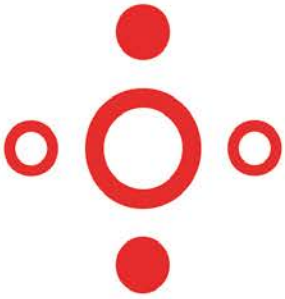
Grŵp Strategaeth Meddyginiaethau Cymru Gyfan
All Wales Medicines Strategy Group



All Wales Paediatric Asthma Management and Prescribing Guideline

June 2023

This document has been prepared by the Respiratory Health Implementation Group, and has subsequently been endorsed by the All Wales Medicines Strategy Group (AWMSG).

AWMSG has only endorsed the guideline content. AWMSG has not endorsed the mobile technology application (app) referred to within the document as this falls outside their remit. The responsibility to ensure all regulatory requirements have been investigated in the development of the app, and continue to be adhered to, remains with the app owner.

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All Wales Paediatric Asthma Management and Prescribing Guideline

Grŵp Strategaeth Meddyginiaethau Cymru Gyfan
All Wales Medicines Strategy Group

Y Grŵp Gweithredu ar Iechyd Anadlol
Respiratory Health Implementation Group
Iechyd Plant
Child Health

GIG CYMRU NHS WALES

CORE PRINCIPLES

- Review peak flow, inhaler technique, triggers, vaping, smoking and secondhand smoke exposure at each review.
- Where possible, enrol patient on the AsthmaHub for Parents app
- Review digital control record on patient's app at each review.
- Update digital asthma action plan and medication on patient's app at each review.
- Document your health care interaction on patient's app at each review.

TREATMENT AND INHALER PRINCIPLES

- Use Paediatric low, moderate and high dose Inhaled Corticosteroids (ICS) in children under 12 years
- Use Adult low, moderate and high dose ICS in children aged 12 years and over.
- All MDIs should be used with a spacer [Aerochamber Plus series recommended]. Mouthpiece spacers are more efficient than mask spacers. Children >3 years should be able to use a mouthpiece spacer even when unwell.
- Consider Dry Powder Inhalers (DPI) in children 6 years and over, and trial DPI as first line in children 12 years and over.
- For children already on metered dose inhalers (MDI), consider "switch from six" from MDI to DPI according to patient preference. Ensure adequate technique training. Review response to any change of therapy within 3 months.
- Prescribe by brand to ensure consistent device.
- ICS and LABA must always be in combination inhaler.
- Prescribe SABA MDI and spacer for emergency use to all children.

NHS WALES GREEN AGENDA

NHS Wales has set a target to reduce the proportion of high global warming potential inhalers from more than 70% to less than 20%, by 2025.

Low global warming potential — High global warming potential

METERED DOSE INHALERS (MDI) HAVE A HIGHER CARBON FOOTPRINT THAN DRY POWDER INHALERS (DPI)

Find out more about this guideline
icst.info/the-all-wales-paediatric-asthma-management-and-prescribing-guideline

Designed by The Institute of Clinical Science & Technology

STEP 1: NEW ASTHMA DIAGNOSIS

Following a positive treatment trial
(see paediatric asthma diagnosis guideline)

Age under 6yrs

Commence
Paediatric low dose ICS
plus PRN SABA

MDI

ICS OPTIONS INCLUDE:
Clenil modulite 100mcg
1 dose BD via spacer

SABA OPTIONS INCLUDE:
Salamol 100mcg
via spacer

Mask spacer age <3 yrs
Mouthpiece spacer age >3yrs
Recommend Aerochamber Plus series

Age 6-11yrs

Commence
Paediatric low dose ICS
plus PRN SABA
Consider DPI in children aged >6 years with appropriate training

DPI

ICS OPTIONS INCLUDE:
Budesonide 100mcg Turbohaler (Pulmicort)
1 dose BD

SABA OPTIONS INCLUDE:
Terbutaline 500mcg Turbohaler
prn

MDI

ICS OPTIONS INCLUDE:
Clenil modulite 100mcg
1 dose BD via spacer

SABA OPTIONS INCLUDE:
Salamol 100mcg
via spacer PRN

Salbutamol easy-breathe
100mcg PRN

Age 12yrs and over

Commence
Adult low dose ICS
plus PRN SABA
Trial DPI as first line in children aged >12 years with appropriate training

DPI

ICS OPTIONS INCLUDE:
Budesonide 100mcg Turbohaler (Pulmicort)
1-2 doses BD

Budesonide 100mcg Easyhaler
1-2 doses BD

SABA OPTIONS INCLUDE:
Terbutaline turbohaler 500mcg *prn*

Salbutamol easyhaler 100mcg *prn*

MDI

ICS OPTIONS INCLUDE:
Clenil modulite 100mcg
1-2 doses BD via spacer

SABA OPTIONS INCLUDE:
Salamol 100mcg
via spacer PRN

Salbutamol easy-breathe
100mcg PRN

STEP 2: PERSISTENT SYMPTOMS

Trial of montelukast (as add on therapy)
4mg nocte
As granules aged < 2 years
As chewable tablet aged > 2 years

