

How to Manage a Wheezing Toddler

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Cleveland Clinic Children's

Conflicts of Interest

- I do non branded talks for Sanofi and Regeneron.
- I write and edit educational content for Dynamed (EBSCO).



Agenda/Objectives

Use a case-based format to:

1. Discuss and decide how to identify who may benefit from asthma inhalers when having cough or wheezing in kids under 5.
2. Review GINA and EPR-4 based recommendations.
3. Discuss and decide when to use inhaled steroids in kids under 6 years old.



Glossary:

- GINA (Global Initiative for Asthma)
- EPR-4 (Expert Panel Review from NIH 2020)
- AIR (Anti-Inflammatory Reliever)
- MART (SMART) (Maintenance and Reliever Therapy)
- ICS/LABA (Dulera, Symbicort, Breyna are ICS/Formoterol)
- ICS/SABA (Airsupra)



Case: Hope 2-year-old

Recurrent wheezing in children **under 5**



Case Presentation

- **Hope** is a 3 y/o girl who presents in April for evaluation of **recurrent wheezing episodes associated exclusively with URTI.**
- Born FT with **no neonatal respiratory complications** and has normal development.
- Since **9 mo of age**, she has had **4 episodes** of wheezing, always with a viral URI - rhinorrhea and cough.
- During these episodes, she develops increased work of breathing and wheezing on exam in the office.
- Oral steroids use once- 2 months ago.
- Her symptoms **resolve completely between illnesses**, and she has **no cough, wheeze, or shortness of breath** when well.
- No sxs with activity, crying, or laughing.
- There is **no nocturnal cough.**



Case Presentation

- During episodes, her wheezing **responds well to albuterol** via nebulizer.
- One ED visit (Two months ago).
- **Never required ICU admission or intubation**
- Hope has **no history of eczema or food allergies.**
- No family history of asthma.
- Goes to daycare.
- **No smoke exposure** at home.
- Today, Hope is **well appearing**, with normal VS and SpO2. Lung exam is normal.



Case Presentation-Summary

- Wheezing only with viral URIs
- **Asymptomatic between episodes**
- Normal exam when well
- Good response to bronchodilators during illness
- There are **no current features suggestive of persistent asthma.**
- Has had only one course of oral steroids during episodes.



Asthma? Assessment

- Detailed history of symptom pattern
- Frequency and severity of episodes
- Response to bronchodilators
- Exclude alternative diagnoses
 - Croup
 - Tracheo/bronchomalacia
 - Other).
- Objective testing limited under age 6-
 - Though normal PFTs do not rule out asthma if no SxS.

