NHS

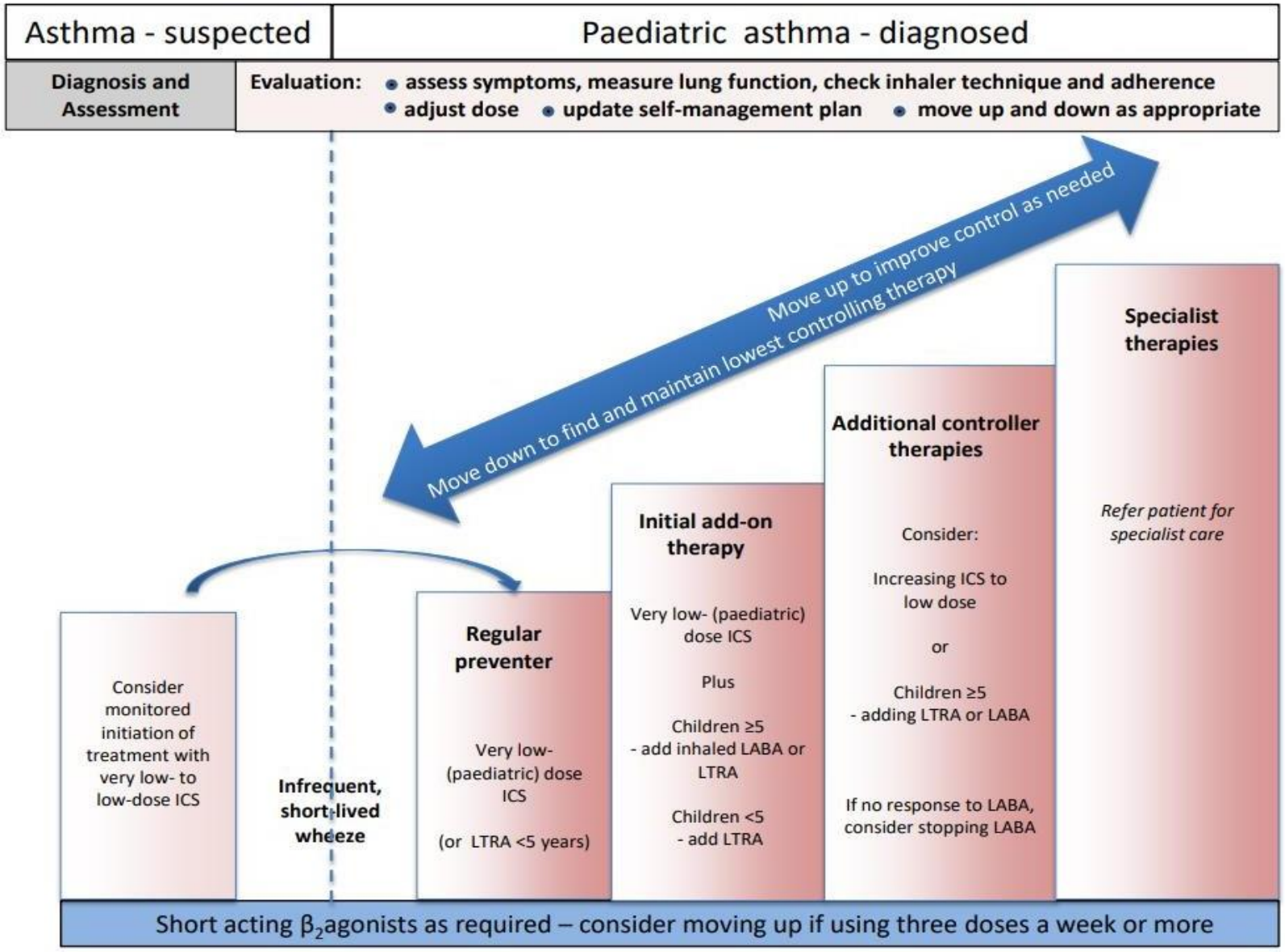
County Durham & Tees Valley
Area Prescribing Committee