Discontinue if no benefit after 6 weeks

Trial of montelukast (as add on therapy)
5mg nocte

Discontinue if no benefit after 6 weeks

Trial of montelukast (as add on therapy)
Age 12-14 yrs: 5mg nocte
Age 15-17 yrs: 10mg nocte

Discontinue if no benefit after 6 weeks

STEP 3

Referral to secondary care asthma services

Age under 4yrs

Change to
Paediatric moderate dose ICS
plus PRN SABA

ICS OPTIONS INCLUDE:
Clenil modulite 100 mcg
2 doses BD via spacer

Age 4yrs and over

Change to
Paediatric moderate dose ICS
plus PRN SABA

ICS OPTIONS INCLUDE:
Clenil modulite 100 mcg
2 doses BD via spacer

Change to
Paediatric low dose ICS/LABA
plus PRN SABA
Consider DPI in children aged >6 years with appropriate training

ICS/LABA OPTIONS INCLUDE:
Symbicort 100/6 Turbohaler
1 dose BD

ICS/LABA OPTIONS INCLUDE:
Seretide 50/25
2 doses OD-BD via spacer

Change to
Adult low dose ICS/LABA
plus PRN SABA

1. Fixed dose plus PRN SABA OR
2. MART regime plus emergency SABA

Trial DPI as first line in children aged >12 years with appropriate training

FIXED DOSE ICS/LABA OPTIONS INCLUDE:
Symbicort 100/6 Turbohaler
2 doses BD
Relvar Elipta 92/22
1 dose OD

MART REGIME OPTIONS INLCUDE:
Symbicort 100/6 Turbohaler
1 dose BD plus additional doses as needed (max 8 doses/24 hrs)

ICS/LABA OPTIONS INCLUDE:
Flutiform 50/5
2 doses BD via spacer
Seretide 50/25
2 dose BD via spacer

STEP 4

Referral to specialist clinics or tertiary asthma services for reassessment

Change to
Paediatric moderate dose ICS/LABA
plus PRN SABA

ICS/LABA OPTIONS INCLUDE:
Seretide 50/25 Evohaler
2 doses BD via spacer

Referral to secondary care asthma services for reassessment

Change to
Paediatric moderate dose ICS/LABA
plus PRN SABA
Consider DPI in children aged >6 years with appropriate training

ICS/LABA OPTIONS INCLUDE:
Symbicort 100/6 Turbohaler *2 doses BD*
Seretide 100 Accuhaler *1 dose BD*

ICS/LABA OPTIONS INCLUDE:
Flutiform 50/5
2 doses BD via spacer
Seretide 50/25
2 doses BD via spacer

Referral to secondary care asthma services for reassessment

Change to
Adult moderate dose ICS/LABA
plus PRN SABA

1. Fixed dose plus PRN SABA OR
2. MART regime plus emergency SABA

Trial DPI as first line in children aged >12 years with appropriate training

FIXED DOSE ICS/LABA OPTIONS INLCUDE:
Symbicort 200/6 Turbohaler
2 doses BD
Relvar Elipta 184/22
1 dose OD

MART REGIME OPTIONS INCLUDE:
Symbicort 200/6 Turbohaler
1-2 doses BD plus additional as needed (max 8 doses/24 hrs)

FIXED DOSE ICS/LABA OPTIONS INCLUDE:
Flutiform 125/5
2 doses BD via spacer
Seretide 125/25
2 doses BD via spacer

STEP 5

Referral to specialist clinics or tertiary asthma services for reassessment

Referral to specialist clinics or tertiary asthma services for reassessment

Referral to specialist clinics or tertiary asthma services for reassessment

DPI: Dry Powder Inhaler
ICS: Inhaled Corticosteroid
LABA: Long-acting Beta$_2$ Agonist
LAMA: Long Acting Muscarinic Antagonist
MART: Maintenance and Reliever Therapy
MDI: Metered Dose Inhaler
PRN: *Pro re nata* 'as needed'
SABA: Short-acting Beta$_2$ Agonist
OD: Once daily
BD: Twice a day

ICS categorisation
(beclometasone dipropionate equivalent)

-Paediatric low dose 200mcg/day
-Paediatric moderate dose 200-400mcg/ day
-Paediatric high dose >400 mcg/day

-Adult low dose 400mcg/day
-Adult moderate dose 400-800mcg/ day
-Adult high dose >800 mcg/day

ICS dosing categories used here from NICE (NG80)

RHIG Version: DRAFT
June 2023

GIG CYMRU NHS WALES

Iechyd Plant

Y Grŵp Gweithredu ar Iechyd Anadlol

Respiratory Health Implementation Group

Child Health

All Wales Paediatric Asthma Management and Prescribing Guidelines

Supporting notes

Endorsed by:

Grŵp Strategaeth Meddyginiaethau Cymru Gyfan
All Wales Medicines Strategy Group

THE ALL WALES PAEDIATRIC ASTHMA MANAGEMENT & PRESCRIBING GUIDELINE

https://allwales.icst.org.uk/programmes/management-of-paediatric-asthma-in-the-community/

FOREWORD FROM THE NATIONAL CLINICAL LEAD

The diagnosis and management of asthma in children is complicated by many factors. Not all that is referred to as wheeze is actually wheeze. Not all children with actual wheeze have atopic asthma. Not all children with wheeze respond to asthma therapies. Tests for asthma cannot be performed by all age groups, are not available in all health care settings and are not always reliable in children.

