West Yorkshire
Health and Care Partnership

West Yorkshire Adult Asthma Management and Prescribing Guidelines

Supporting Notes

Version 2.0 March 2025

Adapted with permission from the All Wales Adult Asthma Diagnosis and Management Guidelines Supporting notes

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DIAGNOSIS

The diagnosis of asthma is a clinical diagnosis supported by tests of airway hyper-responsiveness and airway inflammation. All patients with suspected asthma should undergo objective testing including exhaled nitric oxide, blood eosinophil counts, spirometry/reversibility,peak flow diary monitoring, or bronchial challenge testing to document evidence of variable airflow obstruction. Exhaled nitric oxide (where available) is a simple breath test that can identify airway inflammation that is likely to respond to inhaled corticosteroids. An elevated exhaled nitric oxide level (FeNO) is supportive (but not diagnostic) of asthma, as it may be elevated in non-asthma conditions (e.g. atopy, eczema, allergic rhinitis), and is not elevated in some asthma phenotypes (e.g. neutrophilic asthma).[1,2,6]

The first joint asthma guidance by BTS, NICE and SIGN were published in November 2024,[14] updating previous guidelines published by The British Thoracic Society (BTS) and Scottish Intercollegiate Network (SIGN)[1] and NICE.[2] Other asthma guidelines have been published by GINA[6] and the European Respiratory Society Taskforce.[3]

In order to confirm a diagnosis of asthma the BTS/NICE/SIGN 2024 joint asthma guideline recommends that the initial clinical assessment includes a clinical history, physical assessment and objective tests.

In West Yorkshire, our focus is on encouraging clinicians to use our diagnostic flowchart for asthma while continuing to prioritise spirometry for the diagnosis of COPD. While FeNO testing can support asthma diagnosis, current national guidelines from BTS, NICE, and SIGN also recognise blood eosinophil counts as a suitable alternative, particularly where FeNO is not readily available.
Clinicians are encouraged to use available tools, including eosinophil testing, to support timely and accurate diagnosis. A further update on potential targeted support for spirometry for next year will be provided once planning is complete.

- ***Clinical History***
  Obtain a structured clinical history in people with suspected asthma. Specifically, check for:
    - reported wheeze, noisy breathing, cough, breathlessness or chest tightness, and any variation in these symptoms (for example, worse during the night or early morning, or seasonal)

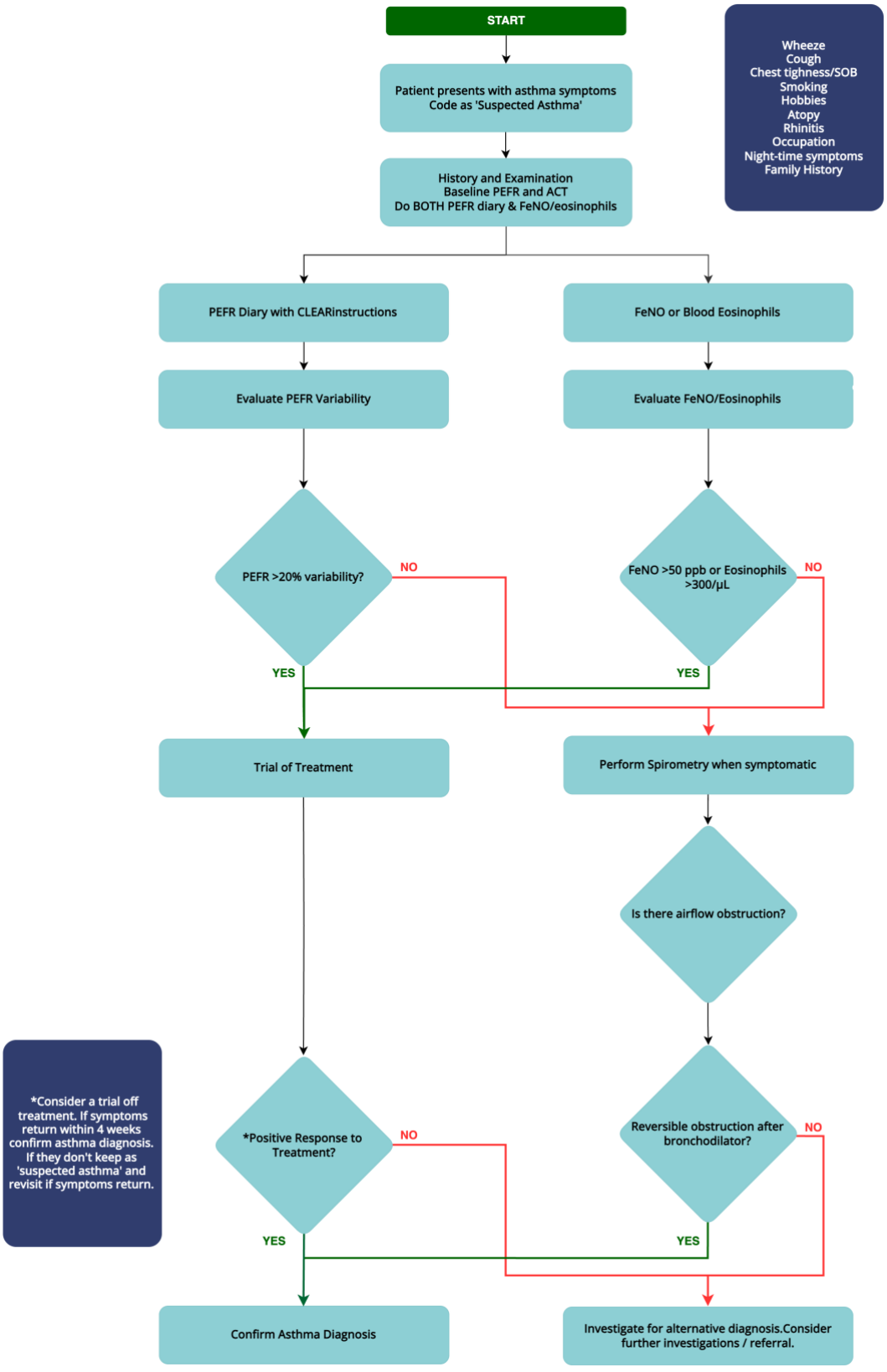
- any triggers that make symptoms worse
- a personal or family history of asthma or allergic rhinitis
- symptoms to suggest alternative diagnoses

- ***Physical examination***
  Examine people with suspected asthma to identify expiratory polyphonic wheeze and signs of other causes of respiratory symptoms but be aware that even if examination results are normal, the person may still have asthma.

- ***Objective Tests***
  Objective tests that may help support a diagnosis of asthma include eosinophil count, fractional exhaled nitric oxide [FeNO], spirometry or peak expiratory flow [PEF] before and after bronchodilator. (NB. the results of spirometry and FeNO tests may be affected in people who have been treated with inhaled corticosteroids, and are more likely to be normal).
  - An eosinophil count is above the laboratory reference range or a FeNO level is 50 ppb or more is supportive of a diagnosis of asthma in the absence of other causes.
  - If asthma is not confirmed by eosinophil count or FeNO level, measure bronchodilator reversibility (BDR) with spirometry. An FEV_1 increase is ≥12% and 200 ml or more from the pre-bronchodilator measurement (or if the FEV1 increase is 10% or more of the predicted normal FEV_1) is supportive of a diagnosis of asthma. NB. Some patients with Chronic Obstructive Pulmonary Disease (COPD) also show reversibility and asthma and COPD can coexist (asthma/COPD overlap syndrome [ACO]).
    - When diagnostic uncertainty remains, or both COPD and asthma are present, use the following findings to help identify asthma:
      - A large (over 400 ml) response to bronchodilators
      - A large (over 400 ml) response to 30mg oral prednisolone daily for 2 weeks
      - Serial peak flow measurements showing 20% or greater diurnal or day-to-day variability.
    - Clinically significant COPD is not present if the FEV_1 and FEV_1/FVC ratio return to normal with drug therapy.[4]
  - If spirometry is not available or it is delayed, measure peak expiratory flow (PEF) twice daily for 2 weeks. PEF variability (expressed as amplitude percentage mean) is 20% or more is supportive of a diagnosis of asthma.

- If asthma is not confirmed by eosinophil count, FeNO, BDR or PEF variability but still suspected on clinical grounds, refer for consideration of a bronchial challenge test.

It should be usual practice to perform objective testing prior to starting therapy for asthma. If inhalers have already been prescribed, these will need to be withheld prior to performing bronchodilator reversibility testing. Local Lung Function Laboratories should provide patients with advice on how long to withhold their inhalers prior to pulmonary function testing. Inhalers do not need to be withheld prior to performing FeNO, however levels of FeNO will be reduced by inhaled corticosteroids.


START
Patient presents with asthma symptoms
Code as 'Suspected Asthma'
History and Examination
Baseline PEFR and ACT
Do BOTH PEFR diary & FeNO/eosinophils
Wheeze
Cough
Chest tighness/SOB
Smoking
Hobbies
Atopy
Rhinitis
Occupation
Night-time symptoms
Family History
PEFR Diary with CLEARinstructions
FeNO or Blood Eosinophils
Evaluate PEFR Variability
Evaluate FeNO/Eosinophils
PEFR >20% variability?
NO
YES
FeNO >50 ppb or Eosinophils >300/µL
NO
YES
Trial of Treatment
Perform Spirometry when symptomatic
Is there airflow obstruction?
*Consider a trial off treatment. If symptoms return within 4 weeks confirm asthma diagnosis. If they don't keep as 'suspected asthma' and revisit if symptoms return.
*Positive Response to Treatment?
NO
YES
Reversible obstruction after bronchodilator?
NO
YES
Confirm Asthma Diagnosis
Investigate for alternative diagnosis.Consider further investigations / referral.

