Chronic Asthma, PC

NEMOURS CHILDREN'S HEALTH

Last Updated: 07/15/25

INCLUSION CRITERIA

Children ≥ 5 yo with intermittent or persistent asthma

EXCLUSION CRITERIA

- Pneumonia
- Suppurative lung disease
- Medically complex
- Suspected vocal cord dysfunction
- Cardiac disease
- Cystic fibrosis
- Immunodeficiency
- Neuromuscular disease
- Tracheostomy

MEASURES

- Increase prescription of maintenance medication
- Decrease UC/ED visits
- Decrease hospitalizations

Allergy/Immunology Considerations[1]

- Consider referral to Allergy/ Immunology for testing and further management see references

Asthma Control Assessment Over the Last 4 Weeks[2]

Well controlled if:
- ACT score at least 19

OR
- Albuterol use less than twice weekly for symptom relief
- Symptoms less than twice weekly
- Night waking less than twice monthly
- No activity limitation due to symptoms
- No oral steroid use in the last 6 months
- No hospital admissions or UC/ED visits in the last 6 months

Pulmonology Referral[3]

- Step 3 therapy
- Uncontrolled after 3-6 months on high-dose ICS-LABA or earlier if very severe, difficult to manage, or doubts about diagnosis
- Ongoing risk factors
- PICU admission
- Two or more hospital admissions in last year

Diagnostic Consideration

- Consider chest x-ray if >6 weeks daily cough

INITIAL ASSESSMENT

- Utilize Asthma Clinical Pathway Smart Set
- Evaluate future risk of adverse outcomes
- Inquire about treatment technique, including inhaler technique, spacer use and adherence
- Assess for comorbidities that may contribute to asthma symptoms (GERD, obstructive sleep apnea, depression and anxiety) and environmental tobacco smoke exposure
- Consider allergy triggers and treatment, including intranasal steroids and nonsedating oral antihistamines[1]
- Consider ordering lung function testing to obtain FEV1 if child is able to complete

Well controlled[2]? — No → **Initiating therapy?** — Yes → Assess symptoms in the last 4 wks.

Initiating therapy? — No → **Step Up Treatment**
- Escalate treatment to the next step
- ***Consider Pulmonology referral[3]***

Assess symptoms in the last 4 wks.

Symptoms ≤ 2x/mo.? — No → **Symptoms weekly but not most days?** — No → **Symptoms most days or night waking ≥ 1x/wk.?** — No → **Daily symptoms and night waking ≥ 1x/wk.?** — Yes

Symptoms ≤ 2x/mo.? — Yes → **STEP 1**
Daily Low-dose ICS for 2 wks. during exacerbation and SABA Q4 hrs. for 5-7 days

Symptoms weekly but not most days? — Yes → **STEP 2**
- **5-11 yo**: daily low-dose ICS and PRN SABA
- **≥ 12 yo**: daily low-dose ICS and PRN SABA **OR** PRN low-dose ICS-formoterol

Symptoms most days or night waking ≥ 1x/wk.? — Yes → **STEP 3**
- **5-11 yo:** daily medium-dose ICS and PRN SABA
- **≥12 yo**: daily and PRN combination low-dose ICS-formoterol (SMART: If alternative LABA, must add PRN SABA)
- Consider initiation of adjunctive LTRA daily. Discuss side effects see page 5
- Spirometry indicated every 3-6 mo.

Daily symptoms and night waking ≥ 1x/wk.? — Yes → **STEP 4**
- **5-11 yo:** daily low to medium-dose ICS-LABA and PRN SABA
- **≥12 yo**: daily and PRN combination medium-dose ICS-formoterol (SMART: If alternative LABA, must add PRN SABA)

STEP 5
- **5-11 yo**: daily high-dose ICS-LABA and PRN SABA
- **≥ 12 yo**: daily high-dose ICS-LABA, LAMA, LTRA and prn SABA

Intermittent | **Mild Persistent** | **Moderate Persistent** | **Severe Persistent**

Treatment Initiation

Well controlled for ≥ 3 mo.? — No → **Continue current treatment**

Continue current treatment → **Asthma Action Plan**
- Update Asthma Action Plan in Epic with treatment adjustments
- Print and review plan with family

Well controlled for ≥ 3 mo.? — Yes → **Step Down Treatment**
- Reduce treatment to the prior step **OR** reduce ICS by 50%