This document for the treatment and management of asthma in children is based on recommendations from the British Thoracic Society and Scottish Intercollegiate British Guideline on the management of asthma (2019), the National Institute for Health and Care Excellence: NICE Guideline NG802, and The Global Initiative for Asthma (GINA): Asthma Management and Prevention Guidelines (2022). Where there are conflicts in advice, a solution is outlined.

This document sets out the patient pathway for Wales, explicit in referral thresholds, and national medication choices. A document for a national, standardized, safer and sustainable approach to asthma care in children.

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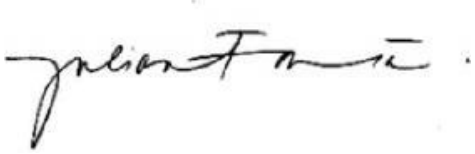


ACKNOWLEDGEMENTS

The All Wales Paediatric Asthma Management and Prescribing Guidelines were developed by RHIG (Child Health) in collaboration with the Welsh Paediatric Respiratory Network.

CONTENTS PAGE

GENERAL PRINCIPLES OF MANAGEMENT

These recommendations are based on those from the British Thoracic Society (BTS) and Scottish Intercollegiate Guideline Network (SIGN) Guideline on the management of asthma (2019)[1], the National Institute for Health and Care Excellence (NICE) Guideline NG80[2], and The Global Initiative for Asthma (GINA): Asthma management and prevention guidelines 2022[3].

THE AIMS OF ASTHMA MANAGEMENT

- to control symptoms allowing normal levels of activity, undisturbed sleep and full school attendance
- to prevent exacerbations
- to maintain normal lung function
- to use minimum therapy necessary

WELL CONTROLLED ASTHMA

The Global Institute for Asthma (GINA) 2022 guidelines define good symptom control as:

- Daytime symptoms less than 3 times/ week
- No limitations of daily activities, including exercise
- No nocturnal symptoms or awakening because of asthma
- Reliever treatment required less than 3 times/ week

In addition to uncontrolled symptoms, the GINA guidelines identify the following risk factors for future exacerbations:

- Previous exacerbation, particularly within the last 12-months
- Poor adherence and inhaler technique
- High Short Acting $Beta_2$ Agonist (SABA) use
- Poor lung function (especially FEV1<60%)
- Smoking and vaping exposure and air pollution
- Co-morbid allergic disease
- Poverty

ASSESSING ASTHMA CONTROL AND RISK OF EXACERBATION

HELPFUL QUESTIONS TO CLARIFY ASTHMA CONTROL

1. Have you had daytime symptoms of asthma?
2. Have you had difficulty sleeping because of asthma?
3. Has your asthma interfered with normal activities like school, or playing sports?
4. How many times a week are you taking your reliever therapy?

HELPFUL QUESTIONS TO CLARIFY RISK OF FUTURE EXACERBATIONS

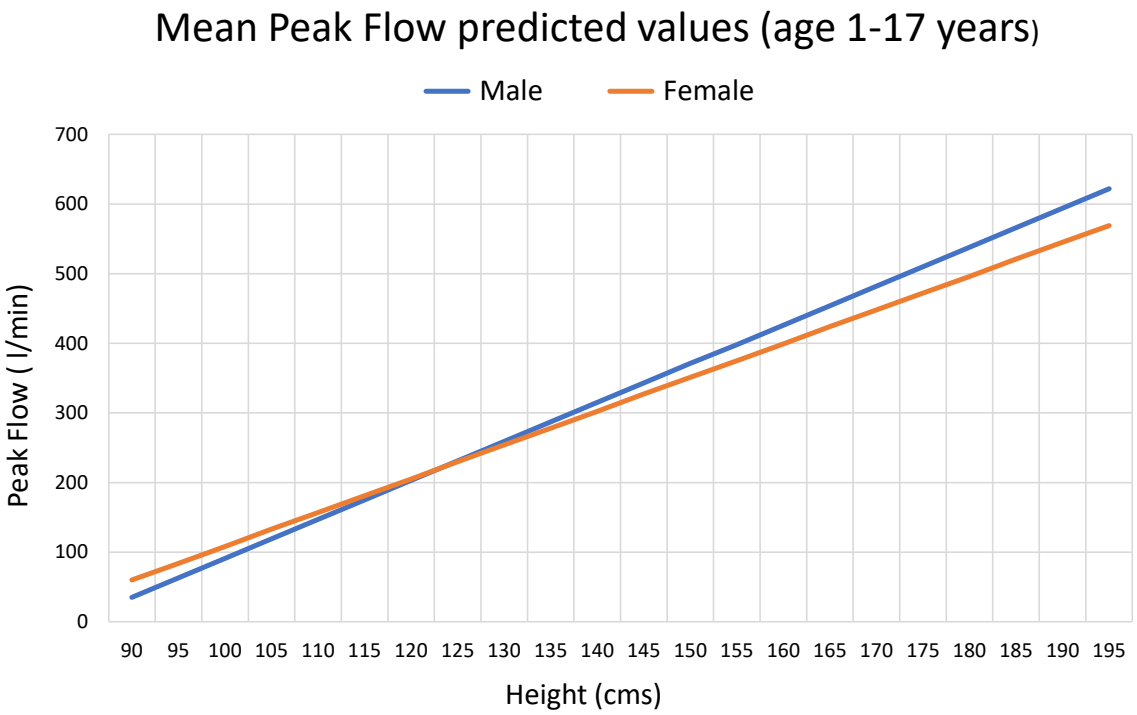
1. Have you picked up your asthma prescription this month?
2. Are you taking your preventer inhaler regularly?
3. Have you had your inhaler technique checked recently?
4. Have you visited your GP, A/E or been admitted to hospital because of asthma this month?
5. Have you required a course of prednisolone for asthma this month?
6. Do you or anyone in your household smoke or vape?