County Durham and Tees Valley Paediatric Asthma Inhaler Guide (for patients under 18 years)

The Pharmacological Management of Stable Asthma for Children

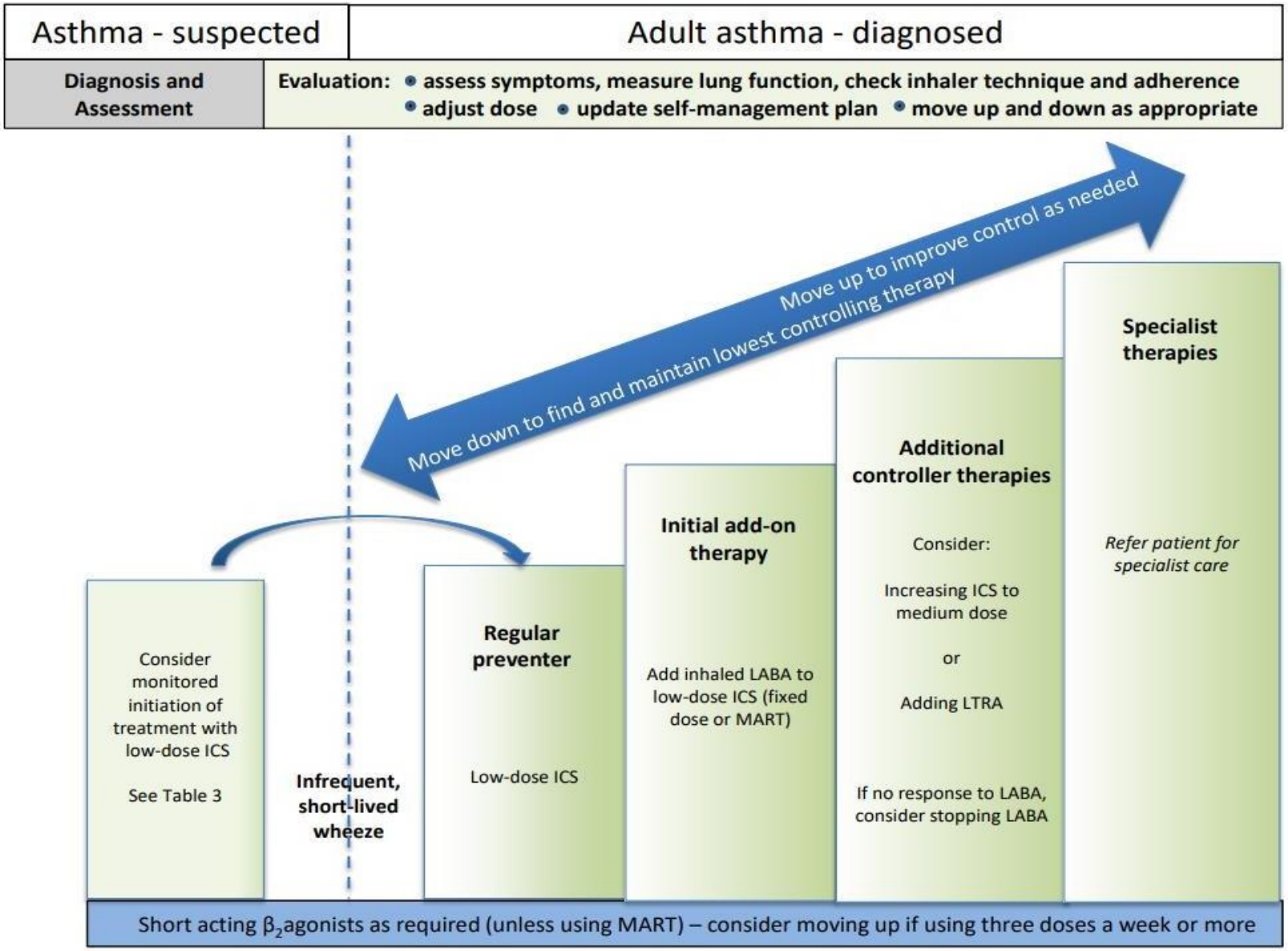
Version number	4.1 March 2022
Date of County Durham and Tees Valley APC approval:	March 2022
Date of review:	May 2023

