in the elderly is often accompanied by loneliness, social isolation, depression and poverty. Social security benefits for which the patient is eligible may not have been claimed. Enlist

the support of family members, social services and local charities such as Age Concern in seeking to address these problems. Consider social prescribing and referral to a local link worker.

Home visits, which have become much less frequent during the COVID-19 pandemic, are particularly valuable in assessing the problems of the frail elderly.

### Respiratory care for the frail elderly patient

When caring for the frail elderly patient with respiratory issues it is essential that we do everything necessary to optimise the care of all their medical needs, not just their respiratory issues. We also need to bear in mind the possibility of patient harm through overdiagnosis and overtreatment. Patients with multiple comorbid conditions are more at risk of non-adherence to prescribed treatments and more at risk of drug interactions if they do take all their prescribed medicines. So how do we approach a holistic evaluation of the frail elderly patient presenting with respiratory issues?

1. Review the full clinical picture.
    a. Start by conducting a comprehensive review that considers the patient as a whole, beyond the specific condition that has prompted their presentation. Consider both physical and psychosocial aspects – especially the presence or absence of family or community support. Review the list of medications and whether or not they are being used.
    b. Determine, following a review, which condition(s) or complaint(s) are the primary concern for management. Be sure to take into consideration the patient's priorities or, if they are unable to communicate those, the wishes they may have expressed to their family members.

2. Confirm the respiratory diagnosis/diagnoses
    a. Older patients with an asthma diagnosis may actually have, or have developed, chronic obstructive pulmonary disease (COPD). Confirming the diagnosis is, of course, critical in ensuring the patient receives the appropriate medication and, conversely, does not receive medications that are unlikely to improve their condition.
    b. Confirming a diagnosis of asthma with or without COPD may be more challenging in the frail elderly patient who is unable to undergo spirometry or even undertake a peak flow effectively. If there are no sufficiently recent test results to support a differential diagnosis then the clinical picture and clinical judgement should be used. For example, asthma is not associated with recurrent or persistent purulent sputum – if this is present, the patient may have bronchiectasis. If the patient has needed repeated course of antibiotic for respiratory infections then a suspicion for COPD may be raised.
    c. Looking beyond the respiratory system for causes of respiratory symptoms may also be informative. Breathlessness may be cardiac in origin. Dysfunctional breathing (breathing pattern disorder) – usually related to anxiety – can be an important contributor to respiratory symptoms, can lead to overestimation of the severity of asthma and consequent overtreatment.

3. Review medication and stop what you can – eliminate medications that are unnecessary. The potential for harm from medication is higher in patients with multimorbidity, especially in frail elderly patients who may be particularly susceptible to side effects.
    a. A core part of the NICE Guidelines NG56 (Multimorbidity: clinical assessment and management) is to rationalise treatment in frail patients and consider medication concordance. Reducing treatment burden may include:
    i. Stopping treatment of limited benefit
    ii. Reducing the dose of considering alternatives for treatments with a higher risk of adverse events
    iii. Considering non-pharmacological treatments as possible alternatives to some medications
    b. It is important to consider the indication and expected benefit from each medication prescribed. For example, does a frail, elderly and largely immobile patient who is not breathless need regular bronchodilation which in the case of an anticholinergic may also be causing side effects such as dry mouth and constipation? An even more difficult question is whether to continue with treatments that are aimed at providing a prognostic benefit for patients with frailty and limited life expectancy. An example of this might be statin therapy. On this topic the wishes of the patient either directly expressed or expressed through their family members should be sought and considered.
    c. A particular challenge for frail elderly patients with COPD is to identify those who have been started on an inhaler containing high-dose inhaled corticosteroids (ICS) and who may be safely weaned off this component of their treatment. Patients with a history of asthma with documented significant reversibility of airways obstruction and intermittent or continuing eosinophilia (usually more than 300 cells/microlitre and not less than 100) on blood counts are those most likely to derive benefit from ICS. However, many patients with COPD on high-dose ICS do not even meet the earlier guideline criteria for starting these agents, and current guidance has evolved towards using them less and relying more on long-acting bronchodilators alone or in combination.[6] High-dose ICS have

the disadvantage of increasing pneumonia risk and may have other adverse effects.

i. Begin by reviewing the individual's criteria for ICS therapy as part of their COPD treatment regimen against the latest clinical guidelines.
ii. For patients not meeting the criteria for ICS therapy undertake a monitored step down of ICS therapy.[7]

d. For inhaled medications consider the suitability of the inhaler device in terms of dexterity issues if the patient is self-administering. Inspiratory capacity should also be considered when selecting a device or evaluating whether a current device is appropriate.
e. Cognitive issues may also impact on the ability of the patient to adhere to their prescribed regimen as well as to successfully use their inhaler device. Ensure a written management plan is available and that anyone caring for the individual is aware of the plan and how to correctly deliver any inhaled medications.