PERFORM PEAK FLOW AT EVERY CONSULTATION (>5 YEARS)

Checking peak flow in clinic will help you understand whether your patient has well controlled asthma at the moment. The value should be assessed as a percentage of the best ever peak flow that the child has performed. The peak flow can be categorised into Green, Amber or Red Zones depending on percent of best ever blow.

Green Zone	>80% best ever	Good control
Amber Zone	50-80% best ever	A sign of deteriorating control
Red Zone	<50% best ever	Red flag – suggestive of severe attack

If your patient does not know their best ever blow, it should be available on their asthma app which you can review together. Otherwise the graph below shows the mean value for male and female children against their height, and this can be used as a general measure of what to expect.



R. Pellegrino, G. Viegi, V. Brusasco, et al.. ATS/ERS Task Force: Standardisation of lung function testing - Interpretative strategies for lung function tests. Guideline 2005[4]

NHS WALES ASTHMAHUB FOR PARENTS: REVIEW PATIENT HELD HISTORICAL DATA

The NHS Wales AsthmaHub for Parents[5] is a self-management App for parents and children with asthma. Each month, a reminder to complete a series of questions called the *Asthma Checker* is sent to the app holder. These questions reflect what might be asked at consultation and provide a monthly record of asthma control.

During your consultation, you can review this longitudinal monthly asthma data on the patient/ parent's smartphone.

TREATMENT ALGORITHMS AND REFERRAL THRESHOLDS

The All Wales Asthma management algorithm identifies appropriate treatment strategies for children age 6 years and under, 6-11 years and 12 years and over. Treatment algorithms highlighted in this guideline are based on BTS and NICE Guidelines[1,2].

DOSING DEFINITIONS FOR INHALED CORTICOSTEROID THERAPY

Paediatric low dose, paediatric moderate dose and paediatric high dose Inhaled Corticosteroid (ICS) definitions are used for children aged under 12 years, and correspond to 200, 200-400, and >400 microgram/day beclometasone dipropionate equivalent, respectively.

Adult low dose, adult moderate dose and adult high dose inhaled corticosteroid definitions are used for children aged 12 years and over, and correspond to 400, 400-800, and >800 microgram/day beclometasone dipropionate equivalent, respectively. These dosing definitions and nomenclature are concordant with NICE Guidelines[2]. Unlike in adult patients, escalation of ICS treatment during acute exacerbation is not indicated in children[6].

Inhaled Corticosteroid	Paediatric (age under 12yrs)	Adult (age 12yrs and over)
Low Dose	200 mcg/day	400 mcg/day
Moderate Dose	200-400 mcg/day	400-800 mcg/day
High Dose	>400 mcg/day	>800 mcg/day

TRIAL OF TREATMENT WITH ICS THERAPY (ALL AGE GROUPS)

1. Commence Paediatric moderate dose ICS (200mcg BD beclometasone dipropionate)
2. Review response at 8 weeks

No response

- discontinue treatment
- consider alternative diagnosis

Positive response

- discontinue treatment
- monitor symptoms
- if symptoms recur, asthma is likely
- Restart ICS at low dose (100mcg BD) as maintenance therapy

PATIENTS UNDER 6 YEARS OF AGE

It can be difficult to make a diagnosis of asthma in children with preschool wheeze given there are no objective tests that may be used to confirm the diagnosis. Recurrent wheeze in this age group may or may not be responsive to beta-agonist or ICS.