GENERAL PRINCIPLES OF MANAGEMENT

Asthma is an inflammatory condition and the 2024 BTS/NICE/SIGN asthma guidelines[14] continue to highlighted the need to treat all individuals symptomatic of asthma with inhaled corticosteroids.

Reducing the use of Short-Acting Beta$_2$ Agonist Inhalers

Short-acting beta$_2$ agonists must not be prescribed to people of any age with asthma without a concomitant prescription of an ICS.[6,14] The practice of using a short acting bronchodilator as monotherapy is now outdated and reports such as the National Review of Asthma Deaths (NRAD)[5] have highlighted the potential dangers of this practice with underuse of inhaled corticosteroids and over reliance on beta-agonists a contributory factor in a number of deaths.

Regular use of SABA, even for 1–2 weeks, is associated with adverse effects resulting from β-receptor downregulation, decreased bronchoprotection, rebound hyperresponsiveness, decreased bronchodilator response;[15] increased allergic response, and increased eosinophilic airway inflammation.[16]

Furthermore, people with asthma who are high users of SABA inhalers (≥3 cannisters per year) have approximately a double increased risk of asthma exacerbations compared to low users (0-2 cannisters per year).[17] It is therefore important to review all patients who are high users of SABA inhalers to identify reasons for poor asthma control and reduce their risk of asthma exacerbations.

Risks Associated with Oral Corticosteroids

GINA[6] recommends adding oral corticosteroids as a last resort for adults with uncontrolled severe asthma due to the substantial associated side effects. However, patients prescribed rescue courses of prednisolone are also at risk of steroid associated side effects, with a cumulative lifetime exposure of as little as 1g of prednisolone (equivalent to just four courses of prednisolone) may increase the risk of side effects including pneumonia, increased BMI, type 2 diabetes, cataracts, osteoporosis, and cardiovascular disease.[18-20]

It is important therefore, to ensure patients with asthma are prescribed the most cost-effective treatments to prevent asthma exacerbations, which for most adults is

to use a 2-in-1 inhaler using an ICS/formoterol combination inhaler as an anti-inflammatory reliever (AIR).

Single Inhaler Therapy for Asthma

The 2024 BTS/NICE/SIGN asthma guidelines[14] recommend that all adults, and adolescents aged 12 years and above are offered a 2-in-1 inhaler ICS/formoterol combination inhaler, which can either be used as a reliever only on an as needed basis, or as Maintenance And Reliever Therapy (MART). In these regimens, patients should not be given a separate SABA inhaler.

This form of treatment is called anti-inflammatory reliever (AIR), where an ICS is combined with either a SABA or formoterol, a fast-onset, long-acting, beta$_2$-agonist (LABA), and used as a reliever treatment. In this way the ICS dose is titrated according to changes in symptom frequency and/or severity through the vehicle of bronchodilator reliever use and avoids SABA monotherapy in patients who are poorly or non-adherent to their maintenance ICS-based therapy.[21]

For individuals with mild, intermittent asthma there is increasing support for the use of inhaled corticosteroid taken together with short acting bronchodilators on an 'if and when required' basis (PRN). This is only recommended for individuals with symptoms less than twice per month. If an individual has more frequent symptoms they should take regular inhaled corticosteroid to reduce their risk of exacerbation and asthma related death. The GINA strategy 2024 supports this approach.[6]

This guideline supports the implementation of Single Inhaler Therapy as the preferred treatment regimen for managing asthma in adults, and should be offered at the point of new diagnosis, and to people with poorly controlled asthma, or following exacerbations.

Adults who are well controlled on existing asthma regimens consisting of ICS and SABA inhalers may be maintained on their current regimens unless they have a preference to change.

ASTHMA CONTROL

An objective measure of asthma control should be recorded during each consultation. This would usually include a symptom score, such as the 'asthma control test' [ACT] or a commonly used tool, the Royal College of Physicians [RCP] 'three questions', a measure of airflow obstruction (peak flow or spirometry) and an assessment of exacerbation risk and symptoms based on reliever use and any requirement for oral steroids. The BTS/NICE/SIGN asthma guidelines 2024[14] recommend that where possible, to check the fractional exhaled nitric oxide (FeNO) level when asthma is uncontrolled. If it is raised this may indicate poor adherence to treatment or the need for an increased dose of inhaled corticosteroid (ICS)

Reliever inhalers should not be required more than twice per week. The risk of severe exacerbations and mortality increases incrementally with higher SABA use, independent of treatment step. Prescribing three or more 200 dose SABA inhalers per year, corresponding to daily use, is associated with an increased risk of severe exacerbations and mortality and reflects very poorly controlled asthma.[6] As an initial step patients prescribed more than 6 reliever inhalers per year should be invited for **urgent review** of their asthma control.

- **Do not prescribe repeat SABAs without an inhaled corticosteroid.**

LEVELS OF ASTHMA CONTROL AND EXACERBATION RISK

Assessment of current clinical control (over last 4 weeks)[6]

Characteristic	Completely Controlled	Partly Controlled	Uncontrolled
Daytime symptoms more than twice per week	None of these	1-2 of these	3-4 of these
Limitation on activities			
Nocturnal symptoms/awakening			
Need for reliever/rescue treatment more than twice per week			

Asthma Control Test	25	20-24	<20
Additional risk factors for future exacerbation			
Previous exacerbation/asthma attack	Especially within last 12 months Intubation/intensive care admission (ever)		
Medication adherence	Increased risk if poor ICS adherence (<80%) and high SABA use (increased risk of mortality if >1 SABA inhaler/month)		
Lung function (Peak flow or FEV1)	Increased risk if reduced lung function, especially if <60% predicted		
Co-morbidities	Smoking, obesity, gastro-oesophageal reflux disease, pregnancy, chronic rhino-sinusitis, anxiety, depression, confirmed food allergy		

PRINCIPLES OF PHARMACOLOGICAL TREATMENT

Prescribing Inhaler Devices

Inhalers should only be prescribed after checking and confirming good inhaler technique. This includes prescribing new inhaler devices and switching to alternative drugs in the same device.

Licensing of inhalers

Licensed indications for asthma inhalers vary between different medicines, different doses and different devices. The West Yorkshire Adult Asthma Management and Prescribing Guidelines include some recommendations that fall outside of licence, but are included in line with the BTS/NICE/SIGN Asthma: diagnosis, monitoring and chronic asthma management Guidelines 2024.[14]

We have included a number of ICS/LABA options in the preferred Single Inhaler Therapy regimens to allow device consistency across steps of the guideline and increase patient choice.

Use of Short-Acting Beta2 Agonist (SABA) inhalers

Do not prescribe short-acting beta2 agonists (SABA inhalers) to people of any age with asthma without a concomitant prescription of an ICS.

Other Considerations

Take into account and try to address the possible reasons for uncontrolled asthma before starting or adjusting medicines for asthma. These may include:

- alternative diagnoses or comorbidities
- suboptimal adherence
- suboptimal inhaler technique
- smoking (active or passive), including vaping using e-cigarettes
- occupational exposures
- psychosocial factors (e.g. anxiety and depression, relationships and social networks)
- seasonal factors
- environmental factors (e.g. air pollution, indoor mould exposure)

Reviewing Response to Prescription changes

After starting or adjusting medicines for asthma, review the response to treatment in 8 to 12 weeks

ANTI-INFLAMMATORY RELIEVER (AIR) & MAINTENANCE AND RELIEVER THERAPY (MART)

Adherence by asthma patients to regularly scheduled ICS-based maintenance treatment is poor, and many rely on SABAs as their mainstay of treatment, which is understandable because of the immediate relief of symptoms that is obtained with their use. This form of treatment is called anti-inflammatory reliever (AIR), where an ICS is combined with either a SABA or formoterol, a fast-onset, long-acting, beta2-agonist (LABA), and used as a reliever treatment. In this way the ICS dose is titrated according to changes in symptom frequency and/or severity through the vehicle of bronchodilator reliever use and avoids SABA monotherapy in patients who are poorly or non-adherent to their maintenance ICS-based therapy.[21]

Anti-inflammatory reliever (AIR) therapy

Anti-inflammatory reliever (AIR) therapy is treatment with a reliever inhaler that contains a combination of an inhaled corticosteroid and formoterol.

For individuals with mild, intermittent asthma there is increasing support for the use of inhaled corticosteroid taken together with short acting bronchodilators on an 'if and when required' basis (PRN). This is only recommended for individuals with symptoms less than twice per month.

If an individual has more frequent symptoms, they should take regular inhaled corticosteroid to reduce their risk of exacerbation and asthma related death. Patients should be stepped up to an ICS-formoterol Maintenance And Reliever Therapy (MART) regimen.

As of June 2025, only certain budesonide/formoterol combination inhalers are licensed for as-needed AIR therapy. The use of any other ICS/formoterol inhalers would currently therefore be off-label. It is anticipated that other ICS/formoterol inhalers will obtain an as-needed AIR therapy in due time.