Medication rationalization is a complex and challenging area. A useful and practical resource is the Canadian website https://www.deprescribing.org, developed by Dr Barbara Farrell and Dr Cara Tannenbaum. This site provides tools to help patients and providers participate in deprescribing, information about ongoing and completed deprescribing initiatives and research projects in Canada, and links to people around the world who are interested in deprescribing.

4. Consider pulmonary rehabilitation (PR) for the frail elderly patient. A study conducted in 2016 found that among patients aged 70 years and over referred for PR, 1 in 4 met criteria for frailty.[8] The study found that compliance was a challenge for frail patients compared with non-frail patients, largely due to COPD exacerbations and hospital admission, those who did engage fully with their prescribed PR fared better in terms of overall health status and exercise tolerance than the overall study cohort. So, frailty in itself is not a reason to rule out PR. Always encourage simple home exercise programs appropriate for the level of disability – age and frailty should be no bar to trying to maintain and improve strength and fitness.

## Conclusion

The primary care clinician is critical in providing continuity of care based on a knowledge and understanding of the whole person for the frail elderly patient receiving care in the community and to coordinate care from multiple services. As part of this, re-evaluating and rationalising care directed towards respiratory conditions and symptoms has the potential to reduce the overall burden of care and ensure patients receive the package of care that is most appropriate and beneficial for them.

Patients with COPD and co-existing frailty should be identified as high risk with regard to COVID-19 infection and a proactive review of their condition carried out.

## PCRS position

- Primary care practitioners should seek to identify and provide proactive support to older people living with frailty in the community
- Conduct a comprehensive review that includes confirmation of the diagnosis/diagnoses of the patient to identify comorbid conditions as well as establish patient's priorities for their care. Ideally include the patient's usual carer in this process. Assess and seek to optimise nutrition and social support.
- Review all the respiratory medications the patient is currently taking, considering the goals of treatment, likely benefits and likely side effects. In particular:
  - Consider whether regular bronchodilation is necessary and appropriate for the frail patient without breathlessness who is largely immobile
  - Re-evaluate the clinical indication for high-dose ICS and consider a dose reduction or cessation if appropriate
  - Consider any dexterity or cognitive issues for patients self-administering their medication and inspiratory capacity
  - Ensure a clear, concise management plan is in place and that anyone caring for the individual is aware of the plan and is able to administer any inhaled medications correctly
- Consideration should be given to the potential for pulmonary rehabilitation given that this intervention has been shown to improve lung function and reduce frailty. Always encourage exercise.

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# Retirement of Professor Martyn Partridge as Chair of Trustees of the PCRS

by **Dr Paul Stephenson,** incoming Chair of Trustees, PCRS

Professor Martyn Partridge is retiring as a PCRS Trustee in July this year after eight years on the Board. He has been the Chair of Trustees since 2019, during which time he has led the PCRS through a worldwide pandemic, a financial review, and the resignation (and reappointment) of two Chief Executives. Martyn is typically modest about his contribution to the PCRS over the years and was reluctant for us to make a fuss about his departure. However, I was invited to write this editorial as a tribute to him and was delighted to accept. In doing so, it is a good opportunity for me to clarify the role of the PCRS Trustees, and how we work with the PCRS Executive and the Executive Director. At the same time, as the PCRS approaches its 40th anniversary in 2027, I want to indulge in some gentle reminiscence to remind us all of the reasons why the PCRS was founded, and how its achievements since then have helped transform the management of patients with respiratory diseases in primary care.