- Poor response to beta-agonists in young children with wheezing may reflect a relatively small contribution to airway narrowing from smooth muscle bronchoconstriction, with airways obstruction predominantly due to mucous production and airway oedema. There is no evidence that ipratropium bromide works better than salbutamol in this age group.
- Other atopic disease, a family history of atopy, and a raised blood eosinophil count >0.2 x 10^9/litre (if available) may be helpful in identifying those children with eosinophilic inflammation who are more likely to respond to asthma therapies at a young age[7].
- Short-lived, occasional wheeze may be managed with SABA monotherapy and regular review[2].
- All children with persistent symptoms (using inhaled beta-agonist ≥3 times /week, symptomatic ≥3 times a week or waking one night a week with wheeze symptoms) should be given an 8-week trial of treatment with paediatric moderate dose ICS[1-3].
- All children age >3 years with recurrent episodic symptoms (including viral-associated symptoms) should be suspected of having asthma and offered an 8-week trial of treatment with paediatric moderate dose ICS[1-3].
- If a trial of treatment with ICS is positive, the child should be commenced on paediatric low dose ICS as maintenance therapy (i.e. a drop in ICS dose from the trial of treatment dose).
- In children < 6 years of age, escalation of therapy in primary care should be limited to paediatric low dose ICS plus Leukotriene antagonist (LRTA), before considering referral to secondary care for reassessment.
- Children age <4 years of age should be referred from secondary to specialist or tertiary asthma care if symptoms remain severe or frequent on paediatric moderate dose ICS and LRTA.
- Children age 4-6 years should be referred from secondary to specialist or tertiary asthma care if symptoms remain severe or frequent on paediatric moderate dose ICS/LABA and LRTA.
- SABA MDI and spacer (Aerochamber Plus series[8] recommended) should be prescribed to all patients for emergency treatment.

PATIENTS AGED 6-11 YEARS

- Short-lived, occasional wheeze may be managed with SABA monotherapy and regular review[2]. There should be a low threshold for commencing maintenance therapy.
- All children aged 6-11 years with persistent symptoms (using inhaled beta-agonist ≥ 3 times /week, symptomatic ≥3 times a week or waking one night a week with wheeze symptoms) should be commenced on maintenance therapy[1-3].
- All children age 6-11 years of age with recurrent episodic symptoms should be commenced on maintenance therapy[1-3].
- All children aged 6-11 years who have had an asthma attack requiring corticosteroids in the last 24 months should be commenced on maintenance therapy[1].
- First line maintenance therapy is paediatric low dose ICS.
- Leukotriene inhibitors (LTRA) should not be used as monotherapy in this age group.
- In children age 6-11 years, escalation of therapy in primary care should be limited to paediatric low dose ICS/LABA and LRTA before considering referral to secondary care for reassessment.
- Children age 6-11 years should be referred from secondary to specialist or tertiary care if symptoms remain severe or frequent on paediatric moderate dose ICS/LABA and LRTA.
- Dry powder inhalers (DPI) should be considered in all children aged 6 years and over, given there are licensed medications, they can be taken effectively with appropriate training[9], increase medication prescribing choice in an age group where few choices exist, offer the patient ease-of-use advantages that they may prefer and have a lower environmental impact compared with metered dose inhalers (MDI)[10]. Ensure adequate resources are available to deliver inhaler technique training
- Consider switching from MDI to DPI from the age of six in patients with well controlled asthma already on maintenance therapy ["switch from six"], and according to patient technique and preference. Ensure adequate resources are available to deliver inhaler technique training. Review response to any change of therapy within 3 months.
- SABA MDI and spacer (Aerochamber Plus series[8] recommended) should be prescribed to all patients for emergency treatment.

PATIENTS AGED 12 YEARS AND OVER

- Short-lived, occasional wheeze may be managed with SABA monotherapy and regular review[2]. There should be a low threshold for commencing maintenance therapy.
- All children aged 12 years and over, with persistent symptoms (using inhaled beta-agonist > 3 times/week, symptomatic >3 times a week or waking one night a week with wheeze symptoms) should be commenced on maintenance therapy[1-3].
- All children aged 12 years and over, with recurrent episodic symptoms should be commenced on maintenance therapy[1-3].
- All children aged 12 years and over, who have had an asthma attack requiring corticosteroids in the last 24 months should be commenced on maintenance therapy[1].
- First line maintenance therapy is adult low dose ICS.
- Leukotriene inhibitors (LTRA) should not be used as monotherapy in this age group.
- In children age 12 years and over, escalation of therapy in primary care should be limited to adult low dose ICS/ LABA and LRTA before considering referral to secondary care for reassessment.
- Adult low dose ICS/LABA may be delivered as fixed dose ICS/LABA or in a MART Regime (Maintenance and Reliever Therapy).
- Children age 12 years and over should be referred from secondary to specialist or tertiary care if symptoms remain severe or frequent on adult moderate dose ICS/LABA and LRTA.
- Adult moderate dose ICS/LABA may be delivered as fixed dose ICS/LABA or in a MART Regime (Maintenance and Reliever Therapy).
- Dry powder inhalers (DPI) are the preferred choice for children age 12 years and over, given they offer options for MART therapy and once daily dosing and have less environmental impact compared with metered dose inhalers (MDI)[10]. Consider switching from MDI to DPI in patients with well controlled asthma already on maintenance therapy according to patient preference. Ensure adequate resources are available to deliver inhaler technique training. Review response to any change of therapy within 3 months.
- SABA MDI and spacer (Aerochamber Plus series[8] recommended) should be prescribed to all patients for emergency treatment.