LICENSED AIR INHALERS

Brand	Device	Licensed Status	ICS	Age
DuoResp® 160/4.5	Spiromax	Licensed	Budesonide	12+
Fobumix® 160/4.5	Easyhaler	Licensed	Budesonide	12+
Symbicort® 200/6	Turbohaler	Licensed	Budesonide	12+
WockAIR® 160/4.5	Forspiro	Licensed	Budesonide	12+

Fostair® 100/6	NEXThaler	Off-label	Beclometasone	18+
Beclometasone / formoterol 100/6 (e.g. Bibecfo®, Fostair®, Luforbec®, Proxor®,Vivaire®)	pMDI	Off-label	Beclometasone	18+

*Patients using more than 8 inhalations daily should be reassessed for alternative explanations of persisting symptoms. Patients should be assessed at regular intervals according to local practice to determine whether their as-needed AIR treatment remains optimal or whether treatment should be stepped up (e.g. to a MART regimen)

Maintenance And Reliever Therapy (MART)

Adults who are highly symptomatic (for example, regular nocturnal waking) or with a severe exacerbation, require regular treatment with an inhaled corticosteroid. The 2024 BTS/NICE/SIGN asthma guidelines recommend that patients are commenced on a low-dose MART regimen. Patients should take their ICS/formoterol inhaler regularly every day as prescribed (usually twice a day), and again if their asthma symptoms get worse or if they have an asthma attack.

MART regimens can help overcome poor adherence with ICS inhalers and historic over reliance on beta$_2$ agonist reliever therapy. There is also evidence these regimes can reduce exacerbation frequency.

A number of combination inhalers are licensed for use as MART regimens, including budesonide/formoterol combination inhalers (DuoResp® Fobumix®, Symbicort®, and WockAIR®), and beclomethasone/formoterol combination inhalers (Bibecfo®, Fostair®, Luforbec®, Proxor®, and Vivaire®).

As of December 2024, only certain budesonide/formoterol inhalers were licensed for as-needed therapy in mild asthma, and only certain ICS/formoterol inhalers were licensed for medium-dose MART therapy. The use of any other ICS/formoterol inhalers would therefore be off-label, but may be used in line with NICE guidelines.

Higher strength ICS/LABA preparations are not licensed for MART regimens and should not be prescribed.

Patients should take 2 doses daily as maintenance therapy (usually 1 dose twice day, or 2 doses once a day) and then also as required for as a reliever medication if required. This enables the amount of inhaled steroid to be titrated against

symptoms. Prescriptions should specify the maximum number of puffs allowed each day. There is no need to prescribe a separate reliever (SABA) inhaler if a patient is on this regimen.

Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice and their maintenance therapy should be reconsidered.

Patients should be advised to have their MART inhaler available with them at all times for use as a reliever. Even in patients using a MART regimen, the persistent requirement for PRN doses of their inhaler more than twice per week indicates poor asthma control and should prompt a review of therapy. If patients continue to request SABA relievers, this should prompt a review of the suitability of that patient for the MART regimen.

When prescribing MART regimens in primary care, these should be read/SNOMED coded in the patient's record e.g. Single inhaler maintenance and reliever therapy started.

MART INHALERS

Brand	Device	ICS	Age	Maintenance Dose	Max Total Daily Dose
DuoResp® 160/4.5	Spiromax	Budesonide	12+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
Fobumix® 80/4.5	Easyhaler	Budesonide	18+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
Fobumix® 160/4.5	Easyhaler	Budesonide	18+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
Symbicort® 100/3	pMDI †	Budesonide	12+	2p BD (or 4p OD) Max 4p BD	12p on one occasion 24p per day (>16 unusual*)

Symbicort® 100/6	Turbohaler	Budesonide	12+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
Symbicort® 200/6	Turbohaler	Budesonide	12+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
WockAIR® 160/4.5	Forspiro	Budesonide	12+	1p BD (or 2p OD) Max 2p BD	6p on one occasion 12p per day (>8 unusual*)
Bibecfo® 100/6	pMDI	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*
Fostair® 100/6	pMDI	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*
Fostair® 100/6	NEXThaler	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*
Luforbec 100/6	pMDI	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*
Proxor 100/6	pMDI	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*
Vivaire 100/6	pMDI	Beclometasone	18+	1p BD Max 2p BD (off-label)	8p per day*

† HFA227 – very high carbon impact;

* A total daily dose of more than 8 inhalations of MART is not normally needed (16 inhalations of Symbicort 100/3 pMDI); however, a total daily dose of up to 12 inhalations (24 inhalations of Symbicort 100/3 pMDI) could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice. They should be reassessed and their maintenance therapy should be reconsidered.

Patient Information

Clear instructions should be provided to patients on the AIR or MART dosing regimen, both verbally and within an Action Plan.

For Mart Regimens only, take 1 (or 2) puffs twice a day every day as a maintenance regimen. Carry your anti-inflammatory reliever inhaler with you every day so that you can use it if you get asthma symptoms:	
	• Take 1 puff of your anti-inflammatory reliever inhaler as needed in response to symptoms (such as feeling wheezy, tight chested, breathless or coughing)
	• If your symptoms persist after a few minutes, take another puff of your inhaler, but don't take more than 6 inhalations on any single occasion without seeking further help
	• You should not take more than 8 (or 12)* puffs of your inhaler in a single day
	• If you are regularly needing to use 8 or more puffs of your anti-inflammatory reliever inhaler every day, then you should make an appointment with your GP or asthma nurse

* beclomethasone/formoterol is licensed up to a maximum of 8 puffs per day; budesonide/formoterol is licensed up to a maximum of 12 puffs per day, although a total daily dose of more than 8 inhalations of MART is not normally needed

Patients prescribed AIR or MART regimens should be given a **personal MART action plan** which outlines how and when to increase the dose and what to do if symptoms do not improve. Careful education about the specific issues around this management strategy is required, and follow up after 6 to 8 weeks is recommended to assess response.

Downloadable Asthma Action Plans for AIR and MART regimens can be downloaded from the Primary Care Respiratory Society, or from Asthma and Lung UK in 9 different languages.

- Primary Care Respiratory Society MART Action Plan: https://www.pcrs-uk.org/resource/current/maintenance-and-reliever-therapy-mart-asthma-action-plan
- Asthma and Lung UK AIR or MART Actions Plans: https://shop.asthmaandlung.org.uk/collections/new-shop-hcp

DEVICE SELECTION

Inhalers should only be prescribed after patients have received training on the device and had their technique checked. Always involve the patient when choosing the device. Take into account individual preference, ease with which the device can be used and prior success or failure with different preparations.

Dry Powder Inhalers (DPIs) are the preferred inhaler device because people with asthma are more to be able to inhale correctly through a DPI than a pMDI.[22] Furthermore, DPI devices have a lower global warming potential than pMDIs, which contain hydrofluoroalkane (HFA) propellants, and so have a lower environmental impact.

A quick and deep inhalation over 2-3 seconds is required to deaggregate a metered dose within a DPI to generate fine particles that deposit in the lungs. DPI devices with a high internal resistance (e.g. Easyhaler, NEXThaler) achieve this deaggregation at lower inspiratory flows than low resistance DPI devices (e.g. Breezhaler), and so higher resistance DPIs may be more effective at delivering fine particle doses to the lungs and so are preferred.[23]

For patients prescribed more than one inhaler device, ensure continuity of device so that only one inhaler technique is required. Whenever possible do not mix Metered Dose Inhalers (MDIs) and Dry Powder Inhalers (DPIs) as they require radically different inhaler techniques (slow and steady vs. quick and deep respectively). Many patients are prescribed an MDI SABA reliever despite being on a DPI preventer.

If a new inhaler device is needed, prescribing decisions should be individualised, and an appropriate device chosen for everyone. The Assess, Choose, and Train (ACT) decision tool (see figure 1)[7] can be used to structure the review to ensure shared decision-making:

1. **A**ssess: Patients should be assessed on their inspiratory flow in order to determine whether they are physically able to inhale through DPIs, or through MDI / breath-actuated MDI (Autohaler/Easi-Breathe) / Soft Mist Inhaler devices in an effective manner;

2. **C**hoose: An appropriate device should be chosen, which may depend on local formulary, cost and environmental considerations;

3. **T**rain: the patient should be taught how to use the device using the seven steps required for good inhaler technique.

Full instruction on the inhaler technique for specific devices can be found on the Asthma + Lung UK website (www.asthma.org.uk/advice/inhaler-videos) and the RightBreathe website (www.rightbreathe.com).