For those readers under a certain age, it might seem unbelievable, but in the early/mid-1980s there was a prevailing nihilism and a belief held by many GPs that nothing much could be done about asthma other than getting out of bed at night to visit someone with an asthma attack to give them a salbutamol nebuliser. Some GPs still believed that asthma was a 'neurotic illness', a belief that inevitably led to stigmatisation of the word 'asthma'. Underdiagnosis and undertreatment were common. There *were* some respiratory-interested GPs around who were confident in managing asthma, but generally, the vast majority of respiratory care was provided by secondary care colleagues in hospital.

Consequently, in 1987, a group of six GPs who were profoundly dissatisfied by the current state of asthma care in the UK formed the GPs in Asthma Group (GPIAG) – which subsequently became the General Practice Airways Group and then the Primary Care Respiratory Society (PCRS). They felt strongly that primary care had much to contribute, not just in terms of clinical expertise, but also in terms of primary care-led research and leadership. At the same time, a practice nurse called Greta Barnes set up an Asthma Training Centre in Stratford-upon-Avon, which subsequently became the National Respiratory Training Centre (NRTC) and then Education for Health. 20 years later, both the PCRS and Education for Health celebrated their 20th anniversaries together at a joint conference in 2007.[1]

Over those first 20 years, the PCRS became a charity with a separate Board of Trustees and an Executive Committee, it established a Chair in Primary Care Respiratory Medicine at the University of Aberdeen, nurses and other allied healthcare professionals joined the society as full members, and the society's remit extended into

other respiratory diseases such as COPD, allergic rhinitis, infections and lung cancer. Its academic journal (*Primary Care Respiratory Journal, PCRJ*) grew from strength to strength, its influence on respiratory policy increased enormously, its excellent Respiratory Leaders programme began to bear fruit, and the PCRS played a pivotal role in the development of the International Primary Care Respiratory Group (IPCRG).[1,2]

So too, the 'Annual Scientific Meeting' of the early years became the 'Annual Conference', and as the number of attendees continued to increase, the Conference Organising Committee had great pleasure in inviting (after much thought, considerable discussion, and the odd glass of wine...) more and more guest speakers who could inspire us every year to improve our management of respiratory diseases. When inviting speakers from secondary care, the prerequisite, of course, was that they were a good speaker, expert in their field, and in tune with the aims of a primary care special-interest professional society.

One of these speakers was Professor Martyn Partridge, formerly a respiratory consultant at Whipps Cross Hospital and then, from 2001, Professor of Respiratory Medicine at Imperial College London. I first heard Martyn speak at a PCRS Conference in the very early 2000s on the differential diagnosis of respiratory diseases. It was an excellent talk, and he was obviously fully aware of the PCRS and his audience. But this wasn't surprising, given his reputation for good relations with his local GPs during his research into the delivery of patient-centred respiratory care, and his focus on developing ever-closer working relationships between primary and secondary care respiratory clinicians. (In the end, this focus culminated in the first-ever PCT-funded appointment of a Consultant in Integrated Respiratory Care at Charing Cross Hospital). Martyn was also one of the 500 founding members of the British Thoracic Society (BTS), was President of the BTS in 2007-2008, was Chief Medical Adviser to Asthma UK, was a Trustee of the NRTC for many years, was a member of the GINA Executive, and chaired the UK Department of Health Asthma Steering Group. Quite clearly, he fulfilled the criteria to speak at a PCRS conference – which he did with considerable aplomb.

It was then no surprise to anyone when Martyn was one of only two secondary care specialists asked to contribute a commemorative review which we published in the *PCRJ* in June 2007 to celebrate the 20th anniversary of the PCRS.[3]

However, it was in 2016 when Martyn's occasional dealings with the PCRS changed into a more formal relationship. He was appointed as a PCRS Trustee – and it is to the enormous benefit of the PCRS that he accepted one of the 'Lay' (non-medical) positions on the Board of Trustees despite his exemplary medical qualifications!

The organisational structure of the PCRS is rather atypical for a professional society and charity, but it seems to work very well. The PCRS Trustees are responsible for the overall governance, management, and strategic direction of the PCRS, as well as its financial health, its probity, and its overall aims and objectives, in accordance with charity and company law. The Board of Trustees is assisted in this role by the PCRS Executive Committee and the organisation's Chief Executive (now called the Executive Director). Both the Chair of the Executive Committee and the Executive Director attend Trustee Board meetings. In essence, the Board of Trustees shoulders the legal responsibility for the society's activities, especially finance and governance, so its members have a range of skills including medical, financial, commercial, legal, and strategic expertise. The Executive Committee acts as an expert advisory body, and all members of the Executive must be formal members of the PCRS and have expertise in respiratory medicine in primary and/or community care. Both the Board of Trustees and the Executive work in close collaboration with the Executive Director.

