

Asthma: 1. DIAGNOSIS

NICE/BTS/SIGN 2024 (NICE 2024, NG245)



Red Whale

GEMS

Guidelines & Evidence Made Simple

DIAGNOSIS based on:

CLINICAL ASSESSMENT



OBJECTIVE TESTS

CLINICAL ASSESSMENT (history + examination)

HISTORY – LOOK FOR:

SYMPTOMS

Wheeze
Noisy breathing
Breathlessness
Chest tightness
Cough

VARIABILITY

e.g. Diurnal or seasonal variation

TRIGGERS

Including indoor/outdoor air pollution

ATOPY

Personal or family history of asthma or allergic rhinitis

OTHER CAUSES?

Are there symptoms to suggest an alternative diagnosis?

EXAMINE FOR:

EXPIRATORY WHEEZE

(but asthma may still be present in absence of wheeze)

SIGNS of OTHER CAUSES of respiratory symptoms

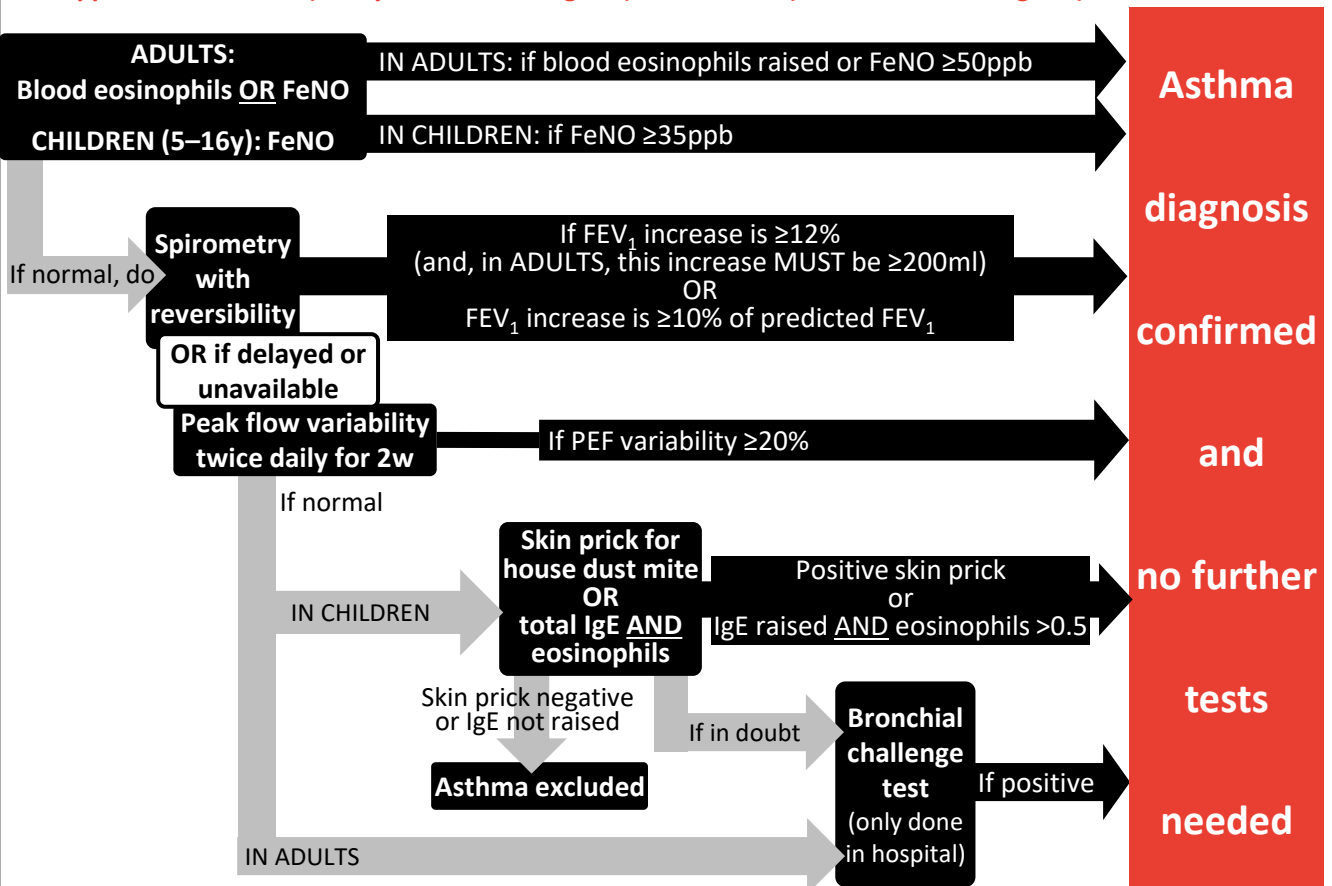
If, based on clinical assessment, asthma is likely, **code as 'suspected asthma'** and proceed to objective testing

OBJECTIVE TESTS: only test if asthma is suspected from clinical assessment

Use a stepwise approach to testing using the flow diagram below.