INHALER DEVICE SELECTION

Full instruction on asthma inhalers, dosing, licenses and age applicability as well as instruction on inhaler technique for specific devices can be found on the RightBreathe website[11]. The NHS Wales Asthmahub for Parents app also contains educational videos on inhaler technique[5].

DRY POWDER INHALERS

Increasing the number of children on DPI is one primary aim of this pathway. Consideration should be made in children age 6 years and over to start on DPIs.

- There are advantages to the patient in terms of ease-of-use if they can use a DPI effectively. As in older children and adults, children age 6-12 years may have a preference to use DPI over MDI and spacer given the convenience.
- Evidence suggests that 86% of 5-12-year olds and 98% of children aged >8 years can use a DPI Turbohaler effectively[9].
- Some DPIs are licensed from age 6 years (some even earlier). Restricting DPIs in this age group restricts licensed medication choices.
- A high proportion of DPIs are used in children in countries where asthma outcomes are better than the UK.
- There is an environmental benefit.

DPI's generally require a minimum inspiratory flow rate of approximately 30l/min. Training whistles and placebo inhalers can be used to check patients can achieve these flow rates and to help optimize inhaler technique. The In-Check DIAL G16 can be used to coach patients to use their inhalers correctly by assessing their peak inspiratory flow rate[12].

PATIENTS UNDER 6 YEARS OF AGE

Children under 6 years of age should be prescribed metered dose inhalers (MDI) with an appropriate spacer (valved holding chamber).

- Children aged <3 years are generally unable to use a mouthpiece spacer and should be prescribed a mask spacer.
- Deposition data is much better for mouthpiece spacers compared to mask spacers and most children aged 3 years and over should be able to use a mouthpiece spacer both when well and when unwell. Switch where possible to mouthpiece spacers at 3 years of age[3].
- A single brand of spacer should be prescribed to keep things simple, and so that only a single technique is required. The Aerochamber Plus series[8] is recommended for all age groups. Avoid providing both mask and mouthpiece spacers to the same patient as this is confusing.
- ICS and LABA treatments must be prescribed as a combination inhaler.

- PRN salbutamol (Salamol[13] is recommended) should be prescribed to all patients as MDI and spacer for use during exacerbation
- An MDI should always be used with a spacer device

PATIENTS AGED 6 TO 17 YEARS

- Children aged 6 years and over should be able to use dry powder inhalers (DPI) with appropriate training.
- DPI's generally require a minimum inspiratory flow rate of approximately 30l/min. Training whistles and placebo inhalers can be used to check patients can achieve these flow rates and to help optimize inhaler technique. The In-Check DIAL G1611 can be used to coach patients to use their inhalers correctly by assessing their peak inspiratory flow rate[12].
- DPI's should be considered when commencing children aged 6 years and over, on asthma therapy, given they are licensed, can be taken effectively with appropriate training, increase medication prescribing choice in an age group where few choices exist, offer the patient ease-of-use advantages which they may prefer and have a lower environmental impact
- Consider "Switch from six" from MDI to DPI in children with asthma who are already on established therapy. Consider ability, technique and patient preference. Review response to any change of therapy within 3 months.
- ICS and LABA treatments must be prescribed as a combination inhaler
- PRN salbutamol (Salamol[13] is recommended) should be prescribed to all patients as MDI and mouthpiece spacer for use during exacerbation, even if salbutamol for breakthrough symptoms is managed with DPI.
- An MDI should always be used with a spacer device

MART THERAPY IN PATIENTS AGED 12 YEARS AND OVER

- A number of combination inhalers (ICS/LABA) are licensed for Maintenance And Reliever Therapy (MART)
- Symbicort Turbohaler is licensed for MART therapy in children aged 12 year and over (maximum of 8 doses/ day in total)
- The patient should take twice daily maintenance therapy and then also use the same product and device as a reliever medication for breakthrough symptoms. This enables the total dose of ICS to be titrated against symptoms.
- Understanding of the concept of Maintenance and Reliever therapy, and the ability to use DPI are important in identifying patients suitable for MART therapy.
- MART regimes 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.
- Persisting use of additional reliever doses more than twice a week indicates suboptimal asthma control and should prompt a review of therapy
- SABA MDI and spacer (Aerochamber Plus series[8] recommended) should be prescribed to all children using MART therapy for emergency treatment.