After becoming a PCRS Trustee in 2016, Martyn became the Chair of Trustees in the summer of 2019. Little did he know what an eventful few years were to follow…

At the PCRS conference in September 2019, (Martyn's first as Chair of Trustees, and Carol Stonham's first as Chair of the Executive), our longstanding and very experienced Chief Executive, Anne Smith, tendered her resignation with a generous period of notice. At the same time, it was clear from the financial accounts that we needed to re-think some of our financial priorities, and a Strategy meeting of the Trustees and the Executive took place in January 2020 at which some important cost-cutting decisions were made (which, in retrospect, have been invaluable).

And then the COVID pandemic struck in March 2020. Throughout this time, Martyn led the recruitment process for a new Chief Executive, and all meetings and interviews took place online – a new experience for us all. Eventually, we were

delighted to appoint Lynn Ladbrook as Chief Executive in May 2020. Lynn very rapidly took over from where Anne had left off and proved to be an excellent choice – but her personal experience as PCRS Chief Executive must have seemed very strange since she was unable to meet most people face-to-face due to pandemic restrictions. In May 2022 she too handed in her resignation to take over another charity, and it was only at the conference in September that year, just as she was about to leave, that some of us met her in person for the first time!

Yet again, a recruitment process seemed inevitable. However, after much discussion and deliberation, the Trustees decided to look internally and to appoint Tricia Bryant (the PCRS Operations Director and head of Red Hot Irons which manages the day-to-day business of the society) as Executive Director. Tricia has been associated with the GPIAG/PCRS for decades and knows the organisation inside-out. She took over the reins in September 2022, just as Katherine Hickman took over as Chair of the Executive. It turns out that this arrangement has been a masterstroke, and the PCRS is now benefiting enormously from Tricia's longstanding experience and knowledge of the organisation.

For Martyn to have led the PCRS through such a turbulent period in its history – a period of challenging finances, the COVID pandemic, and the retirement of not one but two Chief Executives – is an outstanding achievement. Of course, he would be the first to say it was a team effort, and that additional thanks are due to all the PCRS Committee members (especially Carol Stonham and Katherine Hickman), Trustees, and the Red Hot Irons team under Tricia Bryant. Yet, as Chair of Trustees, Martyn bore the legal responsibility and steered us successfully through the challenges. We are extremely grateful. It has been an absolute privilege to work with him and to share his experience and knowledge, and we all wish him well in his future activities.

I am therefore delighted to announce that Professor Martyn Partridge has been nominated by the remaining Trustees for Honorary Life Membership of the PCRS. This will be formally agreed at the PCRS conference at Telford in September.

And as the incoming Chair of Trustees, I very much look forward to seeing you all there!

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**The UK's leading respiratory conference for clinicians working primary, community and integrated care.**

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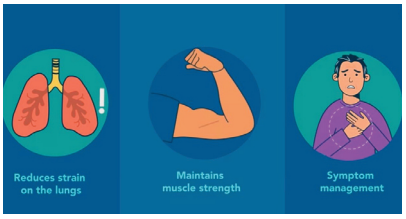
# PCRS News round-up

2024 is proving to be a very busy productive year. So far, we have added new resources to our asthma campaign materials with two new animations, two new podcasts an online learning module and a webinar.

Our challenging perceptions of COPD programme continues and we have just launched three new animations with a webinar scheduled to take place on July 17th - https://qrco.de/bfDYks

*Movement for Health*




*Never too Late to Quit*

*Not Just Another Flare Up*


*We are grateful to AstraZeneca UK Limited for the provision of an educational grant to develop these resources. The resources have been developed by PCRS, and AstraZeneca has had no input into the development, content or production of this material.*

Later in the year, we will be introducing new tools to support healthcare professionals in understanding and supporting patients on MART regimes and we have lots of new resources to come later in the year to support our popular greener healthcare campaign.