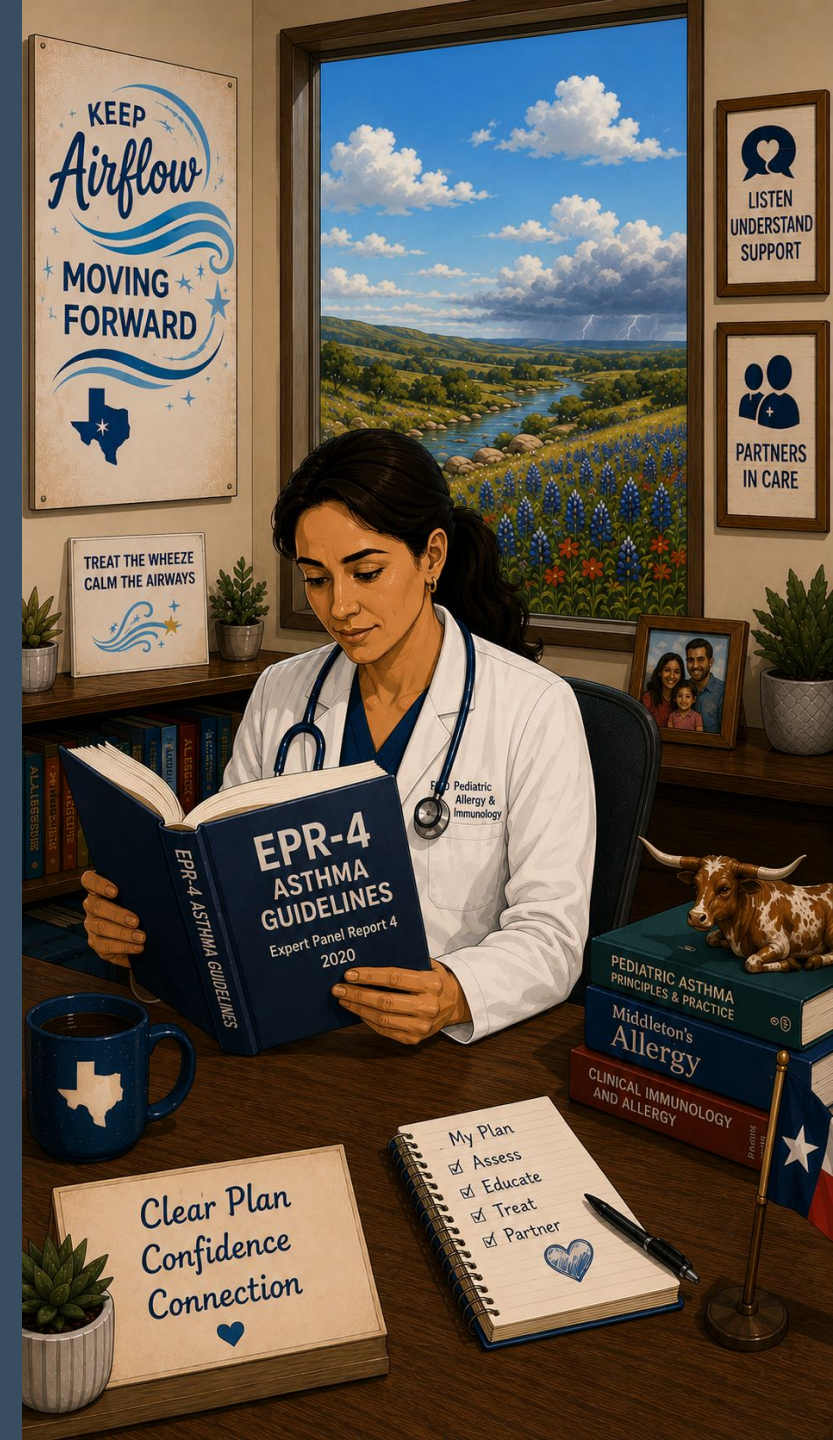


EPR-4: Intermittent High Dose ICS during colds

Wheezing more than three times in life
Or wheezing twice in one year

Then use high dose ICS

- 1 mg Budesonide BID for 7-10 days via Nebulizer + SABA PRN at the first sign of cough with colds
- Option: High dose ICS
 - Fluticasone propionate mdi 110 mcg 1-2 puffs bid with spacer mask. (Extrapolated from 6-11 yo recommendations).



High Dose ICS In Children

- Low dose is preferred dose in children
- Higher doses need to be weighed by side effects

Box 11-3. Low daily doses of inhaled corticosteroids for children 5 years and younger

This is not a table of equivalence, but instead, suggestions for “low” total daily doses for the ICS treatment recommendations for children aged 5 years and younger in Box 11-2 (p.194), based on available studies and product information. Data on comparative potency are not readily available, particularly for children.

This table does NOT imply potency equivalence. For example, if you switch a child’s treatment from a “low” dose of one ICS to a “low” dose of another ICS, this may represent a decrease (or increase) in potency. The child’s asthma may become unstable (or they may be at increased risk of adverse effects).

Children should be monitored to ensure stability after any change of treatment. Doses and potency may also differ by country, depending on local products, inhaler devices, regulatory labelling and clinical guidelines. The doses listed here are the lowest approved doses for which safety and effectiveness have been adequately studied in this age group.

Low-dose ICS provides most of the clinical benefit for most children with asthma. Higher doses are associated with an increased risk of local and systemic side-effects, which must be balanced against potential benefits.

Inhaled corticosteroid	Low total daily dose in mcg (age-group with adequate safety and effectiveness data)
BDP (pMDI, standard particle, HFA)	100 (ages 5 years and older)
BDP (pMDI, extrafine particle, HFA)	50 (ages 5 years and older)
Budesonide nebulized	500 (ages 1 year and older)
Fluticasone propionate (pMDI, standard particle, HFA)	50 (ages 4 years and older)
Fluticasone furoate (DPI)	Not sufficiently studied in children 5 years and younger
Mometasone furoate (pMDI, standard particle, HFA)	100 (ages 5 years and older)
Ciclesonide (pMDI, extrafine particle, HFA)	Not sufficiently studied in children 5 years and younger

In children, pMDI should always be used with a spacer

BDP : beclometasone dipropionate; DPI: dry powder inhaler; HFA: hydrofluoroalkane propellant; pMDI: pressurized metered-dose inhaler. For new preparations, including generic ICS, the manufacturer’s information should be reviewed carefully, as products containing the same molecule may not be clinically equivalent.



6–11 Year-old ICS Dose: GINA 2025 Box 4-2

Children 6–11 years – see notes above (for children 5 years and younger, see Box 11-3, p.195)

Beclometasone dipropionate (pMDI, standard particle, HFA)	100–200	>200–400	>400
Beclometasone dipropionate (pMDI, extrafine particle, HFA)	50–100	>100–200	>200
Budesonide (DPI, or pMDI, standard particle, HFA)	100–200	>200–400	>400
Budesonide (nebules)	250–500	>500–1000	>1000
Ciclesonide (pMDI, extrafine particle*, HFA)	80	>80–160	>160
Fluticasone furoate (DPI)	50		n.a.
Fluticasone propionate (DPI)	50–100	>100–200	>200
Fluticasone propionate (pMDI, standard particle, HFA)	50–100	>100–200	>200
Mometasone furoate (pMDI, standard particle, HFA)	100		200



GINA How to give inhaled meds

Box 11-4. Choosing an inhaler device for children 5 years and younger

Age	Preferred device	Alternate device
0–3 years	Pressurized metered-dose inhaler plus dedicated spacer with face mask	Nebulizer with face mask
4–5 years	Pressurized metered-dose inhaler plus dedicated spacer with mouthpiece	Pressurized metered-dose inhaler plus dedicated spacer with face mask or nebulizer with mouthpiece or face mask

If nebulizer is used, follow infection control procedures, as respiratory viruses can be dispersed by up to 1 meter. See p.109 and Box 5-1 (p.109) for other factors to consider in choice of an inhaler device.

- Nebulizers only be used if not able to use spacer.
- Nebulizers Spreads infection
- If neb used- use mouthpiece and not mask so meds do not get in eyes.