FUTURE GENERATIONS COMMISSIONER FOR WALES: DECARBONISATION POLICY

Metered dose inhalers (MDI) have a higher carbon footprint than dry powder devices (DPI) 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[1]. Recommendations in this document are concordant with BTS policy and with the Future Generations Commissioner for Wales Decarbonisation policy[10].

Patients, parents and clinicians should also be aware of the environmental impact of poor asthma control (requiring additional SABA usage) compared to good control. Excess greenhouse gas emissions are generated by the additional SABA doses associated with uncontrolled asthma, suggesting the best preventer inhaler device from an environmental perspective is always one that allows a patient to effectively control their asthma[14].

- MDI prescriptions currently contribute an estimated 3.5% of the carbon footprint of the NHS. MDI's comprise 70% of all inhalers prescribed in the UK, but only 14% in Sweden[15].
- DPI's should be considered when commencing children aged 6 years and over on asthma therapy, given the are licensed, can be taken effectively with appropriate training, increase medication prescribing choice in an age group where few choices exist, offer the patient ease-of-use advantages which they may prefer and have a lower environmental impact
- Consider "Switch from six" from MDI to DPI in children aged 6 years and over, who are already on established therapy, considering patient preference and technique ability. Ensure adequate resources available to deliver inhaler technique training. Review response to any change of therapy.
- SABA MDI and spacer should be prescribed to all patients for emergency use even if DPI SABA is used for breakthrough symptoms on a day to day basis.
- Ventolin (salbutamol) MDI has been omitted from the guidelines as it is an MDI with a very high carbon footprint (>25 kg CO_2e per inhaler). Salamol[13] (salbutamol MDI with equivalent number of actuations in a smaller canister) has a lower carbon footprint (<10 kg CO_2e per inhaler) and is the MDI SABA of choice.
- Salamol[13] contains 3.7mcg/actuation of alcohol. This is in the same order as alcohol found in fruit and other foods such as bread and burger baps. One small ripe banana (100g) contains 40mcg alcohol, equivalent to 11 puffs of Salamol. Fresh Apple Juice can contain up to 66mcg/100ml (equivalent to 18 actuations of Salamol)[16-18]. Rightbreathe[11] recommends Salamol for age > 1 month, both as routine reliever and in acute severe exacerbation up to 10 puffs every 10 minutes
- Patients should return unwanted inhalers to their community pharmacy for disposal.

STEPPING UP, STEPPING DOWN AND REASSESSING TREATMENT STRATEGY

STEPPING UP

- An assessment of poor asthma control should trigger consideration of escalating therapy.
- Modifiable factors that may influence asthma control should be discussed whenever escalation of therapy is considered, including inhaler technique, compliance, exposure to smoking and vaping, and management of triggers.
- Co-morbidities, especially atopic disease, should be optimized.
- In young children reflection on whether symptoms are responsive to anti-asthma therapy is important before escalation of therapy.
- Any change in therapy should be reassessed within 3 months.

STEPPING DOWN

- All asthma guidelines recommend a step wise approach including the need to consider stepping down therapy once control is achieved and maintained, in order to minimise treatment side effects[1-3].
- Reductions in asthma therapy may be considered if a patient has had complete asthma control over a three-month period. A decision to step down should consider 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.

REASSESSING TREATMENT STRATEGY BETWEEN AGE GROUP CLASSIFICATIONS

- As children progress from one age group to the next at age 6 years and age 12 years, consider available inhaler devices and regimens now available to them. Discuss new options and potential advantages of switching to a new regimen. Consider patient preference and technique ability. Review response to any change of therapy within 3 months.

NATIONAL STEROID TREATMENT CARD

- A National Steroid Treatment Card should be given to all patients prescribed paediatric high dose or adult moderate dose inhaled corticosteroids (> 800 mcg beclometasone dipropionate equivalent).
- In addition, a National Steroid Treatment Card should be considered if the patient is using other glucocorticoids (including potent/very potent topical glucocorticoids, regular nasal glucocorticoids) alongside paediatric moderate dose inhaled steroids (400 mcg beclometasone dipropionate equivalent).
- More information can be found at the Welsh Endocrine and Diabetes Society website[19].

TEMPLATE FOR ASTHMA REVIEW

All individuals with asthma should receive a review at least annually. This will need to be more frequent if poor control is identified and will need to be face to face. All patients should be reviewed after an emergency admission or exacerbation.

- Assess asthma control
- Check peak flow and assess percentage of Best Peak Flow. Identify Green, Amber or Red Zone.
- Review frequency use of SABA reliever medication
- Check prescription fill rate as a measure of compliance (where available)
- Review number of exacerbations in the last 12 months (number of oral corticosteroid courses, GP visits, AE visits and admissions to hospital)
- Review inhaler technique
- Review triggers
- Review first and secondhand smoke and vaping exposure and offer smoking cessation support
- Reinforce need for annual flu vaccination
- Introduce Asthmahub for Parents App[5] to the patient/parent if is not already using it.
- Complete or review digital Personal Asthma Action Plan on Asthmahub for Parents App.
- If asthma has been well controlled for >3 months consider stepping down therapy.
- If patient has reached a new age group classification (at age 6 years and age 12 years) review current treatment regimen and new approaches now available. Discuss relative advantages and preferences with patient and parents.
- Refer to secondary care if:
    - asthma control is poor and patient is at treatment referral threshold
    - patient has required ≥2 courses oral corticosteroids/year
    - patient has been admitted to hospital with asthma in the last 12 months

SELF-MANAGEMENT
NHS WALES ASTHMAHUB FOR PARENTS APP

NHS Wales and Public Health Wales have collaborated in producing a bilingual self-management App for children and their parents called AsthmaHub for Parents[5].