Our policy group will be working hard to develop a response to the Consultation Document for the new NICE/BTS/SIGN Guideline on the Diagnosis and Management of Asthma. PCRS members will also be invited to contribute to our formal response.

We were all saddened to hear that trailblazer primary care nurse, Stephanie Wolfe, passed away earlier this year. Steph played a huge role in the opening up of PCRS as a multidisciplinary organisation ensuring that nurses had equal recognition and value within Primary Care Respiratory Society. She led the first-ever nurse committee of the organisation.

*"Steph was a trailblazer for nurse development in primary care and especially within PCRS. She quietly but confidently developed the nurse role by being the first nurse on the executive committee opening the way encouraging PCRS to embrace change. She was a role model for many particularly for me personally. Without Steph leading the way I would not have been the first nurse to take the executive chair position. She has left an amazing legacy of positive change, equity and multidisciplinary working which has enhanced patient care,"*

said Carol Stonham.

# WockAIR®

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# ONE DEVICE FOR ALL ASTHMA SEVERITIES[1,5]

ICS/formoterol inhaler **NOW licensed for AIR and MART** in asthma patients from age 12+[1]

**Simplicity** – only one inhaler needed for all asthma severities[1,5]

**Recommended by GINA** across all treatment steps[5]

**Bioequivalent** to Symbicort Turbohaler[6] with 32% **lower NHS list price**[9]

Lower carbon footprint than pMDIs[7]


**Reduced risk** of asthma exacerbations vs SABA containing regimens[1-5]

**Easy to use** device for patients with asthma or COPD[1,8]

WockAIR® 160/4.5mcg is an **ICS/formoterol** inhaler **licensed across all GINA treatment steps** (AIR-only or MART) for adults and adolescents (12 years and older)[1,2]