Summary of the pharmacological management of asthma in children – under 18yrs (BTS, 2019)



From SIGN/BTS British guideline on the management of asthma, July 2019

Summary of the pharmacological management of asthma in adults (BTS, 2019)



From SIGN/BTS British guideline on the management of asthma, July 2019

The Pharmacological Management of Stable Asthma for Children under 18 years in Primary Care

Inhalers should always be prescribed by brand to prevent unintentional substitution and ensure patients receive a device they are familiar with. Inhalers are not in preference order, use right device for patient.
All MDI devices should be used with a spacer V = Volumatic, A = Aerochamber plus compatible

1. Regular Preventer 2 years and over – very low dose ICS (if ICS not tolerated then Montelukast for under 5years)	**2. Initial add-on Preventer** 5 years and over – add LABALess than 5 years – add LTRA	**3. Additional add-on therapy** Under 5yrs - increase to low dose ICS 400mcg daily(as per BTS) and refer Over 5yrs - use low dose + LABA OR Add LTRA (appropriate for both)	**4. High Dose Therapies**
2 – 11 years	**2 – 11 years**	**2 – 11 years**	Step 4 is increasing doses to high doses (refer to BNF), however if escalation to high dose needed referral to secondary care is required (child may need to be prescribed high dose whilst waiting for appointment – contact specialist if dose uncertain).
ICS 100 – 200mcg BDP equivalent/ day	**ICS/ LABA** 100 – 200mcg BDP equivalent/ day	**ICS (<5yrs); ICS/LABA (>5yrs)** 300 – 500mcg BDP equivalent/ day	
Pulmicort Turbohaler (DPI) 100mcg 1p BD (6 years+) ✓ Low Carbon 	Symbicort (DPI) 100/6mcg 1p BD (6 years+) ✓ Low Carbon 	Symbicort (DPI) 100/6mcg 2p BD (6 years +) ✓ Low Carbon 	
Clenil (MDI) V 50mcg 2p BD (2 years+) 	***if unable to use Symbicort move across to the next column***	Seretide Evohaler (MDI) V 50/25mcg 2p BD (4 years+) 	
LTRA < 5 years (if ICS not tolerated)	**LTRA (add if under 5)**	**LTRA**	
Montelukast 4mg at night (6 months – 5 years) 	Montelukast 4mg at night(6 months – 5 years) 	Montelukast 4mg at night(6 months – 5 years) 5mg at night (6 – 14 years) 	
12 – 17 years	**12 – 17 years**	**12 – 17 years**	
ICS 400 – 500mcg BDP equivalent/ day	**ICS/LABA** 400 – 500mcg BDP equivalent/ day	**ICS/LABA** 800 – 1000mcg BDP equivalent/ day	
Pulmicort (DPI) 200 Turbohaler 1p BD (12 years+) ✓ Low Carbon 	Symbicort (DPI) 200/6mcg 1p BD Fixed dose or SMART (12 years+) ✓ Low Carbon 	Symbicort (DPI) 200/6mcg 2p BD Fixed dose or SMART (12 years+) ✓ Low Carbon 	
	DuoResp Spiromax (DPI) 160/4.5 1p BD Fixed dose or MART (12 years +) ✓ Low Carbon 	DuoResp Spiromax (DPI) 160/4.5 2p BD Fixed dose or MART (12 years +) ✓ Low Carbon 	
Clenil (MDI) V 100mcg 2p BD (2 years+) 	Seretide Evohaler (MDI) V 50/25mcg 2p BD (4 years+) 	Seretide Evohaler (MDI) 125/25mcg 2p BD (12 years+) 	
Qvar Easibreathe (MDI)50mcg 2p BD Or 100mcg 1p BD (12 years+) 		Relvar Ellipta (DPI) 92/22mcg 1p OD (12 years +)✓ Low Carbon 	
Carbon Footprint. Only low carbon inhalersare annotated. Further information on all inhalers and the importance of returning allinhalers to the pharmacy for disposal in an environmentally safe way is available on https://greeninhaler.org/		**LTRA** Montelukast 5mg at night (6 – 14 years) 10mg at night (14 years+) 	
RELIEVER THERAPY			
Ventolin Accuhaler (DPI)200mcg 1p PRN (5 years+) ✓ Low Carbon 	Bricanyl Turbohaler (DPI)500mcg 1p PRN (5 years+) ✓ Low Carbon 	Salamol (MDI) 100mcg 1-2p PRN V/A 0 months+) 	Salamol Easi-Breathe (BAAI) 100mcg 1-2p PRN (4 years+) 