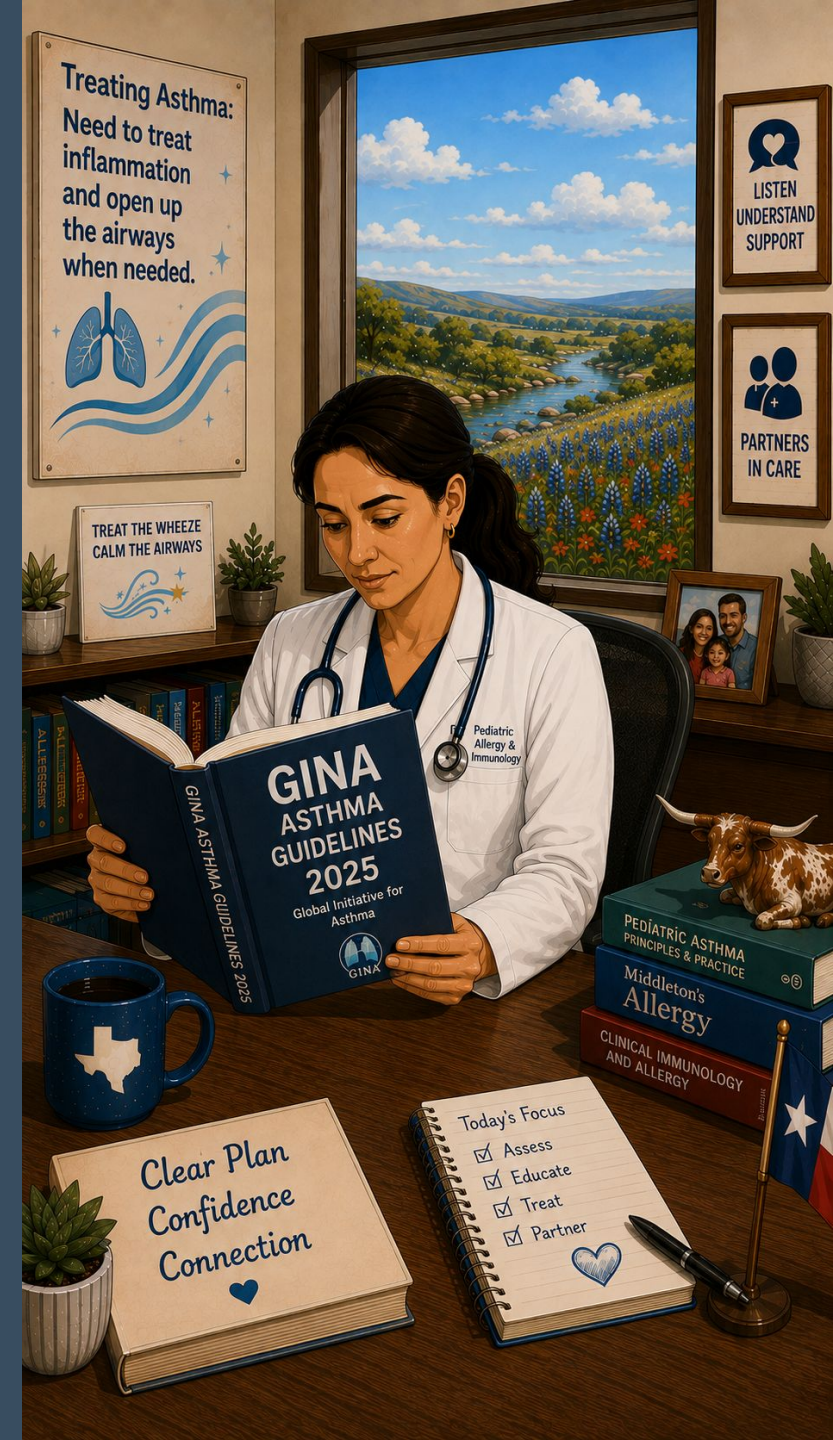
Inhaler technique

- Fancy Website all Kids use: YouTube
- American Lung Association:
<https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/treatment/devices/metered-dose-inhaler-chamber-space>
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GINA- Acute Episodes

- **No daily controller therapy** between episodes unless:
 - Symptoms uncontrolled between colds – >2 times per week
 - Has 1 or more exacerbations requiring urgent care/ED, oral steroids, or admission
- **SABA as needed** during viral illnesses
- Consider *intermittent high-dose ICS at onset of URI* if episodes are frequent or severe



GINA- Acute Episodes

NO MATTER WHAT:

- Provide **parent education** on early symptom recognition and proper inhaler/nebulizer technique
- Consider short course of oral steroids for severe episodes
- Supportive care for URI symptoms
- Avoid routine antibiotics
- **Close follow-up** to reassess phenotype as they grow



ICS PRN During colds

- Benefit: Reduction in severe exacerbation requiring use of systemic steroids
- Requires Caregiver:
 - Recognition of when to start therapy
 - Knowing what therapy to use and how.
 - Access to Action plan



Goals of treatment of recurrent wheezing (Asthma or other)

- Reduce symptoms during episodes
- Reduce ED visits/Hospitalization/Death
- Reduce use of oral steroids.



Case Learning Points

- Use ICS as needed during colds in kids 5 or less in patients with recurrent wheezing.
- In children under 5 years, **symptom pattern over time**—not a single episode—best distinguishes **episodic viral wheeze from early asthma**.
- Many children outgrow symptoms, but ongoing monitoring is essential



What makes cough in allergy clinic different?