- Once a test is positive, the diagnosis is confirmed and no further testing is needed.
- Only proceed to further testing if the test is negative and asthma is still suspected.

This applies to CHILDREN (5–16y in this flow diagram) and ADULTS (≥17 in this flow diagram).



Diagnosis in CHILDREN <5y

The approach is different because diagnosis is more difficult and other conditions may present with asthma-like symptoms. Diagnosis involves a trial of treatment. See section 4 of GEMS.

At 5y, if still symptomatic, attempt objective testing, as above. If unable to test satisfactorily, repeat tests every 6–12m until able to do them satisfactorily.

Asthma: 2. MANAGEMENT

NICE/BTS/SIGN 2024 (NICE 2024, NG245)



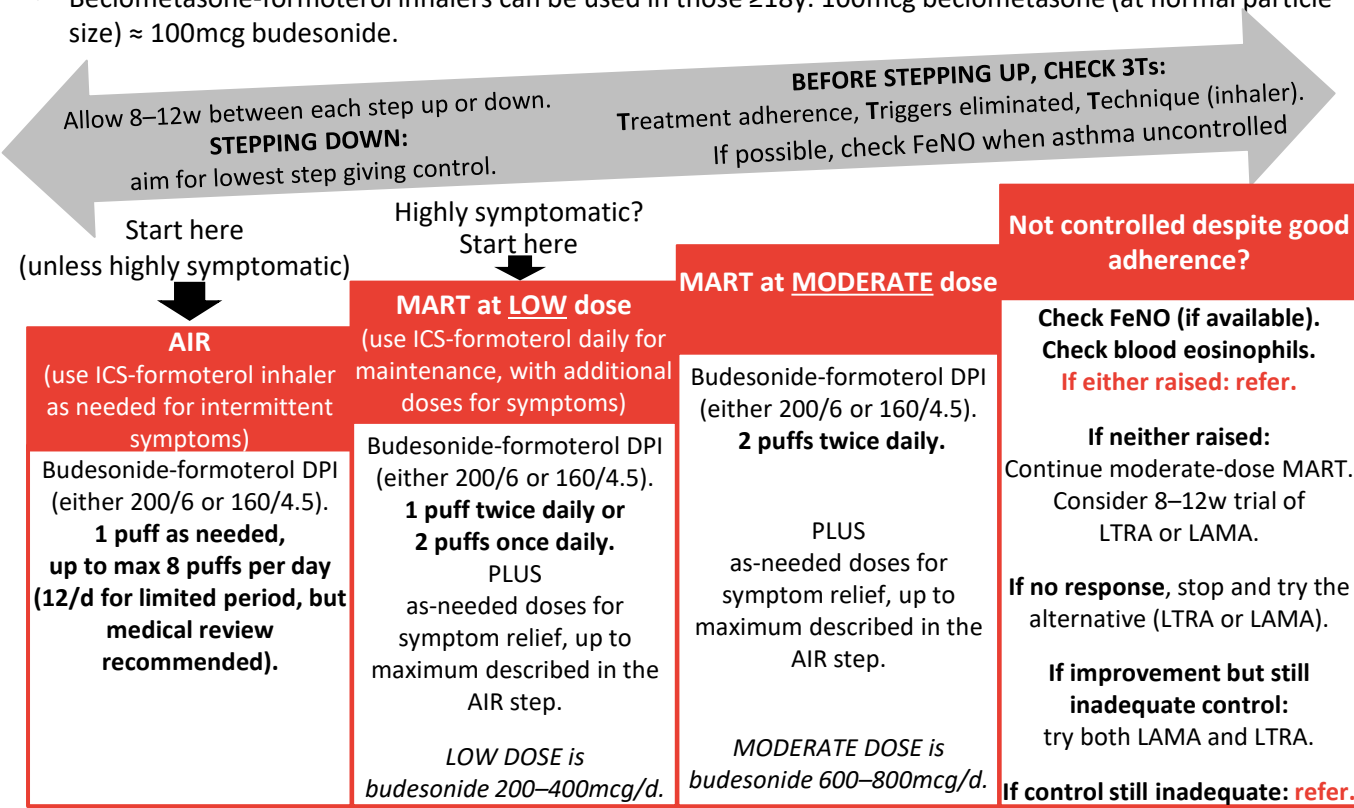
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There are many asthma inhalers, licensed for different ages and indications. Always check the BNF or SPC before prescribing. Currently, the only LABA used for AIR and MART therapy is formoterol due to its rapid onset of action.