Abbreviations

ICS = inhaled corticosteroid
DPI = dry powder inhaler
LABA = long-acting beta agonist
BAAI = breath-actuated aerosol inhaler
BDP = beclomethasone dipropionate
LTRA = leukotriene receptor antagonist
MDI = metered dose inhaler
LAMA = long-acting anti-muscarinic antagonist

County Durham and Tees Valley Paediatric Asthma Inhaler Guide (for patients<18 years)

Diagnosis – refer to BTS 2019 guidelines

Please ensure every patient with asthma receives a written, personalised action plan

Further information is available from the beat asthma website

Assess asthma control

- **Use age appropriate Children's Asthma Control Test Age 4-11yrs or > 12 years**
- **RCP-3 questions are a QoF requirement, please ensure these are completed as part of annual review**

Does the patient have any asthma triggers? See Asthma UK website for more information.

Any symptoms of rhinitis? If so, treat accordingly.

Review current treatment regime (consider video consultation)

Observe inhaler technique (placebo inhalers are available). Animated demonstrations for most inhaler devices can be viewed on the RightBreathe website.

Check adherence and concordance with patient:

- Does the patient/parent/carer understand when and why to use their inhalers?
- Is the patient using their inhalers as prescribed?
- Ordering >6 reliever inhalers per year may indicate poor control.
- Consider a telephone review if a face-to-face consultation is not possible
- Check that the number of preventers issued corresponds with the patient's prescribed regime, taking into account the number of doses in the device.
- **ALWAYS ENSURE SPACER IS USED WITH ANY MDI DEVICE**

If all points above are satisfactory, continue to the next step.

Stepwise management of asthma

Start at the step most appropriate to initial severity; before initiating a new drug or increasing the dose of an inhaler consider whether diagnosis is correct, check adherence to the treatment plan and inhaler technique, and eliminate trigger factors for acute exacerbations.

Step up if not controlled. If **complete control**, consider step down after 3 months in line with ACT score and clinical judgement.

Consider the patient's age, level of dexterity and lifestyle factors when selecting a suitable inhaler device. Animated demonstrations for most inhaler devices can be viewed on the Asthma UK website. See overleaf for inhaler choices for each step.

When to consider stepping up

Step up if any of the following features:

- Using SABA three times a week or more
- Symptomatic three times a week or more
- Waking one night a week
- Also consider in patients who have had asthma attack requiring corticosteroids in the last two years

Consider using ACT score as a tool in order to consider when to step up in therapy, but also when to consider stepping down (i.e. excellent control, demonstrated in high ACT score with clinical stability over several months-use inhaler guide to assist with this).

Where a DPI is licensed but the patient is unable to use it effectively, please use the most appropriate MDI with a spacer.

Steroid cards

Steroid cards are recommended for patients taking doses of inhaled corticosteroids ≥800 micrograms BDP equivalent per day.

All patients taking oral steroids AND inhaled corticosteroids must be provided with a steroid card.

Self-Management and Action plans

A patient is four times less likely to require admission to hospital for their Asthma if they have a Personal Asthma Action Plan (PAAP).

If child is in Primary school, please consider giving School Asthma Card' available from Asthma UK:

Please use a valid PAAP for patients and code it's use on the clinical system. Use a code of declined or not appropriate where relevant. Asthma UK and the beat asthma website has plans, which are free to download and print (**suggest that patients/parents/carers take a photo of their Asthma plan on their smartphone for ease of access and encourage to share with family members**).