Multi-lingual respiratory resources, developed by Dr Llinos Jones are available at: https://www.respiratoryfutures.org.uk/resources/general-resources-multi-lingual-respiratory-resources/

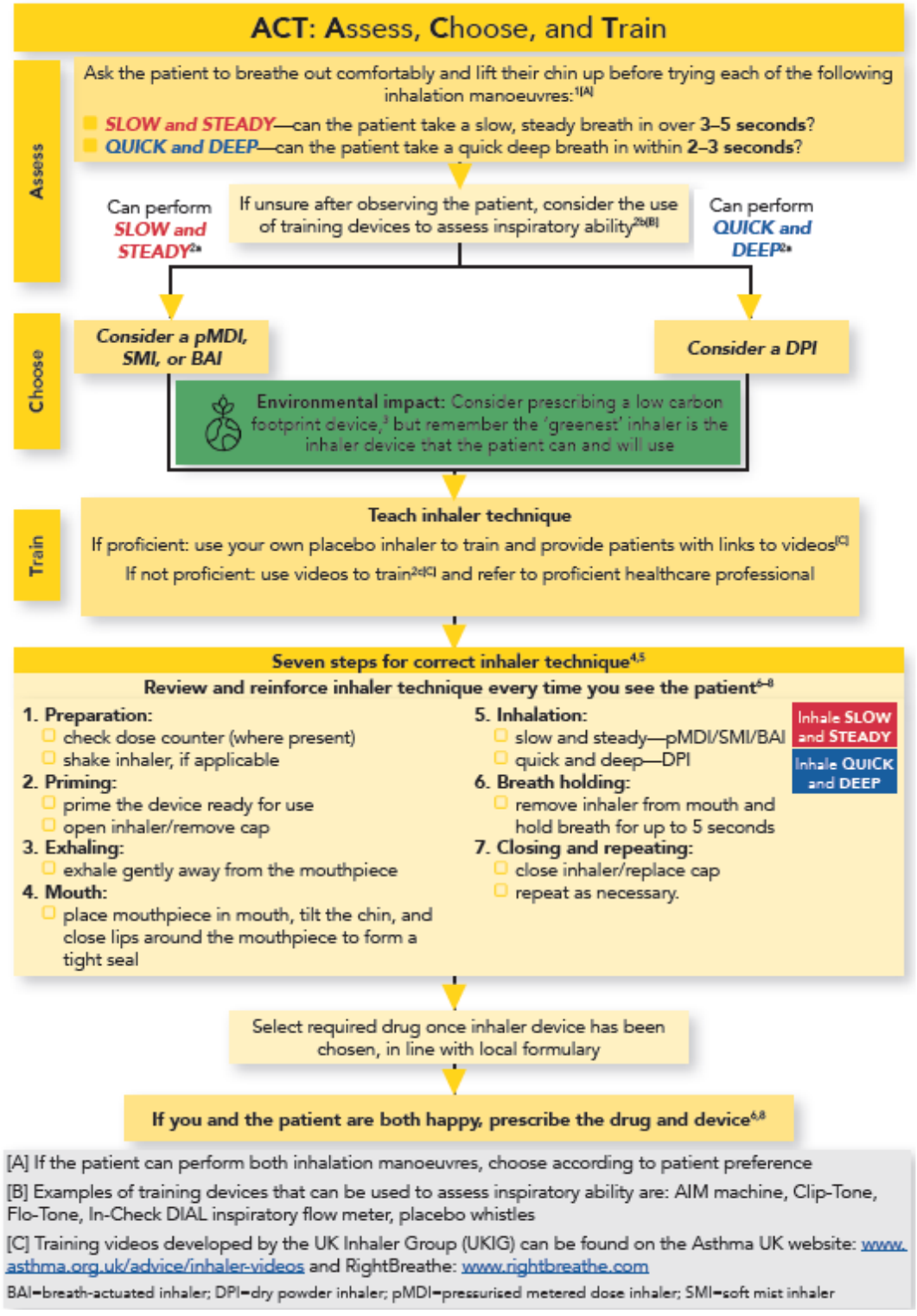


Figure 1: Assess, Choose, Train (ACT) decision tool for inhaler selection[7]

Spacers

To optimise drug delivery, a spacer should be prescribed with all pMDI devices. The AeroChamber Plus Flow-Vu spacer is the first-line spacer for both adults and children in West Yorkshire.

We recommend using spacers with a mouthpiece, rather than a mask, for all adults and children aged 5 years and above, unless they are unable to achieve a tight seal with their lips around the mouthpiece.

The AeroChamber Plus Flow-Vu spacer is available in a range of sizes depending on patient age and needs. Most adults should be prescribed the blue AeroChamber Plus Flow-Vu Anti-static VHC with Mouthpiece, whilst most children aged 5 years and over should be prescribed the green AeroChamber Plus Flow-Vu Anti-static VHC Youth Mouthpiece (5+ years).

Colour	Name of Spacer
Orange	AeroChamber Plus Flow-Vu Anti-static VHC with Small Mask for Infants (0-18 months)
Yellow	AeroChamber Plus Flow-Vu Anti-static VHC with Medium Mask for Children (1-5 years)
Green	AeroChamber Plus Flow-Vu Anti-static VHC Youth Mouthpiece (5+ years)
Blue	AeroChamber Plus Flow-Vu Anti-static VHC with Mouthpiece

Purple	AeroChamber Plus Flow-Vu Anti-static VHC with Small Adult Mask
Blue	AeroChamber Plus Flow-Vu Anti-static VHC with Large Adult Mask

ENVIRONMENTAL IMPACT OF INHALERS

Metered dose inhalers have a higher carbon footprint than dry powder devices and British Thoracic Society (BTS) guidelines recommend that inhalers with low global-warming potential should be used when they are likely to be equally effective. MDIs currently contribute an estimated 4% of the carbon footprint of the NHS. If patients are able to inhale effectively (i.e. inhale quick and deep) to use a DPI, then these devices should be the default option for prescribing with the patient's agreement. However if patients are only able to use MDI devices (e.g. inhales slow and steady, or has a better technique), or prefers to use MDI devices, then these should be prescribed.

Addressing the overuse of SABA inhalers will have a significant impact on the overall carbon footprint from inhaled therapy. There may also be some patients who can be prescribed a DPI SABA but may need an MDI with a spacer for emergency treatment. Ventolin® (salbutamol) Evohaler has been omitted from the guidelines as it is an MDI with a very high carbon footprint (>25 kg CO2e per inhaler). Salamol® MDI in comparison has a lower carbon footprint (<10 kg CO2e per inhaler) although is still classed as a high global warming potential inhaler in comparison to DPIs.

Patients should also be encouraged to

- Use any locally available inhaler recycling and recovery schemes, where available
- To return empty or unwanted inhalers to their community pharmacy for safe disposal. (This involves thermal treatment which destroys remaining propellant greenhouse gases. Inhalers should not be disposed of in household waste as this is likely to become landfill which is harmful to the environment both in material waste and in greenhouse gas emissions as the residual gas from canisters is subsequently released to the atmosphere).

Full instruction on the inhaler technique for specific devices can be found on the Asthma + Lung UK website (www.asthma.org.uk/advice/inhaler-videos) and the RightBreathe website (www.rightbreathe.com).

Multi-lingual respiratory resources, developed by Dr Llinos Jones are available at: https://www.respiratoryfutures.org.uk/resources/general-resources-multi-lingual-respiratory-resources/

ICS/LABA inhalers MUST be prescribed as a combination product to obviate the risk of patients inadvertently taking the LABA as monotherapy, which has been associated with increased risk of mortality. All inhalers should also be prescribed by brand to ensure familiarity for the patient and prevent the wrong inhaler device being inadvertently dispensed by the pharmacy.

STEPPING-UP THERAPY

It is important to check and address factors known to be associated with poor asthma control at every opportunity including when considering a step up in treatment. The following factors should be considered:

- Inhaler technique
- Adherence with asthma medication.
    - This can be checked by an open conversation with the patient. It is important to be non-judgemental and explore barriers to adherence with medication (e.g. dislike of device, side effects, chaotic lifestyle).
    - The prescription 'fill rate' should be reviewed (e.g. the actual number of preventative inhalers prescribed in a 12 month period compared with the number that should have been prescribed). This is a surrogate measure of adherence and can prompt a conversation with a patient, particularly where fewer inhalers are collected than expected.
    - If possible, dose counters can be used to accurately measure adherence.
- Smoking status and referral to smoking cessation services
- Triggers and trigger avoidance (including occupation)
- Co-morbid conditions – e.g. weight management, obstructive sleep apnoea, dysfunctional breathing pattern, rhinitis

Asthma control should be re-assessed within 8 to 12 weeks of a change in therapy.[14]

STEP 1: INITIAL MANAGEMENT OF NEWLY DIAGNOSED ASTHMA

The use of SABA only therapy is not recommended for the management of asthma. All adults with a diagnosis of asthma should be prescribed an inhaled corticosteroid.

Preferred Strategy

The preferred regimen is to use a single ICS/formoterol inhaler as an Anti-Inflammatory Reliever (AIR) on an as needed basis only.

In November 2024, only certain budesonide/formoterol inhalers for as-needed therapy were licensed as an option for adults and adolescents (12 years and older) in mild asthma. The choice of inhaler to prescribe is primarily dependent on and patient-focused factors including inhaler technique, patient preference, environmental impact, rather than cost, and options:

- DPIs: Fobumix Easyhaler 160/4.5, Fostair NEXThaler 100/6 (off-label), or Symbicort Turbohaler 2006
  or
- pMDI: Luforbec pMDI 100/6, Proxor pMDI 100/6

An as needed anti-reliever regimen may be considered as option for people with infrequent symptoms (e.g. less than twice a month), rather than using as needed salbutamol alone. This strategy supports a SABA-free prescribing recommendation in asthma.

The recommended dose of Symbicort Turbohaler or Fobumix Easyhaler used as an anti-inflammatory reliever is 1 dose as needed up to 8 doses/day (rarely 12 doses/ day).