BENEFITS FOR PATIENTS AND PARENTS

- Provides a digital Personal Asthma Action Plan
- Provides a digital treatment escalation plan for exacerbations
- Gives a monthly assessment of asthma control. Each month, the *asthma checker* is sent to the app holder. The *asthma checker* is a series of questions and requests a peak flow measurement, providing a monthly record of asthma control. The app identifies red flags and guides the parent/patient to seek review if appropriate.
- All data is saved on the app helping to build a long-term picture of asthma control for the patient
- The app has a large educational role, providing guidance and videos on all aspects of asthma and preschool wheeze, including treatment strategies, medications, triggers, inhaler techniques, smoking cessation advice, how to manage asthma at school, in cold weather, during exercise etc.

BENEFITS FOR HEALTH CARE PROFESSIONALS

- The app provides a patient held record of asthma control that may be reviewed at each healthcare interaction using the patient/parent's smartphone.
- The digital Personal Asthma Action Plan may be simply reviewed and modified.
- Peak flow measurements can be documented and peak flow diaries recorded and reviewed.
- Elements of the Asthma Care Bundle delivered at each review can be documented on the App.

QUESTIONS ON THE MONTHLY ASTHMA CHECKER

1. When was your last annual review for asthma?
2. Have you picked up your asthma prescription this month?
3. Have you had daytime symptoms of asthma?
4. Have you had difficulty sleeping because of asthma?
5. Has your asthma interfered with normal activities like school, or playing sports?
6. How many times a week are you taking your reliever therapy?
7. Have you visited your GP because of asthma this month?
8. Have you visited A/E because of asthma this month?
9. Have you been to hospital because of asthma this month?
10. Have you required a course of prednisolone for asthma this month?
11. Do you or anyone in your household smoke?
12. What % of Best Peak Flow does your patient have today?

ALL WALES ICST EDUCATION PLATFORM

allwales.icst.org.uk

The All Wales ICST Platform is a freely accessible online platform, custom built for healthcare professionals in Wales. It aligns the National Respiratory Delivery Plan and NHS Wales Decarbonisation Plan with a range of digital innovations, including:

NATIONAL CLINICAL GUIDELINES

- Ranging from Paediatric and Adult Asthma Diagnosis and Management Guidelines, Community Acquired Pneumonia, Management of Non-CF Bronchiectasis with Pseudomonas Aeruginosa Infection, Acute Non-Invasive Ventilation, Management of RSV Bronchiolitis in Infants, etc.
- Developed by experts from NHS Wales
- Formally accepted and adopted across all seven Health Boards
- QR codes to TV shows and education
- Simple, single page colour posters
- Free ordering and delivery of printed copies to your practice or departments

NATIONAL WELSH STANDARDS

- Focusing on being experts at doing the basic things really well
- Online learning with live events and workshops delivered by experts from NHS Wales
- Assessment against the National Standard, with certification
- Accessible to anyone, anytime, anywhere

QUALITY IMPROVEMENT

- The official Royal College of Physician's National Asthma and COPD Audit Programme (NACAP) Quality Improvement Toolkit
- Integrating national audit with quality improvement activity to improve patient outcomes
- 6 peer reviewed QI projects available on the All Wales platform, including:
    1. Getting the diagnosis right for patients on the COPD and Asthma registers
    2. Inhaler technique check
    3. Ensuring every patient has an Asthma Annual Review
    4. Promoting the Asthma and COPD self-management apps
    5. Referral to Pulmonary Rehabilitation for patients with COPD
    6. Checking second-hand smoke exposure

- Simple steps to complete your QI project
- Set your own QI goals according to your work capacity
- When you have reached your goal, you will receive a QI certificate as evidence towards your professional revalidation

RESPIRATORY SELF-MANAGEMENT APPS

A suite of apps for patients with COPD, Asthma and parents of children with Asthma, enhancing the values of self-management and supporting your patients to stay well

Key features include:

- Monthly Asthma/COPD checker to quantify how well your condition has been controlled in the last month
- Digital care plan, to be completed during an annual review
- Wellness dial, to log current symptoms and get advice if symptoms get worse
- GP/ hospital visits where the patient records their interactions with a healthcare professional
- Switch between English and Welsh
- My medication - a record of doses and a demonstration of inhaler technique
- Support team for patients/ parents who need technical support
- Educational videos covering a range of topics on self-management, delivered by local and national experts

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