SMART® - maintenance and reliever therapy regime

Symbicort® (100/6) can be used for both maintenance and relief medication instead of a separate SABA for patients who have seen a benefit with a LABA but are still not controlled at step 3. (AGE 12+ ONLY)

SMART® can be considered for patients with:

- Inadequate asthma control and a frequent need for reliever medication
- Asthma exacerbations in the past requiring medical intervention
- A good understanding of asthma and symptoms

Patients must have received education on the use of the inhaler as maintenance and reliever therapy and clinicians must be confident patients understand how to use it appropriately.

Patients should be advised to always have their inhaler available for reliever use. Patients requiring frequent use of rescue inhalations should be advised to return to the GP practice for reassessment. Practices should monitor the number of prescriptions requested and any dose-related side-effects. Patients using more than one extra relief puff on a regular basis should be reviewed and their maintenance therapy should be reconsidered.

Patients must be encouraged to take part in the national flu campaign

For use in emergency situations only all patients should have a salbutamol inhaler and a large volume spacer. Please discuss with a respiratory specialist if uncertain.

Important – Non attendance

When a child aged 16 years or under is not brought to clinic for review, a code of **'child not brought to appointment'** should be used within the patient notes:

Attempts should be made to contact the parent/carer to question why missed appointment. f contact with parent/carer not possible/fails, consider safeguarding.

Waste and Recycling - Used pMDI canisters still contain propellants; all used pMDI canisters should be returned to a pharmacy (or dispensing GP practice) to dispose of in an environmentally safe way

Childhood Asthma Control Test for children 4 to 11 years old.

Know the score.

This test will provide a score that may help your doctor determine if your child's asthma treatment plan is working or if it might be time for a change.

How to take the Childhood Asthma Control Test

Step 1 Let your child respond to the first four questions (1 to 4). If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining three questions (5 to 7) on your own and without letting your child's response influence your answers. There are no right or wrong answers.

Step 2 Write the number of each answer in the score box provided.

Step 3 Add up each score box for the total.

Step 4 Take the test to the doctor to talk about your child's total score.

19 or less If your child's score is 19 or less, it may be a sign that your child's asthma is not controlled as well as it could be. No matter what the score, bring this test to your doctor to talk about your child's results.

Have your child complete these questions.

SCORE

1. How is your asthma today?

			
0 Very bad	1 Bad	2 Good	3 Very good

2. How much of a problem is your asthma when you run, exercise or play sports?

			
0 It's abig problem,I can'tdo what I want todo.	1 It's aproblem and I don'tlike it.	2 It's a little problem but it's okay.	3 It's not a problem.

3. Do you cough because of your asthma?

			
0 Yes, all of the time.	1 Yes, most of the time.	2 Yes, some of the time.	3 No, none of the time.

4. Do you wake up during the night because of your asthma?

			
0 Yes, all of the time.	1 Yes, most of the time.	Yes, some of the time.	3 No, none of the time.

Please complete the following questions on your own.

5. During the last 4 weeks, on average, how many days per month did your child have any daytime asthma symptoms?

5 Not at all	4 1-3 days/mo	3 4-10 days/mo	2 11-18 days/mo	1 19-24 days/mo	0 Everyday

6. During the last 4 weeks, on average, how many days per month did your child wheeze during the day because of asthma?

5 Not at all	4 1-3 days/mo	3 4-10 days/mo	2 11-18 days/mo	1 19-24 days/mo	0 Everyday

7. During the last 4 weeks, on average, how many days per month did your child wake up during the night because of asthma?

5 Not at all	4 1-3 days/mo	3 4-10 days/mo	2 11-18 days/mo	1 19-24 days/mo	0 Everyday

Please turn this page over to see what your child's total score means.

What does it mean if my child scores 19 or less?

- If your child's score is 19 or less, it may be a sign that your child's asthma is not under control.