Patients using more than 8 inhalations daily should be reassessed for alternative explanations of persisting symptoms. Patients should be assessed at regular intervals according to local practice to determine whether their as-needed AIR treatment remains optimal or whether treatment should be stepped up (e.g. to a MART regimen)

In practice, AIR regimens are only recommended for individuals with symptoms less than twice per month. If an individual has more frequent symptoms they should take regular inhaled corticosteroid (usually as a MART regimen) to reduce their risk of exacerbation and asthma related death.

Studies have shown that Symbicort 200/6 Turbohaler used one dose PRN may produce a similar or greater reduction in severe exacerbations compared with regular use of twice-daily ICS plus PRN SABA, with no clinically important difference in symptom control or lung function.[12,13]

Patients should be given a personal AIR action plan (e.g. available from Asthma and Lung UK) which outlines how and when to increase the dose and what to do if symptoms do not improve. Careful education about the specific issues around this management strategy is required, and follow up after 6 to 8 weeks is recommended to assess response.

Alternative Strategy

If an ICS/formoterol AIR regimen is not suitable for an individual patient, an alternative strategy is to commence a regular inhaled corticosteroid taken once or twice a day (depending on licence) with an additional as needed SABA reliever inhaler. This regimen is highly effective in reducing asthma symptoms and reducing the risk of asthma exacerbations, hospitalisation and death.

Dry Powder Inhaler options include:

- Easyhaler Budesonide 200mcg 1 dose BD
- Easyhaler Budesonide 400mcg 1 dose OD

Patients should also be prescribed a DPI SABA (e.g. Easyhaler salbutamol 100mcg 2 doses PRN)

pMDI (preferably via a spacer) options include:

- Kelhale 100mcg 1 dose BD

Patients should also be prescribed a pMDI SABA (e.g. Salamol pMDI 100mcg 2 doses PRN)

STEP 2: MANAGEMENT OF PERSISTENT ASTHMA

This is the appropriate step for commencing treatment in adults presenting as highly symptomatic (for example, regular nocturnal waking) or with a severe exacerbation,[14] as well as escalating from Step 1 using AIR regimen only (as needed ICS/formoterol) or regular low dose ICS plus as needed SABA reliever therapy.

People with uncontrolled asthma despite as needed ICS/formoterol or regular low-dose inhaled corticosteroid, should be assessed for adherence, inhaler technique and trigger factors before stepping up therapy.[14]

Preferred Strategy

The most cost-effective strategy to prevent exacerbations of asthma is to use low-dose ICS/formoterol as maintenance and reliever therapy (MART).[14,24,25] Systematic reviews have demonstrated that ICS/LABA prescribed as a MART regimen is associated with fewer exacerbations compared to the same or higher fixed-dose ICS/LABA + SABA in patients aged 12-years and over.[24]

In the West Yorkshire guideline, we recommend commencing a DPI ICS/formoterol for most adults rather than a pMDI. Options include:

- Fobumix Easyhaler 160/4.5 - 1 dose BD plus prn (Max 12 doses/day)
- Fostair NEXThaler 100/6 - 1 dose BD plus prn (Max 8 doses/day)
- Symbicort Turbohaler 200/6 - 1 dose BD plus prn (Max 12 doses/day)

Adults requiring a pMDI should be offered either Luforbec 100/6 pMDI or Proxor 100/6 pMDI (beclomethasone/formoterol).

A total daily dose of more than 8 inhalations of MART is not normally needed, however a total daily dose of up to 12 inhalations of budesonide/formoterol could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice. They should be reassessed and their maintenance therapy should be reconsidered.

Patients should be given a personal MART action plan (e.g. available from Asthma and Lung UK) which outlines how and when to increase the dose and what to do if symptoms do not improve. Careful education about the specific issues around this management strategy is required, and follow up after 6 to 8 weeks is recommended to assess response.

Alternative Strategy

If an ICS/formoterol MART regimen is not suitable for an individual patient, an alternative strategy is to commence a regular low-dose ICS/formoterol inhaler taken once or twice a day (depending on licence) with an additional as needed SABA reliever inhaler.

It is important that LABAs are prescribed as a combination ICS/LABA inhaler to ensure adherence to the ICS.[1]

Dry Powder Inhaler options include:

- Fobumix Easyhaler 160/4.5 - 1 dose BD
- Fostair NEXThaler 100/6 - 1 dose BD
- Relvar Ellipta 92/22 - 1 dose OD
- Patients should also be prescribed a DPI SABA (e.g. Easyhaler salbutamol 100mcg - 2 doses PRN)

pMDI (preferably via a spacer) options include Luforbec pMDI 100/6 or Proxor pMDI 100/6

Patients should also be prescribed a pMDI SABA (e.g. Salamol pMDI 100mcg - 2 doses PRN)

STEP 3: ONGOING POOR CONTROL

People with uncontrolled asthma despite low-dose MART or regular low-dose ICS/LABA plus as needed SABA reliever, should be assessed for adherence, inhaler technique and trigger factors before stepping up therapy.[14]

Preferred Strategy

The 2024 BTS/NICE/SIGN asthma guidelines recommend stepping up to a moderate-dose MART regimen in people aged 12 and over with asthma that is not controlled on low-dose MART.[14]

In a network meta-analysis of adults with moderate-to-severe asthma, low-dose to moderate-dose MART was as effective as high-dose ICS/LABA plus as needed SABA reliever in reducing the risk of severe asthma exacerbations. However the lower corticosteroid doses used in moderate-dose MART regimens reduce the risk of adverse effects of inhaled corticosteroid use.[25]

In the West Yorkshire guideline, we recommend commencing a DPI ICS/formoterol for most adults rather than a pMDI. Options include:

- Fobumix Easyhaler 160/4.5 - 2 doses BD plus 1 dose prn (Max 12 doses/day)
- Fostair NEXThaler 100/6 - 2 doses BD plus 1 dose prn (Max 8 doses/day) (off-label)
- Symbicort Turbohaler 200/6 - 2 doses BD plus 1 dose prn (Max 12 doses/day)

Adults requiring a pMDI should be offered Luforbec 100/6 pMDI or Proxor 100/6 pMDI (beclomethasone/formoterol).

A total daily dose of more than 8 inhalations of MART is not normally needed, however a total daily dose of up to 12 inhalations of budesonide/formoterol could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice. They should be reassessed and their maintenance therapy should be reconsidered.

Patients should be given a personal MART action plan (e.g. available from Asthma and Lung UK) which outlines how and when to increase the dose and what to do if symptoms do not improve. Careful education about the specific issues around this management strategy is required, and follow up after 6 to 8 weeks is recommended to assess response.

Alternative Strategy

If an ICS/formoterol MART regimen is not suitable for an individual patient, an alternative strategy is to commence a regular moderate-dose ICS/formoterol inhaler taken once or twice a day (depending on licence) with an additional as needed SABA reliever inhaler.

Dry Powder Inhaler options include:

- Fobumix Easyhaler 160/4.5 - 2 doses BD
- Fostair NEXThaler 100/6 - 2 doses BD
- Relvar Ellipta 92/22 - 1 dose OD

Patients should also be prescribed a DPI SABA (e.g. Easyhaler salbutamol 100mcg - 2 doses PRN)

pMDI (preferably via a spacer) options include Luforbec 100/6 pMDI or Proxor pMDI 100/6

Patients should also be prescribed a pMDI SABA (e.g. Salamol pMDI 100mcg - 2 doses PRN)

STEP 4: ADD-ON THERAPIES

People with uncontrolled asthma despite moderate-dose MART or regular moderate-dose ICS/LABA plus as needed SABA reliever, should be assessed for adherence, inhaler technique and trigger factors before stepping up therapy.[14]

The 2024 BTS/NICE/SIGN asthma guidelines[14] recommend that adults who remain uncontrolled on moderate-dose MART (or fixed moderate-dose ICS/LABA plus as needed SABA reliever) should be further investigated before stepping up treatment:

- Check the fractional exhaled nitric oxide (FeNO) level (if available), and the blood eosinophil count. If either of these is raised, refer to a specialist in asthma care.
- If neither FeNO or eosinophil count is raised, consider an 8-12 week trial of either a Leukotriene Receptor Antagonist (LTRA) or a Long-Acting Muscarinic Antagonist (LAMA) used in addition to moderate-dose ICS/LABA. At the end of the trial:
    - if asthma is controlled, continue the treatment
    - if control has improved but is still inadequate, continue the treatment and start a trial of the other medicine (LTRA or LAMA)

Leukotriene Receptor Antagonist

Montelukast may be particularly helpful in those with exercise-induced asthma and in asthma associated with allergic rhinitis. If patients do not benefit from a 6 week trial of this agent it should be discontinued.

Always treat co-existing allergic rhinitis with a separate nasal steroid +/- antihistamines to prevent asthma triggering from nasal inflammation.

Prescribers should be alert for neuropsychiatric reactions in patients taking montelukast and carefully consider the benefits and risks of continuing treatment if they occur.[10] Patients and their caregivers should be advised to carefully read the list of neuropsychiatric reactions in the patient information leaflet and seek medical advice immediately should they occur.