Which inhaler?	• Dry powder devices have lower carbon footprint and best evidence when used for AIR and MART. • Young children need a pMDI+spacer+face mask. • Ensure patient knows how to use inhaler. Show them or get them to watch a video. Check sufficient inspiratory effort for their inhaler using a device such as the In-Check DIAL G16. • CHECK INHALER TECHNIQUE AT EVERY ASTHMA-RELATED CONSULTATION. • Avoid generic prescribing: patient may be given a device they don't know how to use. • If on more than one inhaler, try to ensure all require same inhaler technique to avoid confusion. • NEVER prescribe SABA or LABA without ICS: risk of death (National Review Asthma Deaths/BNF).	
Inhaler technique	• For most dry powder devices, a shorter, sharper inhalation is needed. • For pMDI and spacer, encourage tidal breathing (5 NORMAL, not big, breaths). Clean plastic spacers monthly (leaflet says weekly!). Wash in detergent and drip dry.	
Assessing control	Aim for complete control, which means: • No symptoms, no limitation on exercise, no asthma attacks. • No need for rescue medication. Exercise-induced asthma is a sign of poorly-controlled asthma.	Asthma is <u>UNCONTROLLED</u> if any of: • Restricting normal activities. • Exacerbation requiring oral steroids. • Using reliever inhaler ≥ 3 days/week. • Waking due to asthma ≥ 1 nights/w.

MANAGEMENT from age 12y, up to and including adults

- From age 12y, newly diagnosed patients should be managed using this single inhaler pathway.
- Where we say 'low or moderate dose', we are referring to the ICS dose.
- As of October 2025, only budesonide-formoterol inhalers are licensed for all steps from 12y to adult. For simplicity, we have quoted doses for budesonide-formoterol below.
- Beclometasone-formoterol inhalers can be used in those $\geq 18y$. 100mcg beclometasone (at normal particle size) $\approx$ 100mcg budesonide.



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3. Asthma MANAGEMENT 5–11y

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MANAGEMENT aged 5–11y

Start
with

Paediatric **LOW**-dose ICS inhaler + SABA inhaler

Beclometasone/budesonide 100–200mcg/d in 2 divided doses
+ SABA as needed.

Which inhaler?

If using a dry powder device in children <12y, consider offering SABA pMDI + spacer for emergency use: they may not be able to activate the dry powder device in an acute attack (requires greater inspiratory effort).

If need to step up:
are they suitable for MART?

- If yes, follow MART staircase.
- If no, follow conventional staircase.

NICE does not say how to assess suitability for MART, but we imagine it might include ability to use the device and willingness to use unlicensed product for those <6y.

MART
staircase

Switch to paediatric **LOW**-dose MART

(budesonide 100–200mcg/d)

**ONLY LICENSED FROM 6y,
but recommended by NICE.**

ICS-formoterol 100/6

1–2 puffs/day would achieve this.

Increase to paediatric

MODERATE-dose MART
(budesonide 300–400mcg/d)

**ONLY LICENSED FROM 6y,
but recommended by NICE.**

ICS-formoterol 100/6

2 puffs twice daily would achieve this.

PLUS additional doses as needed for symptom relief.

How many? Only licensed from 6y:

max 8 puffs/d total (including maintenance doses) and not more than 4 puffs at once.

Use a DRY POWDER device for MART in children (this has best evidence).

REFER

Which inhaler? MART is only licensed from 6y, although NICE recommends we use MART from 5y. Budesonide-formoterol 100/6 (DPI) is licensed for asthma maintenance (from 6y) AND MART (from 6y) so this may be our inhaler of choice.

CONVENTIONAL staircase
(if unsuitable for MART)

Consider trial of LTRA

Low-dose ICS
+ SABA + LTRA.

Add LTRA for 8–12w trial:
stop if ineffective.