- Make an appointment to discuss your child's asthma score with their doctor. Ask if you should change your child's asthma treatment plan.

- Ask your child's doctor about daily long-term medications that can help control airway inflammation and constriction, the two main causes of asthma symptoms. Many children may need to treat both of these on a daily basis for the best asthma control.

Asthma Control Test for Children aged 12 years and over

Asthma UK is the only charity dedicated to the health and well-being of the 5.2 million people in the UK with asthma. By taking control of their asthma, most people's day-to-day lives should be free from disruption such as troubled sleep or not being able to exercise.

Asthma Control Test™

Why take the Asthma Control Test™?

The Asthma Control Test™ will provide you with a snapshot of how well your asthma has been controlled over the last four weeks, giving you a simple score out of 25. Asthma symptoms can vary from month to month, so it is worth keeping the test handy to see if your score changes. You can also share your results with your doctor or asthma nurse to help explain just how your asthma affects you.

Are you in control of your asthma? Or is your asthma in control of you? Here's how to find out

Step 1: Read each question below carefully, circle your score and write it in the box.

Step 2: Add up each of your five scores to get your total Asthma Control Test™ score.

Step 3: Use the score guide to learn how well you are controlling your asthma.

Q1 During the **past 4 weeks**, how often did your asthma prevent you from getting as much done at work, school or home?

All of the time	Most of the time	Some of the time	A little of the time	None of the time	Score:
1	2	3	4	5	

Q2 During the **past 4 weeks**, how often have you had shortness of breath?

More than once a day	Once a day	3-6 times a week	1-2 times a week	Not at all	Score:
1	2	3	4	5	

Q3 During the **past 4 weeks**, how often did your asthma symptoms (wheezing, coughing, chest tightness, shortness of breath) wake you up at night or earlier than usual in the morning?

4 or more times a week	2-3 nights a week	Once a week	Once or twice	Not at all	Score:
1	2	3	4	5	

Q4 During the **past 4 weeks**, how often have you used your reliever inhaler (usually blue)?

3 or more times a day	1-2 times a day	2-3 times a week	Once a week or less	Not at all	Score:
1	2	3	4	5	

Q5 How would you rate your **asthma control** during the **past 4 weeks?**

Not controlled	Poorly controlled	Somewhat controlled	Well controlled	Completely controlled	Score:
1	2	3	4	5	

Total Score

What does your score mean?

Score: 25 – WELL DONE

- Your asthma appears to have been UNDER CONTROL over the last 4 weeks.
- However, if you are experiencing any problems with your asthma, you should see your doctor or nurse.

Score: 20 to 24 – ON TARGET

Your asthma appears to have been REASONABLY WELL CONTROLLED during the past 4 weeks.

However, if you are experiencing symptoms your doctor or nurse may be able to help you.

Score: less than 20 – OFF TARGET

- Your asthma may NOT HAVE BEEN CONTROLLED during the past 4 weeks.
- Your doctor or nurse can recommend an asthma action plan to help improve your asthma control.

What can you do now?

Like many other people in the UK, it is possible that your asthma could have less impact on your everyday life. You can get a free pack full of information about how to take control of your asthma, including an action plan to fill in with your doctor or asthma nurse, from Asthma UK

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"US English version modified for use in UK". The production of this leaflet has been supported by GlaxoSmithKline