Long-Acting Muscarinic Antagonist

The addition of a long acting antimuscarinic agent (LAMA) is an option for adult patients who are on maintenance moderate dose ICS/LABA who experience one or more asthma exacerbations in the previous year. This therapy may be of particular benefit in patients who have both asthma and COPD.

There are now three options available for clinicians and patients: add-on Spiriva Respimat (tiotropium) or three-drug combination inhalers Trimbow® MDI

(beclometasone dipropionate/formoterol/glycopyrronium) and Enerzair® Breezhaler (indacaterol/ glycopyrronium/ mometasone).

Patients prescribed 'open triple' therapy (i.e. ICS/LABA plus a separate LAMA) should be reviewed to consider whether it is appropriate to switch to a single 'closed triple' inhaler (i.e. a three-drug ICS/LABA/LAMA combination inhaler). Such changes should only be performed after teaching and checking inhaler technique, and gaining the patient's agreement for such a switch).

Of note, the triple therapy inhalers (Trimbow® pMDI/Enerzair® Breezhaler) contain different strengths of inhaled corticosteroid and caution is needed to ensure that the required dose of ICS is not inadvertently stepped up or down when commencing a triple therapy inhaler. At Step 4, we do not recommend the use of high-dose ICS/LABA/LAMA inhalers (Trimbow 172/5/9 pMDI, Enerzair 114/46/136 Breezhaler).

	Spiriva® 2.5 micrograms Respimat	**Trimbow® 87/5/9 micrograms MDI**	**Trimbow® 172/5/9 micrograms MDI**	**Enerzair® 114/46/136 micrograms Breezhaler**
ICS strength	LAMA only Separate ICS/LABA to be prescribed	Moderate strength ICS (plus LABA/LAMA)	High strength ICS (plus LABA/LAMA)	High strength ICS (plus LABA/LAMA)
Dose	2 doses OD	2 doses BD	2 doses BD	1 dose OD
Device	Soft mist inhaler (spacer can be used if preferred)	MDI (via spacer)	MDI (via spacer)	Breezhaler

REFERRAL/SPECIALIST THERAPY

Patients who remain uncontrolled despite moderate dose ICS/LABA +/- additional controller agents have difficult to control or severe asthma, and should be referred to specialist care. A proportion of these will have an alternative or co-existent condition that is contributing to their symptoms. Objective and structured evaluation can help identify and treat these conditions. Patients with suspected occupational asthma should be referred.

Some individuals will have severe eosinophilic asthma and will require high dose ICS/LABA combination inhalers. Others may have neutrophilic asthma and may benefit from additional bronchodilator therapy such as Spiriva Respimat.

In addition patients receiving 2 or more courses of oral steroids in a 12 month period despite adherence with optimised therapy should be referred.

There are a number of biological therapies now licenced for severe asthma. These can be prescribed where appropriate following review by a specialist in severe asthma, aiming to reduce asthma exacerbations and/or oral corticosteroid use.

These biological therapies target IgE (omalizumab), IL-5 (mepolizumab, reslizumab), IL-5 receptor (benralizumab), IL-4/IL-13 (dupilumab), and thymic stromal lymphopoietin (TSLP) pathways (tezepelumab). They have all been classified as Red drugs by West Yorkshire ICS Area Prescribing Committee (APC). Future biologic therapies for asthma are likely to also be classified as Red drugs. These treatments may only be initiated, prescribed & supplied by hospital specialists, and so should not be prescribed in primary care.

Biological therapies are used for patients with severe persistent asthma that remains uncontrolled despite high-dose inhaled corticosteroids and additional controller medications. Eligible patients may have raised biomarkers such as elevated blood eosinophils, high FeNO levels, or IgE, indicating type 2 inflammation.

TRANSFERRING ADULTS FROM OTHER TREATMENT PATHWAYS

The West Yorkshire Adult Asthma Management and Prescribing Guidelines prioritise the use of single inhaler AIR and MART regimens to optimise asthma treatment and reduce the risk of asthma exacerbations.

Adults with uncontrolled asthma or experiencing asthma exacerbations who are currently prescribed more traditional fixed-dose ICS maintenance (+/- LABA) with as needed SABA regimens should be reviewed at treatment optimised. We recommend discussing and switching patients to single inhaler AIR and MART regimens.

SABA only

SABA-only regimens are no-longer recommended.

Adults using a SABA infrequently (e.g. less than twice a month) should be switched to single ICS/formoterol inhaler as an Anti-Inflammatory Reliever (AIR) on an as needed basis only.

Adults using a SABA more frequently should be switched to low-dose MART.

Low-dose ICS regimens

Adults who are uncontrolled or exacerbating on low-dose ICS regimens should be offered low-dose MART. This includes adults currently taking:

- regular low-dose ICS plus SABA as needed
- regular low-dose ICS/LABA plus SABA as needed
- regular low-dose ICS and LTRA, plus SABA as needed
- regular low-dose ICS/LABA and LTRA, plus SABA as needed

Moderate-dose ICS regimens

Adults who are uncontrolled or exacerbating on moderate-dose ICS regimens should be offered moderate-dose MART. This includes adults currently taking:

- regular moderate-dose ICS plus SABA as needed
- regular moderate-dose ICS/LABA plus SABA as needed
- regular moderate-dose ICS and supplementary therapy (LTRA +/- LAMA), plus SABA as needed

- regular moderate-dose ICS/LABA and supplementary therapy (LTRA +/- LAMA), plus SABA as needed

High-dose ICS-regimens

Adults who are uncontrolled or exacerbating on high-dose ICS regimens should be referred to a specialist in asthma care

STEPPING DOWN

All asthma guidelines recommend a step wise approach including the need to consider stepping down therapy once control is achieved and maintained.[1,2] High-dose ICS carries a risk of systemic side effects (adrenal suppression, growth retardation, decrease in bone mineral density and cataracts) and these risks should be balanced against the benefits.

Reductions in asthma therapy should be considered if a patient has had complete asthma control over a three month period. A decision to step down should take into account how difficult it was to achieve stability and also whether previous step down attempts have resulted in exacerbations. Seasonal variation in symptoms should also be considered. Stop or reduce dose of medicines in an order that takes into account the clinical effectiveness when the medicine was introduced, side effects and the person's preference. It is recommended that the dose of ICS is reduced by no more than 50% each time. The risks and benefits of dose reduction should be discussed with patients and their carers.

SELF MANAGEMENT & ASTHMA ACTION PLANS

The importance of supported self-management is highlighted in national guidelines.[1,2] This should include a written personalised asthma action plan containing advice on how to recognise a loss of asthma control (peak flow monitoring or symptoms) and what action to take to regain control, including when to start oral steroids and seek emergency advice. Patients should be prescribed a peak flow meter to aid self-management. **Best peak flow should be ascertained when treatment is optimised and symptoms are stable. Best peak flow is more accurate than predicted peak flow.**

Trigger points should be individualised but as a guide, oral steroids are usually required when peak flow reaches ≤60% of best and emergency review is usually necessary when peak flow reaches ≤50% of best.

Paper Asthma Action Plans are available from the Primary Care Respiratory Society (PCRS) and Asthma + Lung UK:

- PCRS **MART Action Plan**: https://www.pcrs-uk.org/resource/current/maintenance-and-reliever-therapy-mart-asthma-action-plan
- Asthma + Lung UK **MART Action Plan**: https://www.asthmaandlung.org.uk/symptoms-tests-treatments/treatments/mart
- Asthma + Lung UK **AIR Action Plan:** https://www.asthmaandlung.org.uk/healthcare-professionals/adult-asthma/AAPs/completing-air-action-plan-your-patients

The Asthma + Lung UK Action Plans are available in a number of languages.

West Yorkshire Respiratory (Asthma & COPD) Self-Management Smart Phone Apps (July 2023)

These apps have been developed with, and will continue to be updated by, experts in asthma & COPD and have been co-produced by patient representatives. They are freely available for patients across England.

The purpose of the apps is to support patients and parents of children with the long-term management of their asthma or COPD to help them stay well. The apps provide advice, education, and support for staying well and spotting worsening symptoms early using a personalised asthma or COPD plan.

There have been some significant positive outcomes where the apps have been introduced in Wales. Among ALL users of the respiratory apps 36% reduced their visits to the GP and 19% their admissions to A&E when they regularly used their app for six months or more.

Patients can be directed to download the **Asthmahub (England)** app developed by ICST Hub

iOS/Apple:
https://apps.apple.com/gb/app/asthmahub-england/id6443845314

Android:
https://play.google.com/store/apps/details?id=com.icst.asthmahub.com&hl=en_US

There is evidence that quadrupling ICS dose when asthma control starts to deteriorate (peak flow ≤80% best) can reduce the risk of an exacerbation.[8] However this is often difficult to achieve easily, particularly for people taking ICS/LABA inhalers because the LABA dose should not be quadrupled.

- In those individuals at step 1, it is relatively easy to achieve the required increase of ICS dose by quadrupling the use of their ICS inhaler.
- Individuals prescribed a fixed ICS/LABA regimen (e.g. Relvar® 92/22 Ellipta) should not quadruple their dose. Instead, an increased ICS dose means prescribing an additional ICS inhaler may be required as part of an asthma management plan. For example if taking Relvar® 92/22 Ellipta, prescribe additional fluticasone 250 Accuhaler to take 3 doses BD in addition to Relvar as part of action plan when peak flow ≤80%, for maximum of 14 days – see table below. If an individual is already taking high dose ICS/LABA (step 5) the evidence for increasing ICS is less clear and is not currently routinely recommended.
- In those individuals prescribed MART therapy, an increased ICS dose is adequately achieved through increased use of PRN reliever doses of their ICS/LABA inhaler, and quadrupling the dose is not necessary.