Add LABA by swapping
to ICS-LABA inhaler with
paediatric **LOW**-dose ICS
(≡ budesonide 100–
200mcg/d)

ICS-LABA inhaler with low-
dose ICS
+ SABA (+/-LTRA).

NEVER prescribe LABA
without ICS (risk of death).

Continue ICS-LABA
inhaler but increase dose
to provide paediatric
MODERATE-dose ICS
(≡ budesonide 300–
400mcg/d)

ICS-LABA inhaler with
moderate-dose ICS
+ SABA (+/-LTRA).

REFER

Which ICS-LABA inhaler? How to achieve this with a licensed inhaler:

- Remember, this is conventional asthma maintenance therapy, **not** MART.
- Budesonide-formoterol, fluticasone-formoterol and fluticasone-salmeterol combination inhalers are all licensed for use in this age group.

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4. Asthma in the under-5s

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Diagnosis in children <5y

When to suspect asthma in a child <5y?

Diagnosis in under-5s is more difficult. Diagnosis and management follow a shared pathway.

- Consider other possibilities (e.g. viral-induced wheeze, cardiac or congenital respiratory conditions).
- Use a TRIAL OF TREATMENT and assess response to decide ongoing management.
- **Children under 5 usually require a pMDI inhaler + spacer.**

*Once a child reaches 5y, if still symptomatic, objective testing should be attempted.
If unable to test satisfactorily, repeat tests every 6–12m until able to do them satisfactorily.*

**Symptoms present that suggest the
need for maintenance therapy**

OR

**Severe acute episodes of difficulty
breathing and wheeze**

SUSPECT ASTHMA

Trial of treatment

8–12w treatment with paediatric low-dose
ICS (twice daily) + SABA (as needed).
Review regularly.

Not resolved?

Check 3Ts. Consider other causes.

**Refer if no explanation
for treatment failure.**

Resolved?

**Consider stopping ICS + SABA,
then review 3m after stopping.**

Symptoms recur

OR

Acute episode requiring oral steroids

OR

Admission

**Restart regular ICS + SABA as needed
at paediatric low-dose ICS.**

Increase to moderate-dose ICS if needed

**If remains uncontrolled,
consider adding
LTRA for 8–12w trial.
Stop if ineffective.**

Controlled?

**Consider a trial without
treatment sometime in
the next 12 months.**

**Still uncontrolled?
Stop LTRA.**

Refer

Beclometasone (as Clenil Modulite and Soprobec)
licensed for under-5s.
Paediatric low-dose 100–200mcg/d,
moderate-dose 300–400mcg/d.

Management in children <5y

When to refer?

Also refer to a specialist respiratory paediatrician if a preschool child has had an admission to hospital with wheeze, or two or more emergency department admissions with wheeze in a 12-month period.

Management of acute asthma: ADULTS

SIGN 158, 2024 (not covered in NICE NG245)

Many asthma deaths
are preventable

ACUTE ASTHMA IN ADULTS

Do not give antibiotics
routinely. Most
infections are viral.

Factors leading to poor outcomes:
Patients/relatives not recognising severity.
Clinicians not assessing severity objectively.
Underuse of corticosteroids. Overuse of SABAs.

ASSESS SEVERITY

Moderate	Severe	Life-threatening
PEFR >50–75% best/predicted. Sats ≥92%. Speech normal. RR <25. P <110.	PEFR 33–50% best/predicted. Sats ≥92%. Can't finish a sentence in 1 breath. RR ≥25. P ≥110.	PEFR <33% best/predicted. Sats <92% or cyanosis. Poor respiratory effort/silent chest. Hypotension/arrhythmia. Exhaustion/altered consciousness.
TREAT AT HOME/SURGERY. ASSESS RESPONSE.	CONSIDER ADMISSION.	ADMIT IMMEDIATELY.
In SEVERE or LIFE-THREATENING asthma, patient may not show distress or have all the abnormalities above. If ANY are present, this should alert the clinician!		

MANAGEMENT

Moderate	Severe	Life-threatening
Oxygen not needed. SALBUTAMOL via spacer (maximum 10 puffs). <i>If no improvement:</i> SALBUTAMOL (5mg) nebulised via O ₂ . Oral PREDNISOLONE 40–50mg for at least 5d or until recovery.	OXYGEN to keep sats at 94–98%. SALBUTAMOL (5mg) nebulised via O ₂ . If nebuliser not available, via spacer (max 10 puffs, one puff every 60 seconds, tidal breathing). Oral PREDNISOLONE 40–50mg or HYDROCORTISONE 100mg iv.	OXYGEN to keep sats at 94–98%. SALBUTAMOL (5mg) <u>AND</u> IPRATROPIUM (0.5mg) nebulised via O ₂ . If nebuliser not available, SALBUTAMOL via spacer. Oral PREDNISOLONE 40–50mg or HYDROCORTISONE 100mg iv.