Registered charity number 802364

Management of acute asthma in children < 18yrs in general practice

Age 2–5 years

ASSESS AND RECORD ASTHMA SEVERITY

Moderate asthma	Acute severe asthma	Life-threatening asthma
• SpO_2 ≥92% • Able to talk • Heart rate ≤140/min • Respiratory rate ≤40/min	• SpO_2 <92% • Too breathless to talk • Heart rate >140/min • Respiratory rate >40/min • Use of accessory neck muscles	SpO_2 <92% plus any of: • Silent chest • Poor respiratory effort • Agitation • Confusion • Cyanosis
• β_2 bronchodilator: - via spacer ± facemask* • Consider oral prednisolone 20 mg	• Oxygen via facemask to maintain SpO_2 94–98% if available • β_2 bronchodilator - via nebuliser (preferably oxygen-driven), salbutamol 2.5 mg - *or*, if nebuliser not available, via spacer* • Oral prednisolone 20 mg **Assess response to treatment 15 mins after β_2 bronchodilator**	• β_2 bronchodilator with ipratropium: - via nebuliser (preferably oxygen-driven), salbutamol 2.5 mg and ipratropium 0.25 mg every 20 minutes - *or*, if nebuliser and ipratropium not available, β_2 bronchodilator via spacer* • Oral prednisolone 20 mg *or* IV hydrocortisone 50 mg if vomiting
IF POOR RESPONSE ARRANGE ADMISSION	**IF POOR RESPONSE REPEAT β_2 BRONCHODILATOR AND ARRANGE ADMISSION**	**REPEAT β_2 BRONCHODILATOR VIA OXYGEN-DRIVEN NEBULISER WHILST ARRANGING IMMEDIATE HOSPITAL ADMISSION**

GOOD RESPONSE
- Continue β_2 bronchodilator via spacer or nebuliser, as needed but not exceeding 4 hourly
- **If symptoms are not controlled repeat β_2 bronchodilator and refer to hospital**
- Continue prednisolone until recovery (minimum 3-5 days)
- Arrange follow-up clinic visit within 48 hours
- Consider referral to secondary care asthma clinic if 2nd attack within 12 months.

POOR RESPONSE
- Stay with patient until ambulance arrives
- Send written assessment and referral details
- Repeat β_2 bronchodilator via oxygen-driven nebuliser in ambulance

LOWER THRESHOLD FOR ADMISSION IF:
- Attack in late afternoon or at night
- Recent hospital admission or previous severe attack
- Concern over social circumstances or ability to cope at home

NB: If a patient has signs and symptoms across categories, always treat according to their most severe features

Age >5 years

ASSESS AND RECORD ASTHMA SEVERITY

Moderate asthma	Acute severe asthma	Life-threatening asthma
• SpO_2 ≥92% • Able to talk • Heart rate ≤125/min • Respiratory rate ≤30/min • PEF ≥50% best or predicted	• SpO_2 <92% • Too breathless to talk • Heart rate >125/min • Respiratory rate >30/min • Use of accessory neck muscles • PEF 33–50% best or predicted	SpO_2 <92% plus any of: • Silent chest • Poor respiratory effort • Agitation • Confusion • Cyanosis • PEF <33% best or predicted
• β_2 bronchodilator: - via spacer* • Consider oral prednisolone 30–40 mg	• Oxygen via facemask to maintain SpO_2 94–98% if available • β_2 bronchodilator - via nebuliser (preferably oxygen-driven), salbutamol 5 mg - *or*, if nebuliser not available, via spacer* • Oral prednisolone 30–40 mg **Assess response to treatment 15 mins after β_2 bronchodilator**	• β_2 bronchodilator with ipratropium: - via nebuliser (preferably oxygen-driven), salbutamol 5 mg and ipratropium 0.25 mg every 20 minutes - *or*, if nebuliser and ipratropium not available, β_2 bronchodilator via spacer* • Oral prednisolone 30–40 mg *or* IV hydrocortisone 100 mg if vomiting
IF POOR RESPONSE ARRANGE ADMISSION	**IF POOR RESPONSE REPEAT β_2 BRONCHODILATOR AND ARRANGE ADMISSION**	**REPEAT β_2 BRONCHODILATOR VIA OXYGEN-DRIVEN NEBULISER WHILST ARRANGING IMMEDIATE HOSPITAL ADMISSION**

GOOD RESPONSE
- Continue β_2 bronchodilator via spacer or nebuliser, as needed but not exceeding 4 hourly
- **If symptoms are not controlled repeat β_2 bronchodilator and refer to hospital**
- Continue prednisolone until recovery (minimum 3-5 days)
- Arrange follow-up clinic visit within 48 hours
- Consider referral to secondary care asthma clinic if 2nd attack within 12 months.