It is recognised that this approach does require a motivated patient and will not be appropriate in all cases. In some cases an action plan proceeding immediately to oral steroids will be more appropriate.

HOW TO ACHIEVE A QUADRUPLING IN ICS AS PART OF PERSONALISED ACTION PLAN IN PATIENTS ON A FIXED DOSE COMBINATION INHALER

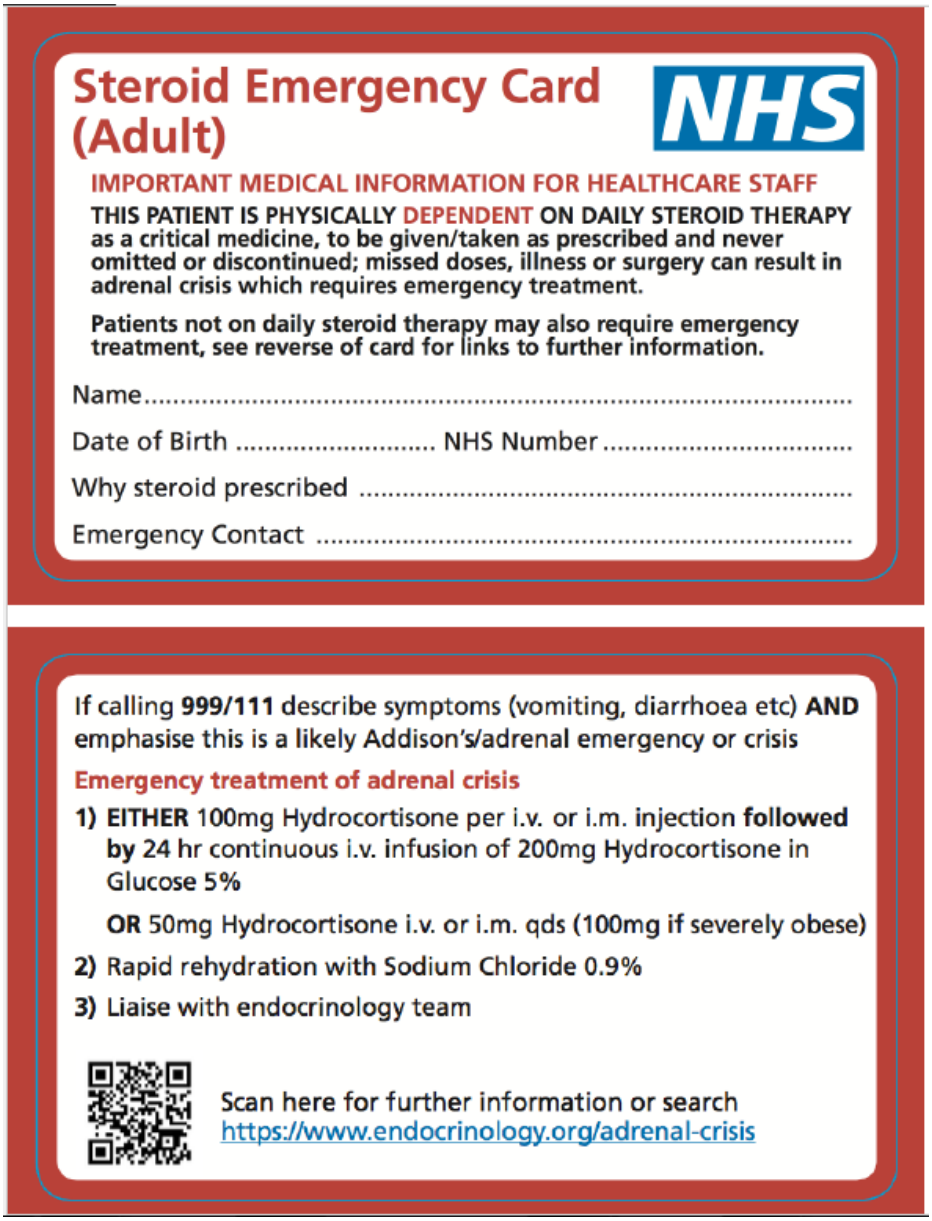
	Maintenance Dose	**Method of achieving increase in ICS**	**Additional ICS** ***(for use with action plan in addition to maintenance dose ICS/LABA)***
Fostair® MDI	100/6 1 dose BD	Increase maintenance dose to 4 doses BD	N/A
	100/6 2 doses BD	Provide additional ICS	Kelhale 100 micrograms 6 doses BD
Fostair® NEXThaler	100/6 1 dose BD	Increase maintenance dose to 4 doses BD	N/A
	100/6 2 doses BD	Provide additional ICS	Easyhaler Budesonide/beclomethasone 200 micrograms 6 doses BD
Fobumix® Easyhaler	160/4.5 1 dose BD	Increase maintenance dose to 4 doses BD	N/A
	160/4.5 2 dose BD	Provide additional ICS	Easyhaler Budesonide 200 micrograms 6 doses BD
Relvar® Ellipta	92/22 1 doses OD	Provide additional ICS	Fluticasone Accuhaler 250 micrograms 3 doses BD
Atectura® Breezhaler	125/62.5 1 dose OD	Provide additional ICS	Easyhaler Budesonide 200 micrograms 3 doses BD
	125/127.5 1 dose OD	Provide additional ICS	Easyhaler Budesonide 200 micrograms 6 doses BD
Trimbow® MDI	87/5/9 2 doses BD	Provide additional ICS	Clenil 200 micrograms 6 doses BD

NATIONAL STEROID TREATMENT CARDS

A National Steroid Treatment Card should be given to all patients taking inhaled beclomethasone >1000 micrograms/day or fluticasone >500 micrograms/day, as they are at risk of adrenal insufficiency due to hypothalamo-pituitary axis suppression and should be issued with an NHS Steroid Emergency Card.

In addition, steroid cards should be considered for people using other glucocorticoids (including potent/very potent topical glucocorticoids, intra-articular injection, regular nasal glucocorticoids) alongside medium dose inhaled steroids.

Further information on steroid treatment cards can be found in the National Patient Safety Alert Reference No. NatPSA/2020/005/NHSPS (13th August 2020).[9]



Steroid Emergency Card (Adult)

NHS

IMPORTANT MEDICAL INFORMATION FOR HEALTHCARE STAFF

THIS PATIENT IS PHYSICALLY DEPENDENT ON DAILY STEROID THERAPY as a critical medicine, to be given/taken as prescribed and never omitted or discontinued; missed doses, illness or surgery can result in adrenal crisis which requires emergency treatment.

Patients not on daily steroid therapy may also require emergency treatment, see reverse of card for links to further information.

Name.....

Date of Birth ..... NHS Number .....

Why steroid prescribed .....

Emergency Contact .....

If calling **999/111** describe symptoms (vomiting, diarrhoea etc) **AND** emphasise this is a likely Addison's/adrenal emergency or crisis

Emergency treatment of adrenal crisis

1) **EITHER** 100mg Hydrocortisone per i.v. or i.m. injection **followed by** 24 hr continuous i.v. infusion of 200mg Hydrocortisone in Glucose 5%

   OR 50mg Hydrocortisone i.v. or i.m. qds (100mg if severely obese)

2) Rapid rehydration with Sodium Chloride 0.9%

3) Liaise with endocrinology team

Scan here for further information or search https://www.endocrinology.org/adrenal-crisis

CATEGORISATION OF INHALED CORTICOSTEROID DOSE

	Low dose	Moderate dose	High dose
Beclometasone dipropionate			
Standard particle metred dose and dry powder inhalers	200 to 500 micrograms per day in 2 divided doses	600 to 800 micrograms per day in 2 divided doses	1,000 to 2,000 micrograms per day in 2 divided doses
Extra-fine particle metered dose inhalers 1	100 to 200 micrograms per day in 2 divided doses	300 to 400 micrograms per day in 2 divided doses	500 to 800 micrograms per day in 2 divided doses
Budesonide			
Dry powder inhalers	200 to 400 micrograms per day as a singe dose or in 2 divided doses	600 to 800 micrograms per day as a single dose or in 2 divided doses	1,000 to 1,600 micrograms per day in 2 divided doses
Ciclesonide			
Metered dose inhalers	80 to 160 micrograms per day as a single dose	240 to 320 micrograms per day as a single dose or in 2 divided doses	400 to 640 micrograms per day in 2 divided doses
Fluticasone propionate			
Metered dose and dry powder inhalers (excluding Seffalair Spiromax) 2 3	100 to 250 micrograms per day in 2 divided doses	300 to 500 micrograms per day in 2 divided doses	600 to 1,000 micrograms per day in 2 divided doses
Fluticasone furoate			
Dry powder inhalers 4	Not available	100 micrograms per day as a single dose	200 micrograms per day as a single dose
Mometasone furoate			
Dry powder inhaler	200 micrograms per day as a single dose	400 micrograms per day as a single dose or in 2 divided doses	600 to 800 micrograms per day in 2 divided doses
Inhalation powder capsules 5	80 micrograms per day as a single dose	160 micrograms per day as a single dose	320 micrograms per day as a single dose

Adapted from BTS/NICE/SIGN guidelines
(https://www.nice.org.uk/guidance/ng245/resources)[14]

1. Extra-fine particle beclomethasone-containing inhalers include brands such as Kelhale, Qvar, Fostair, Proxor, Luforbec, and Bibecfo, which are more potent than standard particle beclomethasone inhalers.
2. Flixotide Evohaler and Flixotide Accuhaler are licensed up to 2,000 micrograms per day (in 2 divided doses).
3. Seffalair Spiromax is a combination product containing fluticasone propionate and salmeterol. The manufacturer's SPC states the delivered dose of Seffalair Spiromax is different from other salmeterol/fluticasone containing products on the market and the products are not interchangeable.
4. Fluticasone furoate is currently available for asthma only as a combination product, Relvar Ellipta (fluticasone furoate with vilanterol).
5. Atectura Breezhaler is a combination product containing mometasone furoate and indacaterol in a hard capsule delivered via the Breezhaler device.