ADMISSION

Moderate	Severe	Life-threatening
Admit if: - History of near-fatal asthma. - After initial treatment, any features of severe or life-threatening asthma present.	If no response, admit. If admitting, stay until ambulance arrives.	IMMEDIATE ADMISSION.

Have lower threshold to admit if:

- Afternoon/evening attack.
- Recent nocturnal symptoms.
- Recent admission.
- Patient unable to assess own symptoms.
- Concern over social situation.

AFTER ADMISSION

Primary care follow-up within 2 working days of discharge. At review:

- Check symptoms, peak flow and inhaler technique. Continue prednisolone for 5d or until recovery.
- Step-up regular therapy if needed.
- Ensure patient has a written PAAP and knows how to use it!**
- Address potentially preventable contributors to admission.

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Management of acute asthma:
CHILDREN

SIGN 158, 2024 (Not covered in NICE NG245)

**ACUTE ASTHMA
IN CHILDREN**

Do not give
antibiotics
routinely. Most
infections are viral.

Some children with severe asthma do not look
distressed, and some clinical signs may be normal.

If signs and symptoms are scattered across severity
criteria: treat according to the most severe.

ASSESS SEVERITY					
Moderate		Severe		Life-threatening	
Sats $\geq 92\%$. Talking normally. PEFR $\geq 50\%$ best/predicted ($>5y$).		Sats $<92\%$. Too breathless to talk. Using accessory neck muscles. PEFR 33–50% best/predicted ($>5y$)		Sats $<92\%$ <u>plus any of</u> : Silent chest Poor respiratory effort Cyanosis Agitation/confusion. PEFR $<33\%$ best/predicted ($>5y$).	
2–5y	$>5y$	2–5y	$>5y$	ADMIT IMMEDIATELY.	
RR ≤ 40	RR ≤ 30	RR > 40	RR > 30		
P ≤ 140	P ≤ 125	P > 140	P > 125		
MANAGEMENT					
Moderate		Severe		Life-threatening	
Oxygen usually not needed.		OXYGEN to keep sats at 94–98%.		OXYGEN to keep sats at 94–98%.	
SALBUTAMOL via spacer $\pm$ facemask (maximum 10 puffs). Consider PREDNISOLONE for 3–5d or until well: Age 2–5y: 20mg. Age $>5y$: 30–40mg.		SALBUTAMOL nebulised via O ₂ : Age 2–5y: 2.5mg. Age $>5y$: 5mg. If nebuliser not available, via spacer (maximum 10 puffs). PREDNISOLONE for 3–5d or until well: Age 2–5y: 20mg. Age $>5y$: 30–40mg.		SALBUTAMOL + IPRATROPIUM nebulised via O ₂ every 20 mins : Age 2–5y: 2.5mg salbutamol. Age $>5y$: 5mg salbutamol. Ipratropium: 0.25mg for all ages. If nebuliser not available, salbutamol via spacer (max 10 puffs). PREDNISOLONE 3–5d or until well: Age 2–5y: 20mg. Age $>5y$: 30–40mg. Or iv HYDROCORTISONE if vomiting: Age 2–5y: 50mg. Age $>5y$: 100mg.	
Reassess (after 15 mins for severe asthma). Have lower threshold to admit if: afternoon/evening attack, recent admission or previous severe attack, concern over social situation.				IMMEDIATE ADMISSION. Repeat salbutamol while awaiting ambulance.	
- If poor response, repeat bronchodilators and ADMIT. - If good response: - Continue salbutamol but ≤ 4 hourly. If fails to control: ADMIT. - Arrange follow-up within 48h. - Consider referral to secondary care if second attack in 12m.					
AFTER ADMISSION					
Primary care follow-up within 2 working days of discharge. At review: - Check symptoms and peak flow, inhaler technique and understanding of inhalers. - Continue prednisolone until recovery (minimum 3–5 days). - Ensure patient has a written PAAP <i>and knows how to use it!</i> - Address potentially preventable contributors to admission. - Refer for secondary care follow-up if life-threatening features. Consider referral if 2 attacks within 12m.					
NB: home nebulisers for acute asthma in children to ONLY be initiated/managed by specialists (MHRA 2022).					

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