Predicting Persistent Asthma in Preschool Children
Must have ≥ 4 episodes of wheezing per year (mAPI)

Major Predictors (Need ≥ 1)

- Parent with Asthma
- Physician diagnosis
Eczema
- Aeroallergen sensitization

Minor Predictors (Need ≥ 2)

- Wheezing when not sick
- Blood Eos $>4\%$
- Food Sensitization (Don't test for this reason)





PATIENT-CENTERED CARE

- Listen
- Understand
- Partner
- Personalize
- Empower

Patients in my allergy clinic who are coughing have asthma until we prove they do not.

Okay. I still want to think about other potential causes but using asthma inhalers maybe worth a try.



Cleveland Clinic

Middleton's Allergy

Asthma
Differential Diagnosis

MEDICAL STUDENT

Case: Calvin 4-year-old with cough

Recurrent wheezing in atopic children **under 5**



Case: Cole is a 4-year-old with eczema and milk anaphylaxis

- Has recurrent wheezing during colds.
- Has cough when around grandma's cat.
- Daily cough during pollen season.



GINA: Dx of Asthma Under 6

1. Recurrent Wheezing episodes with or without asthma-like symptoms between episodes.
2. No likely alternative cause for respiratory symptoms.
3. Timely response to acute or long-term asthma treatment.



Box 10-4. Common differential diagnoses of asthma in children 5 years and younger

If the symptoms or signs below are present, consider...	Condition
Mainly cough and runny congested nose for <10 days, <i>without</i> wheezing or difficulty breathing	Viral upper respiratory tract infection
Cough when feeding, recurrent chest infections	Gastroesophageal reflux +/- pharyngeal dysphagia
Sudden onset of symptoms, unilateral wheeze	Inhaled foreign body Other conditions including tuberculosis
Protracted paroxysms of coughing, often with stridor and vomiting	Pertussis
Persistent wet cough	Protracted bacterial bronchitis Tuberculosis
Noisy breathing when crying or eating; harsh cough	Tracheomalacia
Cardiac murmurs, failure to thrive	Congenital heart disease
Pre-term delivery, symptoms since birth	Bronchopulmonary dysplasia
Excessive cough and mucus production, gastrointestinal symptoms, failure to thrive	Cystic fibrosis
Cough and recurrent chest infections; neonatal respiratory distress, chronic ear infections and persistent nasal discharge from birth	Primary ciliary dyskinesia
Noisy breathing, feeding difficulties	Vascular ring
Recurrent fever and infections (including non-respiratory)	Primary immunodeficiency



Definition of Response to Asthma Treatment

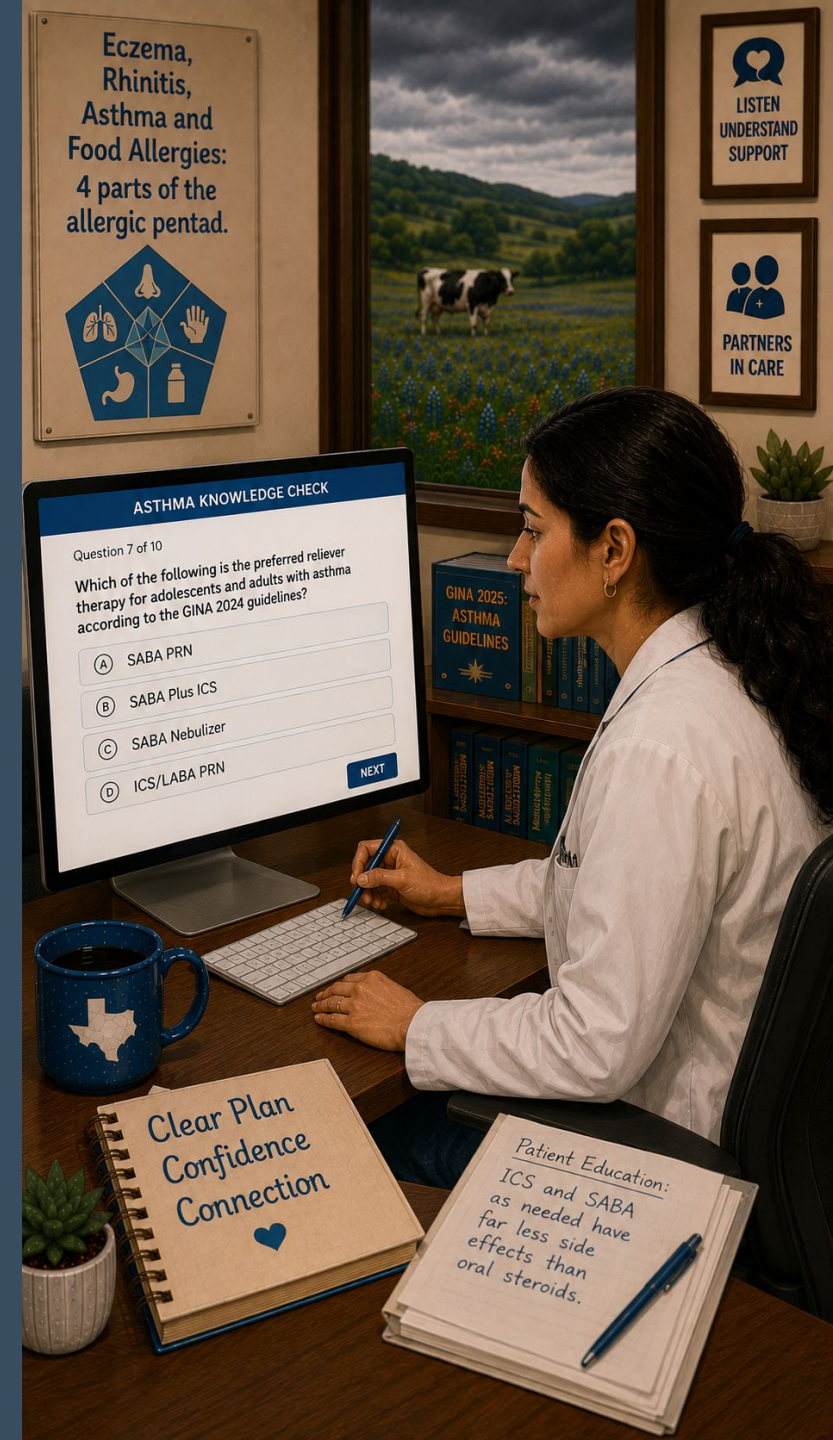
Use a 2-3 month trial ICS daily with SABA prn:

- 1 or more acute episodes requiring urgent care visit, 1 course of oral steroids or hospitalization
- Asthma-like symptoms > 2 x/week.



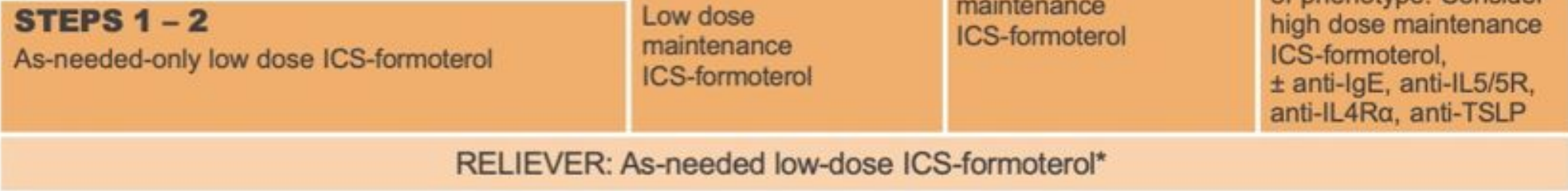
Case: 4 y/o with cough during colds and around allergens

- How would you treat the cough around cats?
- Would you recommend use of ICS daily during pollen seasons?
- If the child was 16, how would you treat?
- If the child was 6, how would you treat?



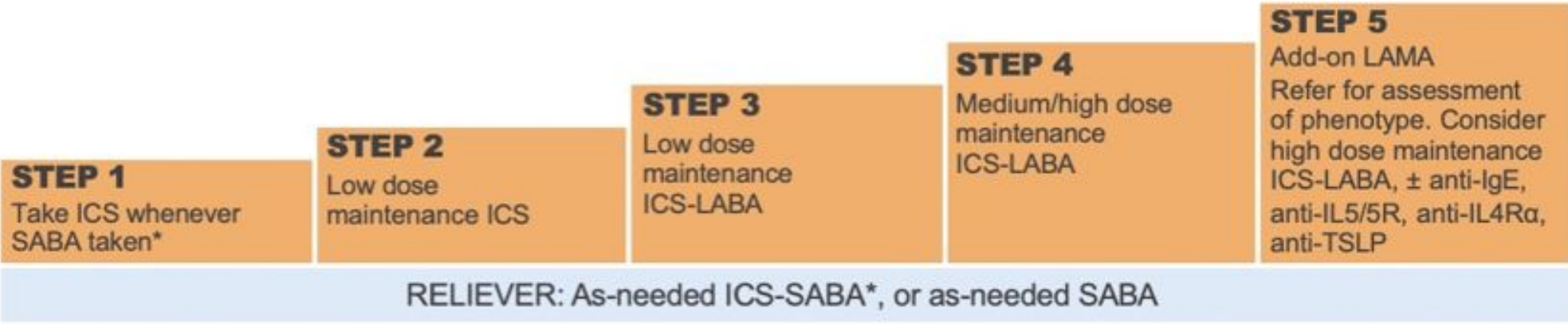
TRACK 1: PREFERRED CONTROLLER and RELIEVER

Using ICS-formoterol as the reliever* reduces the risk of exacerbations compared with using a SABA reliever, and is a simpler regimen

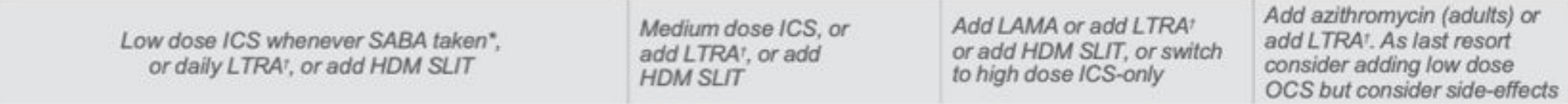


TRACK 2: Alternative CONTROLLER and RELIEVER

Before considering a regimen with SABA reliever, check if the patient is likely to adhere to daily controller treatment



Other controller options (limited indications, or less evidence for efficacy or safety – see text)



GINA 2025 Adults and Teens 12+ years



Comorbidities
Child and parent/
caregiver satisfaction

ADJUST

& comorbidities
Non-pharmacological strategies
Asthma medications including ICS
Education & skills training

Asthma medication options:

Adjust treatment up and down for individual child's needs

PREFERRED CONTROLLER

to prevent exacerbations and control symptoms

Other controller options
(limited indications, or less evidence for efficacy or safety)