**Abbreviations:** AIR-anti-inflammatory reliever; MART – Maintenance and Reliever Therapy; COPD- Chronic Obstructive Pulmonary Disease; pMDI- pressurised metered dose inhaler; SABA- short acting beta agonist; GINA-Global Initiative for Asthma. **Abbreviated Prescribing Information:** WockAIR 160mcg/4.5mcg and 320mcg/9mcg Inhalation Powder, Predispensed (160mcg budesonide and 4.5mcg formoterol fumarate dihydrate; 320 mcg budesonide and 9mcg formoterol fumarate dihydrate). Please refer to the Summary of Product Characteristics (SmPC) before prescribing **Presentation:** WockAIR Inhaler contains 60 doses of powder medicinal product in a coiled strip of foil with a dose counter and should be disposed of when empty and replaced with a new one. Indications: In adults and adolescents (12 years and older) for the regular treatment of asthma where use of combination (inhaled corticosteroids and long-acting ß2 adenoreceptor agonist) is appropriate: patients not adequately controlled with inhaled corticosteroids and "as needed" inhaled short-acting ß2 adrenoceptor agonists or patients already adequately controlled on both inhaled corticosteroids and long-acting ß2 adrenoceptor agonists. WockAIR 160/4.5mcg is also indicated as reliever therapy for adults and adolescents (12 years and older) with mild asthma. WockAIR is indicated in adults, aged 18 years and older, for the symptomatic treatment of patients with COPD with FEV1 <70% predicted normal (post bronchodilator) and an exacerbation history despite regular bronchodilator therapy. **Dosage and Administration:** For the treatment of asthma, the required dose of each component of WockAIR is individual and should be adjusted to the severity of the disease. The dose should be titrated to the lowest dose at which effective control of symptoms is maintained. WockAIR is not recommended for children younger than 12 years. **Maintenance therapy:** adults (18 years and older): 1-2 inhalations twice daily. Some patients may require up to a maximum of 4 inhalations twice daily; adolescents (12 – 17 years): 1-2 inhalations twice daily. **Maintenance and reliever therapy:** adults and adolescents (12 years and older): 2 inhalations per day, given either as one inhalation in the morning and evening or as 2 inhalations in either the morning or evening. Patients should take 1 additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. **Reliever therapy:** Adults and adolescents (12 years and older): Patients should take 1 inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion. A total daily dose of up to 12 inhalations could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice and should be reassessed. COPD: adults: 2 inhalations twice daily. Patients should be demonstrated how to use the WockAIR inhaler and correct use should be checked regularly. **Contraindications:** Hypersensitivity to the active substances or to any of the excipients. **Warnings and Precautions:** Patients should be advised to have their rescue inhaler available at all times. Serious asthma-related adverse events and exacerbations may occur during treatment with WockAIR. Patients should be asked to continue treatment but to seek medical advice if asthma symptoms remain uncontrolled or worsen after initiation with WockAIR. If patients find the treatment ineffective, or exceed the highest recommended dose of WockAIR, medical attention must be sought. Patients should not be initiated on WockAIR during an exacerbation, or if they have significantly worsening or acutely deteriorating asthma. Paradoxical bronchospasm may occur, with an immediate increase in wheezing and shortness of breath, after dosing and WockAIR should be discontinued immediately. Systemic effects may occur with any inhaled corticosteroid, including Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation in children and adolescents, 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 or aggression. WockAIR should be administered with caution in patients with thyrotoxicosis, phaeochromocytoma, diabetes mellitus, untreated hypokalaemia, hypertrophic obstructive cardiomyopathy, idiopathic subvalvular aortic stenosis, severe hypertension, aneurysm or other severe cardiovascular disorders, such as ischaemic heart disease, tachyarrhythmias or severe heart failure. Caution should be observed when treating patients with prolongation of the QTc-interval since Formoterol itself may induce QTc-interval prolongation. Concomitant treatment of ß2 adrenoceptor agonists with medicinal products which can induce hypokalaemia or potentiate a hypokalaemic effect, e.g. xanthine derivatives, steroids and diuretics, may add to a possible hypokalaemic effect of the ß2 adrenoceptor agonist. Visual disturbance may be reported with systemic and topical corticosteroid use and patient should be considered for evaluation of possible causes (e.g. cataract, glaucoma or central serous chorioretinopathy). WockAIR contains lactose monohydrate and may cause allergic reactions. In children, height should be regularly monitored to identify possible growth retardation. If growth is slowed, therapy should be re-evaluated with the aim of reducing the dose of inhaled corticosteroid to the lowest dose at which effective control of asthma is maintained. An increase in the incidence of pneumonia, including pneumonia requiring hospitalisation, has been observed in