Using the BTS/NICE/SIGN Inhaled Corticosteroid Dose tables

When using the tables, prescribers should consult manufacturers' SPCs, the BNF and BNFC for full prescribing information, and take into account the following:

- **Doses relate to the metered ICS dose.** For some inhalers this may be different from the delivered dose (the dose that leaves the mouthpiece) and the labelled strength.
- **Doses relate to the ICS dose given in either an ICS inhaler or a combination ICS/long-acting beta2 agonist (LABA) inhaler.** If an ICS/LABA inhaler is used in a maintenance and reliever therapy (MART) regimen, the dose relates to the regular maintenance dose.
- **Dosages in the tables are not strict dose equivalences but are a guide to similar clinical effectiveness.** Prescribers should also take into account the possibility of adverse effects from ICS, which may differ between ICS and according to dosage.
- **The smallest dosage should be used to obtain optimal control.** People with asthma should usually use the smallest dosage of ICS that provides optimal asthma control, to reduce the risk of side effects. The MHRA advises that steroid treatment cards should be routinely provided for people who need prolonged treatment with high dose ICS (MHRA, Current problems in pharmacovigilance, May 2006).
- **Not all products have UK marketing authorisation for use at all dosages.** If considering prescribing a product outside the terms of its marketing authorisation, follow relevant professional guidance and take full responsibility for the decision. Obtain and document informed consent. See the General Medical Council's advice on Good practice in prescribing and managing medicines and devices for further information.

DEVELOPMENT OF THE GUIDELINE

The West Yorkshire Adult Asthma Management and Prescribing Guideline was developed by a working group of the West Yorkshire Respiratory Network with design support from the Institute of Clinical Science and Technology (https://wyh.icst.org.uk/). Draft versions of the guideline were sent for consultation amongst primary and secondary care healthcare professionals specialising in asthma management.

Members of the working group were:

- Dr Katherine Hickman, GP & Respiratory Lead for West Yorkshire
- Patrick Heaton, Medicines Optimisation Advisor & Practice Pharmacist
- Kevin Frost, Senior Clinical Pharmacist – Respiratory, Airedale NHS Foundation Trust
- Dr Toby Capstick, Consultant Pharmacist, Respiratory Leeds Teaching Hospitals NHS Trust

Decisions on formulary choices and inhaler drug/device selection were achieved by consensus, based on objective and subjective factors including:

- Ease of use of inhaler device
- Presence of dose counter
- Carbon Impact of inhaler devices
- Range of low/medium/high ICS/LABA doses within product range
- Comparative
- Tobacco Industry Links

The pharmaceutical industry has had no role in the development of this guideline. The West Yorkshire Respiratory Network is unable to receive any representation from members of the pharmaceutical industry on this guideline, or subsequent versions.

REFERENCES

1. British Thoracic Society and Scottish Intercollegiate Guidelines Network. British guideline on the management of asthma. 2019. Available at https://www.brit-thoracic.org.uk/quality-improvement/guidelines/asthma/
2. National Institute for Health and Care Excellence. Asthma: diagnosis, monitoring and chronic asthma management. NICE guideline [NG80]. November 2017. Available at https://www.nice.org.uk/guidance/ng80/chapter/Recommendations#initial-clinical-assessment
3. Louis R, Satia I, Ojanguren I, et al. European Respiratory Society Guidelines for the Diagnosis of Asthma in Adults. Eur Respir J 2022; in press (https://doi.org/10.1183/13993003.01585-2021)
4. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline [NG115]. National Institute for Health and Care Excellence. July 2019. Available at https://www.nice.org.uk/guidance/ng115/chapter/Recommendations#diagnosing-copd
5. The National Review into Asthma Deaths. Royal College Physicians. May 2014. Available at https://www.rcplondon.ac.uk/projects/outputs/why-asthma-still-kills
6. Global Initiative for Asthma (GINA) Asthma Management and Prevention. 2024. https://ginasthma.org/2024-report/
7. Usmani O, Capstick T, Saleem A et. Scullion J (Development Group). Choosing an appropriate inhaler device for the treatment of adults with asthma or COPD. MGP Guidelines. 2020. Available at: https://www.medscape.co.uk/viewarticle/choosingappropriate-inhaler-device-treatment-adults-asthma-2022a10025xw
8. McKeever et al. Quadrupling Inhaled Glucocorticoid Dose to Abort Asthma Exacerbations. NEJM. March 2018. 378:902-910
9. National Patient Safety Alert. Steroid Emergency Card to support early recognition and treatment of adrenal crisis in adults. Reference No. NatPSA/2020/005/NHSPS. 13th August 2020.
10. Medicines and Healthcare products Regulatory Agency. Montelukast (Singulair): reminder of the risk of neuropsychiatric reactions. 19th September 2019. Available at: https://www.gov.uk/drug-safety-update/montelukast-singulair-reminder-of-the-risk-of-neuropsychiatric-reactions
11. Asthma-Lung UK. Inhalers for asthma, COPD, and other lung conditions: Patient information regarding inhaler links to the tobacco industry. Available at. https://www.blf.org.uk/sites/default/files/PMI%20Vectura%20patient%20info%20FINAL.pdf

12. Bateman ED, Reddel HK, O'Byrne PM et al. As-Needed Budesonide–Formoterol versus Maintenance Budesonide in Mild Asthma. New Engl J Med 2018;378:1877-87
13. O'Byrne PM, JM Fitzgerald, Bateman ED et al. Inhaled Combined Budesonide–Formoterol as Needed in Mild Asthma. New Engl J Med 2018;378:1865-76.
14. British Thoracic Society, National Institute for Health and Care Excellence, and Scottish Intercollegiate Guidelines Network. Asthma: diagnosis, monitoring and chronic asthma management (BTS, NICE, SIGN). NICE guideline [NG245]. Published: 27 November 2024
15. Hancox RJ, Cowan JO, Flannery EM et al. Bronchodilator tolerance and rebound bronchoconstriction during regular inhaled beta-agonist treatment. Respir Med 2000;94:767-71.
16. Aldridge RE, Hancox RJ, Taylor DR et al. Effects of terbutaline and budesonide on sputum cells and bronchial hyperresponsiveness in asthma. Am J Respir Crit Care Med 2000;161:1459-64.
17. Bloom CI, Cabrera C, Arnetorp S et al. Asthma-Related Health Outcomes Associated with Short-Acting β2-Agonist Inhaler Use: An Observational UK Study as Part of the SABINA Global Program Adv Ther. 2020;37(10):4190–208
18. Price DB, Truro F, Voorham J et al. Adverse outcomes from initiation of systemic corticosteroids for asthma: long-term observational study. J Asthma Allergy. 2018;11:193-204.
19. Tran TN, King E, Sarkar R et al. Oral corticosteroid prescription patterns for asthma in France, Germany, Italy and the UK. Eur Respir J. 2020;55(6):190236.
20. Volmer T, Effenberger T, Trautner C et al. Consequences of long-term oral corticosteroid therapy and its side-effects in severe asthma in adults: a focused review of the impact data in the literature Eur Resp J. 2018;52:1800703
21. Levy ML, Beasley R, Bostock B, Capstick TGD, et al. A simple and effective evidence-based approach to asthma management: ICS-formoterol reliever therapy. British Journal of General Practice. 2024;74:86-89
22. Haughney J, Lee AJ, McKnight E et al. Peak Inspiratory Flow Measured at Different Inhaler Resistances in Patients with Asthma J Allergy Clin Immunol Pract 2021;9:890-6
23. Capstick TGD, Gudimetla S, Harris DS et al. Demystifying Dry Powder Inhaler Resistance with Relevance to Optimal Patient Care. Clinical Drug Investigation 2024. https://doi.org/10.1007/s40261-023-01330-2
24. Sobieraj DJ, Weeda ER, Nguyen E et al. Association of Inhaled Corticosteroids and Long-Acting β-Agonists as Controller and Quick Relief Therapy With Exacerbations and Symptom Control in Persistent Asthma: A Systematic Review and Meta-analysis JAMA. 2018;319(14):1485-1496
25. Rogliani P, Ritondo BL, Ora J et al. SMART and as-needed therapies in mild-to-severe asthma: a network meta-analysis. Eur Respir J 2020;56:2000625.