RELIEVER

STEP 1

Low dose ICS taken whenever SABA taken*

STEP 2

Daily low dose inhaled corticosteroid (ICS) (see table of ICS dose ranges for children)

Daily leukotriene receptor antagonist (LTRA[†]), or low dose ICS taken whenever SABA taken*

STEP 3

Low dose ICS-LABA, OR medium dose ICS, OR very low dose ICS-formoterol maintenance and reliever therapy (MART)

Low dose ICS + LTRA[†]

STEP 4

Refer for expert advice, OR medium dose ICS-LABA, OR low dose ICS-formoterol maintenance and reliever therapy (MART)

Add tiotropium or add LTRA[†]

STEP 5

Refer for phenotypic assessment ± higher dose ICS-LABA or add-on therapy, e.g. anti-IgE, anti-IL4Rα, anti-IL5

As last resort, consider add-on low dose OCS, but consider side-effects

As-needed SABA (or ICS-formoterol reliever* in MART in Steps 3 and 4)

*Anti-inflammatory reliever; [†]advise about risk of neuropsychiatric adverse effects

GINA 2025 Step therapy 6-11 years old



Cole- Allergy Testing

- Positive to dog, cat, dust mite, tree and grass pollens.
- What are the goals of asthma management?



Cole- Allergy testing

Positive to dog, cat, dust mite, tree and grass pollens.

What are the goals of asthma management?

- Decrease symptoms
- Decrease UC/ED visits
- Decrease hospitalizations/Mortality
- Decrease use of oral steroids.



Asthma medication options:

Adjust treatment up and down for individual child's needs

**PREFERRED
CONTROLLER
CHOICE**

Other controller options
(limited indications, or
less evidence for efficacy
or safety)

RELIEVER

**CONSIDER
THIS STEP FOR
CHILDREN WITH:**

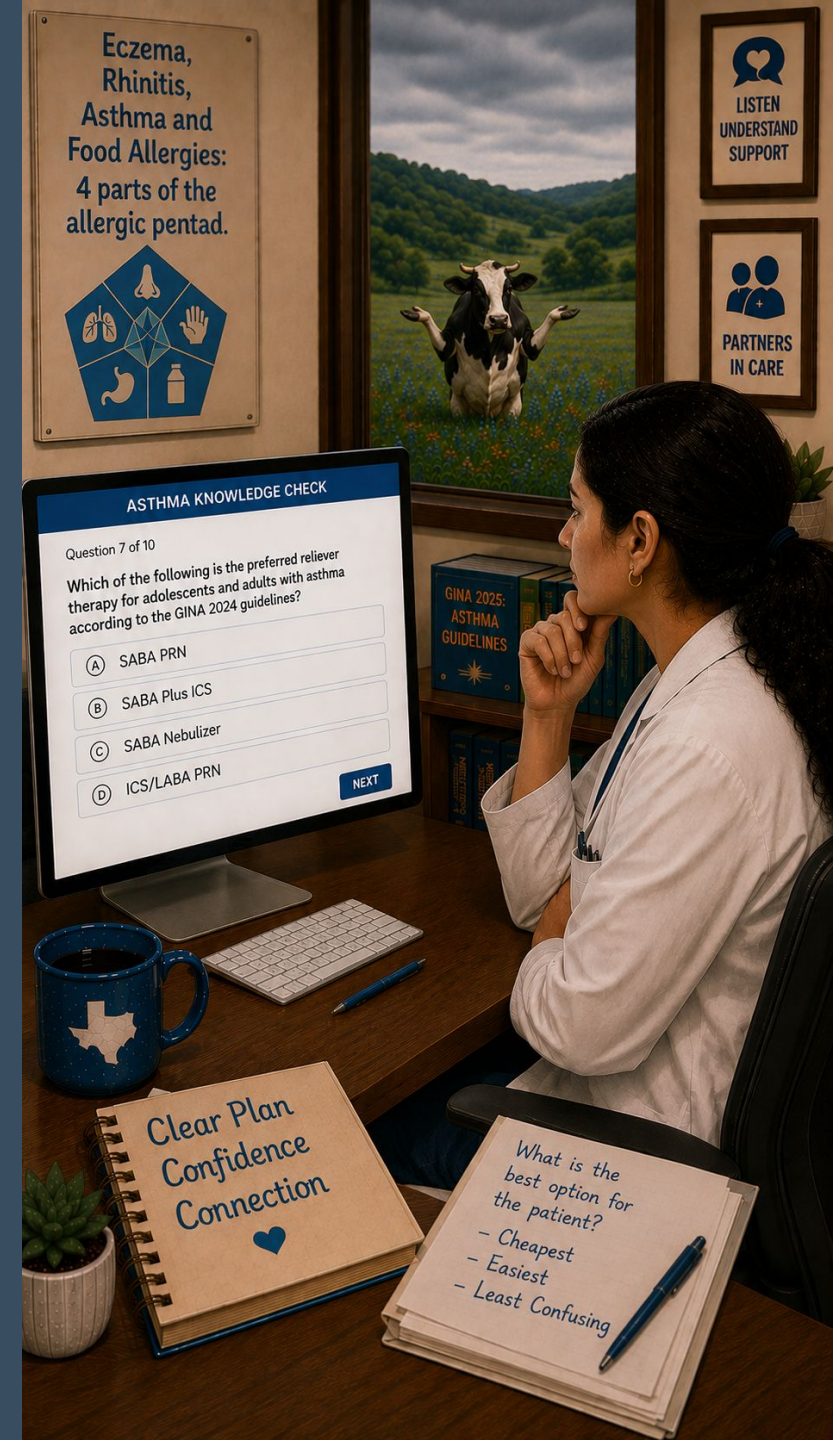
		STEP 2	STEP 3	STEP 4
PREFERRED CONTROLLER CHOICE	STEP 1 (Insufficient evidence for daily controller)	Daily low dose inhaled corticosteroid (ICS) (see Box 11-3 for ICS dose ranges for pre-school children)	Double 'low dose' ICS (See Box 11-3)	Continue controller & refer for specialist assessment
	Consider intermittent short course ICS at onset of viral illness	Daily leukotriene receptor antagonist (LTRA [†]), or intermittent short course of ICS at onset of respiratory illness	Consider specialist referral	
RELIEVER		As-needed short-acting beta ₂ -agonist		
CONSIDER THIS STEP FOR CHILDREN WITH:	Infrequent acute (e.g viral-induced) wheezing episodes and no or minimal interval asthma symptoms	Asthma symptoms not well-controlled (Box 11-1), or one or more severe exacerbations in the past year	Asthma not well controlled on low dose ICS	Asthma not well controlled on double ICS
			Before stepping up, check for alternative diagnosis and inhaler skills, review adherence and exposures	