POOR RESPONSE
- Stay with patient until ambulance arrives
- Send written assessment and referral details
- Repeat β_2 bronchodilator via oxygen-driven nebuliser in ambulance

LOWER THRESHOLD FOR ADMISSION IF:
- Attack in late afternoon or at night
- Recent hospital admission or previous severe attack
- Concern over social circumstances or ability to cope at home

NB: If a patient has signs and symptoms across categories, always treat according to their most severe features

* β_2 bronchodilator via spacer given one puff at a time, inhaled separately using tidal breathing; according to response, give another puff every 60 seconds up to a maximum of 10 puffs

From SIGN/BTS British guideline on the management of asthma, July 2019

Management of acute asthma in adults in general practice

Many deaths from asthma are preventable. Delay can be fatal. Factors leading to poor outcome include:

- Clinical staff failing to assess severity by objective measurement
- Patients or relatives failing to appreciate severity
- Under use of corticosteroids

Regard each emergency asthma consultation as for acute severe asthma until shown otherwise.

Assess and record:

- Peak expiratory flow (PEF)
- Symptoms and response to self treatment
- Heart and respiratory rates
- Oxygen saturation (by pulse oximetry)

Caution: *Patients with severe or life-threatening attacks may not be distressed and may not have all the abnormalities listed below. The presence of any should alert the doctor.*

Moderate asthma	Acute severe asthma	Life-threatening asthma
INITIAL ASSESSMENT		
PEF>50–75% best or predicted	**PEF 33–50% best or predicted**	**PEF<33% best or predicted**
FURTHER ASSESSMENT		
• SpO_2 ≥92% • Speech normal • Respiration <25 breaths/min • Pulse <110 beats/min	• SpO_2 ≥92% • Can't complete sentences • Respiration ≥25 breaths/min • Pulse ≥110 beats/min	• SpO_2 <92% • Silent chest, cyanosis or poor respiratory effort • Arrhythmia or hypotension • Exhaustion, altered consciousness
MANAGEMENT		
Treat at home or in surgery and ASSESS RESPONSE TO TREATMENT	**Consider admission**	**Arrange immediate ADMISSION**
TREATMENT		
• β_2 bronchodilator: – via spacer* If no improvement: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg • Give prednisolone 40–50 mg • Continue or increase usual treatment If good response to first treatment (symptoms improved, respiration and pulse settling and PEF >50%) continue or increase usual treatment and continue prednisolone	• Oxygen to maintain SpO_2 94–98% if available • β_2 bronchodilator: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg – or if nebuliser not available, via spacer* • Prednisolone 40–50 mg or IV hydrocortisone 100 mg • **If no response in acute severe asthma: ADMIT**	• Oxygen to maintain SpO_2 94–98% • β_2 bronchodilator with ipratropium: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg and ipratropium 0.5mg – or if nebuliser and ipratropium not available, β_2 bronchodilator via spacer* • Prednisolone 40–50 mg or IV hydrocortisone 100 mg immediately
Admit to hospital if any: • Life-threatening features • Features of acute severe asthma present after initial treatment • Previous near-fatal asthma Lower threshold for admission if afternoon or evening attack, recent nocturnal symptoms or hospital admission, previous severe attacks, patient unable to assess own condition, or concern over social circumstances	**If admitting the patient to hospital:** • Stay with patient until ambulance arrives • Send written asssessment and referral details to hospital • β_2 bronchodilator via oxygen-driven **nebuliser in ambulance**	**Follow up after treatment or discharge from hospital:** • Continue prednisolone until recovery (minimum 5 days) • **GP review within 2 working days** • Monitor symptoms and PEF • Check inhaler technique • **Written asthma action plan** • Modify treatment according to guidelines for chronic persistent asthma • Address potentially preventable contributors to admission

*** β_2 bronchodilator via spacer given one puff at a time, inhaled separately using tidal breathing; according to response, give another puff every 60 seconds up to a maximum of 10 puffs**

From SIGN/BTS British guideline on the management of asthma, July 2019