patients with COPD receiving inhaled corticosteroids. **Drug interactions:** Potent inhibitors of CYP3A4 (e.g. ketoconazole, itraconazole, voriconazole, posaconazole, clarithromycin, telithromycin, nefazodone, cobicistat and HIV protease inhibitors) are likely to markedly increase plasma levels of budesonide and WockAIR maintenance and reliever therapy is not recommended. Beta-adrenergic blockers can weaken or inhibit the effect of formoterol. WockAIR should therefore not be given together with beta-adrenergic blockers (including eye drops). Concomitant treatment with quinidine, disopyramide, procainamide, phenothiazines, antihistamines (terfenadine) 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 ß2 sympathomimetics. Concomitant treatment with monoamine oxidase inhibitors, including agents with similar properties such as furazolidone and procarbazine, may precipitate hypertensive reactions. There is an elevated risk of arrhythmias in patients receiving concomitant anaesthesia with halogenated hydrocarbons. Concomitant use of other beta-adrenergic or anticholinergic medicinal products can have a potentially additive bronchodilating effect. Hypokalaemia may result from beta2-agonist therapy and may be potentiated by concomitant treatment with xanthine derivatives, corticosteroids and diuretics and may increase the disposition towards arrhythmias in patients who are treated with digitalis glycosides. **Pregnancy and lactation:** For budesonide/formoterol or the concomitant treatment with formoterol and budesonide, no clinical data on exposed pregnancies are available. There are no adequate data from use of formoterol in pregnant women. Data on approximately 2000 exposed pregnancies indicate no increased teratogenic risk associated with the use of inhaled budesonide. During pregnancy, WockAIR should only be used when the benefits outweigh the potential risks at the lowest effective dose. Budesonide is excreted in breast milk. Administration of WockAIR to women who are breast-feeding should only be considered if the expected benefit to the mother is greater than any possible risk to the child. There is no data available on the potential effect of budesonide on fertility. **Undesirable effects:** The following adverse events were reported in clinical practice: **Common:** candida infections in the oropharynx, pneumonia (in COPD patients), headache, tremor, palpitations, mild irritation in the throat, coughing, dysphonia including hoarseness; Uncommon: aggression, psychomotor hyperactivity, anxiety, sleep disorders, dizziness, blurred vision, tachycardia, nausea, bruises, muscle cramps; **Rare:** immediate and delayed hypersensitivity reactions, e.g. exanthema, urticaria, pruritus, dermatitis, angioedema and anaphylactic reaction, hypokalaemia, cardiac arrhythmias, e.g. atrial fibrillation, supraventricular tachycardia, extrasystoles, bronchospasm; **Very rare:** Cushing's syndrome, adrenal suppression, growth retardation, decrease in bone mineral density, hyperglycaemia, depression, behavioural changes (predominantly in children), taste disturbances, cataract and glaucoma, angina pectoris, prolongation of QTc-interval, variations in blood pressure. **For further information on adverse effects please refer to the SmPC.** Legal Category: POM Marketing Authorization Number and Holder: Wockhardt UK Ltd, Ash Road North, Wrexham, LL13 9UF, UK. Marketing Authorization Number: PL 29831/0736-0737 Package quantities and basic NHS price: 160mcg/4.5mcg: £19.00; 320mcg/9mcg £19.00 Date of API Preparation: 17 March 2024 **References:** 1. WockAIR® Summary of Product Characteristics. 2. Sobieraj DM, Weeda ER, Nguyen E, et al. Association of inhaled corticosteroids and long-acting ß-agonists as controller and quick relief therapy with exacerbations and symptom control in persistent asthma: a systematic review and meta-analysis. JAMA 2018; 319: 1485–1496. 3. Beasley R, DSc; Harrison T, Peterson S et al. Evaluation of Budesonide-Formoterol for Maintenance and Reliever Therapy Among Patients With Poorly Controlled Asthma: A Systematic Review and Meta-analysis. JAMA Network Open. 2022;5(3):e220615. doi:10.1001/jamanetworkopen.2022.0615. 4. Crossingham I et al. Cochrane Database Syst Rev 2021; 5(5): CD013518. 5. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2023. Updated July 2023. 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**Adverse events should be reported. Reporting forms and information can be found at www.yellowcard.gov.uk**
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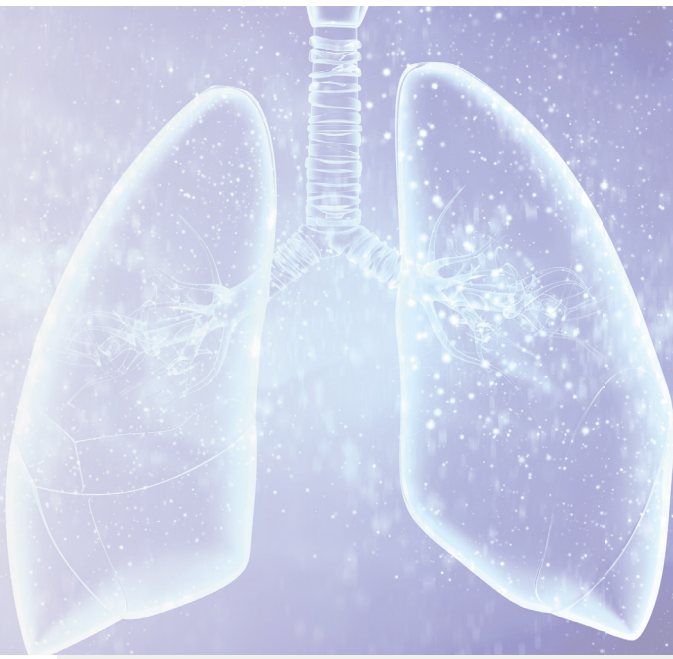
# Call for Papers



*npj Primary Care Respiratory Medicine* is an open access, online-only, multidisciplinary journal dedicated to publishing high-quality research in all areas of the primary care management of respiratory and respiratory-related allergic diseases. Papers published by the journal represent important advances of significance to specialists within the fields of primary care and respiratory medicine. We are particularly interested in receiving papers in relation to the following aspects of respiratory medicine, respiratory-related allergic diseases and tobacco control:

- Epidemiology
- Prevention
- Clinical care
- Service delivery and organisation of healthcare (including implementation science)
- Global health

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