GINA 2025 0-5 years old



4 y/o Cole with cough, eczema and has asthma

- How do you treat this now?
- What would you do during colds?
- What would you do when he visits Grandma?



Cole has Intermittent Asthma

Therapy Recommendations (GINA Step 1) 6-11 years old:

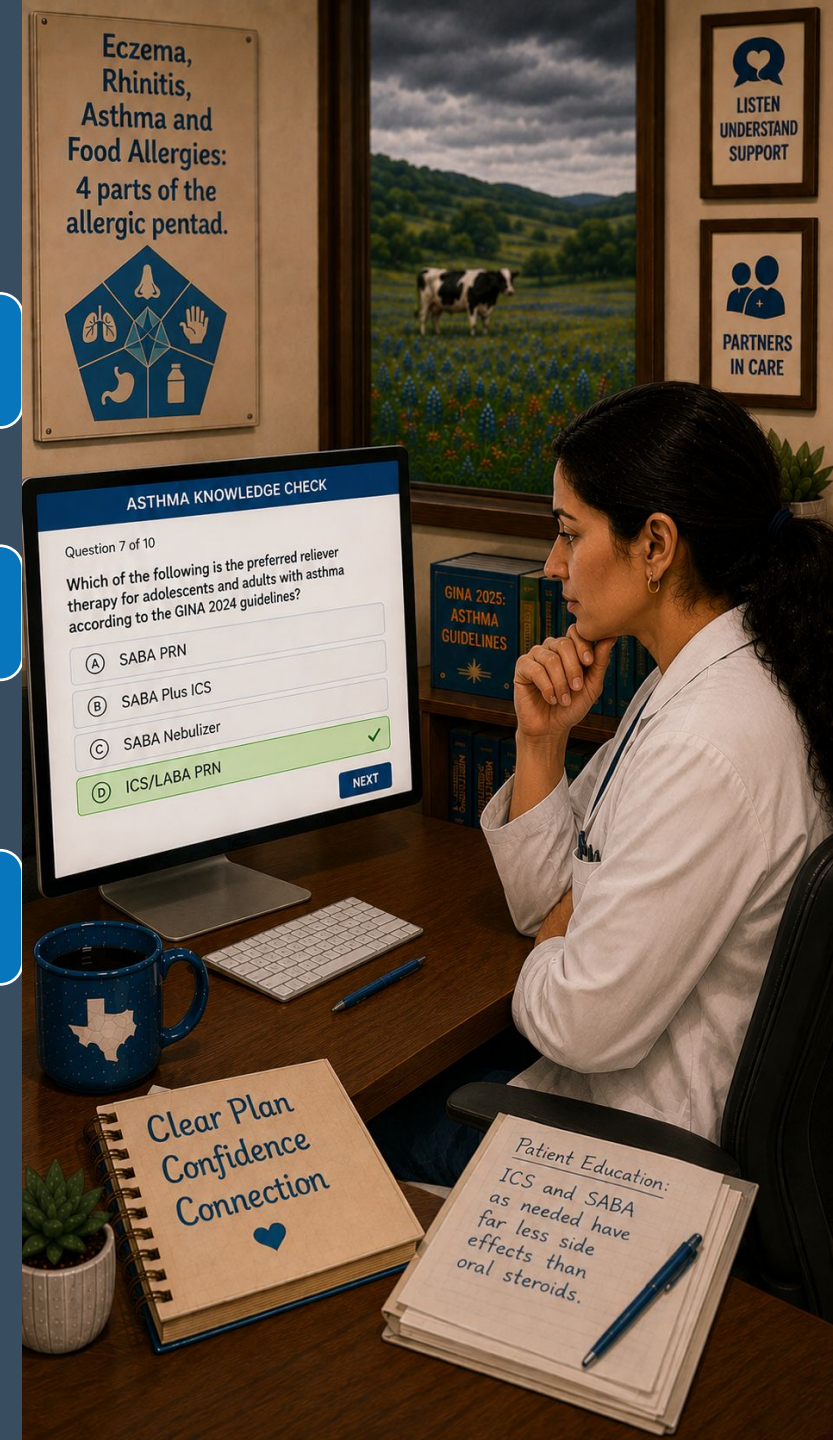
- AIR: All patients with asthma, even those with infrequent symptoms, should not use SABA alone due to the risk of exacerbations.

