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Title:	Asthma Assessment and Management and Use of FeNO	
Applicable to:	Providers managing patients older than 5 years with a diagnosis of asthma	
Source(s):	GINA Pocket Guide 2023	
Read Full Guideline:	Global Initiative for Asthma. Pocket Guide for Asthma Management and Prevention, 2023. Available from: www.ginasthma.org .	
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SUMMARY

The BSWQA follows the recommendations of the Global Initiative for Asthma (GINA) 2023 Pocket Guide for Asthma Management and Prevention for Adults and Children Older than 5 years found [at GINA Pocket Guide 2023 \(ginasthma.org\)](http://ginasthma.org)

Summary of core concepts include:

Treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents.

Asthma Treatment Tracks for Adults & Adolescents: options for ongoing treatment for adults and adolescents have been clarified in the main treatment figure (Box 7A, p.20 in the GINA 2023 Pocket Guidelines) by showing two treatment 'tracks':

1. Track 1: The reliever is as-needed low dose ICS-formoterol. This is the preferred approach recommended by GINA for adults and adolescents. Using low dose ICS-formoterol as reliever reduces the risk of severe exacerbations compared with regimens with SABA as reliever, with similar symptom control. With this approach:
 - a. When a patient at any treatment step has asthma symptoms, they use low dose ICS-formoterol in a single inhaler for symptom relief.
 - b. In Steps 3–5, patients also take ICS-formoterol as their regular daily treatment. This is called 'maintenance and reliever therapy' (MART). ICS-formoterol should not be used as the reliever by patients taking any other ICS-LABA.
2. Track 2: The reliever is as-needed SABA. This is an alternative approach when Track 1 is not possible or is not preferred by a patient who has no exacerbations on their current therapy:
 - a. In Step 1, the patient takes a SABA and a low dose ICS together for symptom relief when symptoms occur, either in a combination inhaler, or with the ICS taken right after the SABA.
 - b. In Steps 2–5, a SABA (alone) is used for symptom relief, and the patient takes ICS-containing controller medication regularly every day.

Asthma Treatment for Children ages 6-11: (Box 8A, p.24, GINA 2023 Pocket Guidelines)

1. Step 1: Taking ICS whenever SABA is taken is a possible option, with indirect evidence from two Step 2 studies with separate ICS and SABA inhalers.
2. Step 2: The preferred controller option for children at Step 2 is regular low dose ICS with as-needed SABA. See Box 9, p.28 in the GINA 2023 Pocket Guidelines for ICS dose ranges in children. Other options include taking low dose ICS whenever SABA is taken, using separate inhalers. Daily LTRA is less effective for exacerbation reduction.
3. Step 3: After checking inhaler technique and adherence, and treating modifiable risk factors, there are three preferred options for children:
 - a. Medium dose ICS with as-needed SABA.
 - b. Low dose ICS-LABA, with as-needed SABA. Combination ICS-LABA is non-inferior to ICS alone for severe exacerbations, with no difference in symptom control or reliever use.
 - c. Maintenance and reliever therapy with a very low dose of budesonide-formoterol (100/6 mcg once-daily, 80/4.5 mcg delivered dose) showed a large reduction in severe exacerbations in children compared with the same dose of ICS-formoterol or higher dose of ICS.
4. Step 4: Options include increasing the dose of maintenance ICS-LABA to medium; for maintenance and reliever therapy, the maintenance dose may be increased to 100/6 mcg twice daily (metered dose 80/4.5 mcg). If asthma is not well-controlled with medium dose ICS, continue controller, and refer for expert advice.
5. Step 5: Refer for phenotypic investigation ± add-on treatment with a biologic agent.

Additional Recommendations

1. Treatment with high dose ICS-LABA could affect growth in children. Carefully monitor growth at each visit.
2. Osteoporosis is a potential risk for menopausal women using high dose ICS-LABA, monitor accordingly (see [Osteoporosis Screening and Management Guidelines](#)).

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Use of FeNO

Measurement of fractional nitric oxide (NO) concentration in exhaled breath (FeNO) is a quantitative, noninvasive, simple, and safe method of measuring airway inflammation that provides a complementary tool to other ways of assessing airways disease, including asthma.

FeNO measurement should be considered in patients to adjust and evaluate the benefits of inhaled corticosteroids and to assess adherence to medication therapy. It should not be used as a diagnostic tool.

Table 2: Recommendation for Interpretation of FeNO Results (2)

TABLE 5. GENERAL OUTLINE FOR F_{ENO} INTERPRETATION: SYMPTOMS REFER TO COUGH AND/OR WHEEZE AND/OR SHORTNESS OF BREATH*

	$F_{\text{ENO}} < 25\text{ppb}$ ($<20\text{ ppb}$ in children)	$F_{\text{ENO}} 25\text{--}50\text{ ppb}$ ($20\text{--}35\text{ ppb}$ in children)	$F_{\text{ENO}} > 50\text{ ppb}$ ($>35\text{ ppb}$ in children)
	Diagnosis		
Symptoms present during past 6+ wk	Eosinophilic airway inflammation unlikely Alternative diagnoses Unlikely to benefit from ICS	Be cautious Evaluate clinical context Monitor change in F_{ENO} over time	Eosinophilic airway inflammation present Likely to benefit from ICS
	Monitoring (in Patients with Diagnosed Asthma)		
Symptoms present	Possible alternative diagnoses Unlikely to benefit from increase in ICS	Persistent allergen exposure Inadequate ICS dose Poor adherence Steroid resistance	Persistent allergen exposure Poor adherence or inhaler technique Inadequate ICS dose Risk for exacerbation Steroid resistance
Symptoms absent	Adequate ICS dose Good adherence ICS taper	Adequate ICS dosing Good adherence Monitor change in F_{ENO}	ICS withdrawal or dose reduction may result in relapse Poor adherence or inhaler technique

Definition of abbreviations: F_{ENO} = fraction of exhaled nitric oxide; ICS = inhaled corticosteroid.

* The interpretation of F_{ENO} is an adjunct measure to history, physical exam, and lung function assessment. See text and Tables 3 and 4 for other details.

FACTS AND FIGURES

- [Table 1: Table of Figures GINA Pocket Guide 2023 \(ginasthma.org\)](#)
- [Table 2: Recommendation for Interpretation of FeNO Results \(2\)](#)

RESOURCES

- For Baylor Scott & White Epic users, there is an Asthma Action Plan that should be completed and printed for the patient at each visit.

REFERENCES

1. Global Initiative for Asthma. Pocket Guide for Asthma Management and Prevention, 2023. Available from: www.ginasthma.org.
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5. UpToDate: An overview of asthma management in children and adults. Se[30. 2024
6. 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group, December 2020