AIR (Track 1): As-needed SABA plus concomitant use of low-dose ICS whenever SABA is taken.

- The child should be instructed to take their SABA reliever followed by their low-dose ICS.

AIR (OTHER OPTION- Not guideline based):

- As-needed low-dose inhaled corticosteroid (ICS)-formoterol for symptom relief.
 - Budesonide/formoterol (Symbicort) MDI 80/4.5mcg up to 8 puffs per day
 - Mometasone/formoterol (Dulera) MDI 50/5mcg up to 8 puffs per day
- Similar to GINA 2025 for >6-11.
- The child takes the ICS/LABA when symptoms occur. 1-2 puffs up to 8 total puffs per day. Call if needing more.



Cole 5-year-old Follow up

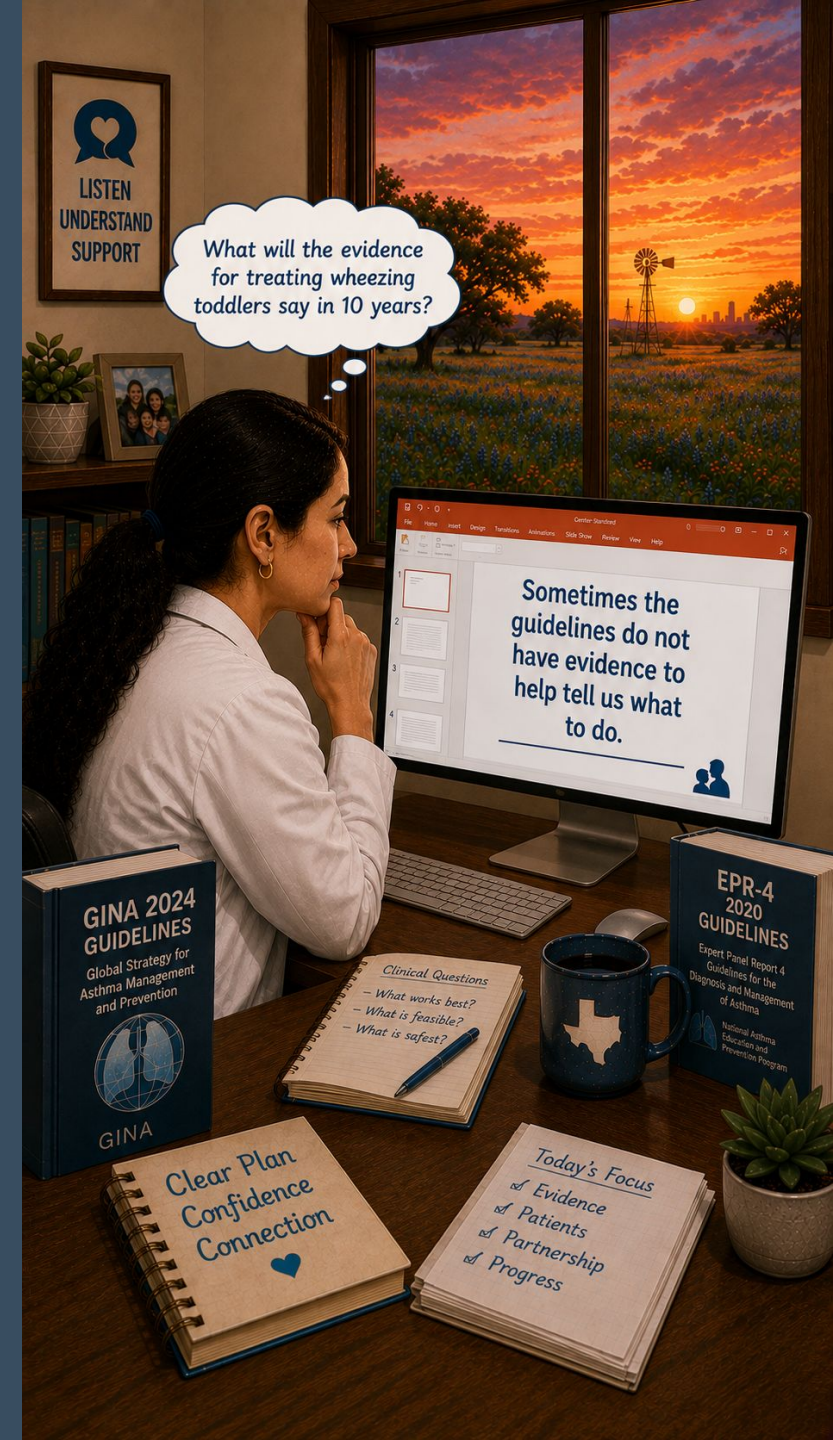
- Has used PRN ICS/LABA as their insurance covered it for free.
- Has had no courses of oral steroids.
- Colds last for 5-10 days, no UC/ED visits.
- Is able to enjoy trips to grandma's house
- Still avoids the cat.



Considerations for PRN ICS/LABA

- Adherence with combination therapy (Two inhalers) is worse than a single inhaler
- Price for SABA + ICS maybe cheaper than ICS/LABA though it may not.
- It is cumbersome to carry 2 different inhalers, particularly at school
- Cost and coverage provide a significant impact on guideline adherent treatment

- What do we do when there are no



What questions do you have?

Thank you!