Continued Care
- Offer influenza vaccination when seasonally appropriate
- Provide related educational resources and encourage asthma symptom tracker use in MyChart
- If no clear assessment can be made, ask the family to keep a daily diary of asthma symptoms and reliever use for 2 weeks
- Schedule follow-up
  - Gaining Control: 2-6 weeks
  - Well Controlled: 3-6 months
  - Step Down Anticipated: 3 months

Treatment Follow Up

Short Acting Beta Agonists (SABAs)					
Generic Name	**Brand Name**	**Form**	**Dosage**	**Dosing**	
				5-11 years	**12+ years**
Albuterol	ProAir	HFA	90 mcg/ actuation	2 inhalations every 4-6 hours PRN	
	Ventolin	HFA			
	Proventil	HFA			
	Pro Air Respiclik	DPI			
	AccuNeb	Nebs	0.63 mg/ 3 ml	1 vial every 4-8 hours PRN	-
			1.25 mg/ 3 ml		1 vial every 4-8 hours PRN
			2.5 mg/ 3 ml		
Levoalbuterol	Xopenex	HFA	45 mcg/ actuation	2 inhalations every 4-6 hours PRN	
	Xopenex Concentrate	Nebs	0.31 mg/ 3 ml	1 vial every 8 hours PRN	-
			0.63 mg/ 3 ml		1 vial every 6-8 hours (max 3 doses per 24 hours)

Long-Acting Muscarnic Antagonists (LAMAs) - 12+ years					
LAMA Component	**Brand Name**	**Form**	**Concentration**	**Low Dose**	**High Dose**
Tiotropium	Spiriva Respimat	Soft Mist Inhaler (SMI)	1.25 mcg/inhalation	2 inhalations daily	-
			2.5 mcg/inhalation	-	2 inhalations daily

Leukotriene Receptor Antagonist (LTRAs)						
Generic Name	**Brand Name**	**Form**	**Dosage**	**Dosing**		
				< 6 years	**6 - 14 years**	**> 15 years**
Montelukast	Singulair	Chewable Tablet	4 mg	1 tablet QHS	-	-
			5 mg	-	1 tablet QHS	-
		Tablet	10 mg	-	-	1 tablet QHS
		Packet	4 mg	1 packet QHS	-	-

Inhaled Corticosteroid Component - 12+ years						
Inhaled Corticosteroid	**Brand Name**	**Form**	**Concentration**	**Low Dose**	**Medium Dose**	**High Dose**
Beclomethasone	QVAR	HFA	40 mcg/puff	2 inhalations BID	-	-
			80 mcg/puff	-	2 inhalations BID	-
Budesonide	Pulmicort	DPI	90 mcg/inhalation	-	-	-
			180 mcg/inhalation	1 inhalation BID	2 inhalations BID	-
	Symbicort/ Breyna	HFA	80/4.5 mcg/inhalation	2 inhalations BID	-	-
			160/4.5 mcg/inhalation	-	1 inhalation BID	-
Ciclesonide	Alvesco	HFA	80 mcg/ inhalation	1 inhalation BID	-	-
			106 mcg/ inhalation	-	1 inhalation BID	-
Fluticasone Propionate	Flovent	HFA	44 mcg/inhalation	2 inhalations BID	-	-
			110 mcg/inhalation	-	2 inhalations BID	-
			220 mcg/inhalation	-	-	2 inhalations BID
	Flovent Diskus	DPI	50 mcg/inhalation	1 inhalation BID	-	-
			100 mcg/inhalation	1 inhalation BID	-	-
			250 mcg/inhalation	-	1 inhalation BID	-
	Advair	HFA	45/21 mcg/inhalation	2 inhalations BID	-	-
			115/21 mcg/inhalation	-	2 inhalations BID	-
			230/21 mcg/inhalation	-	-	2 inhalations BID
	Advair Diskus/ Wixela	DPI	100/50 mcg/inhalation	1 inhalation BID	-	-
			250/50 mcg/inhalation	-	1 inhalation BID	-
			500/50 mcg/inhalation	-	-	1 inhalation BID
	Air Duo Resplick	DPI	55/14 mcg/inhalation	1 inhalation BID	-	-
			113/14 mcg/inhalation	1 inhalation BID	-	-
			232/14 mcg/inhalation	-	1 inhalation BID	-
Fluticasone Furoate	Arnuity Ellipta	DPI	50 mcg/inhalation	-	-	-
			100 mcg/inhalation	1 inhalation daily		-
			200 mcg/inhalation	-	-	1 inhalation daily
	Breo	DPI	50/25 mcg/inhalation	-	-	-
			100/25 mcg/inhalation	1 inhalation daily		-
			200/25 mcg/inhalation	-	-	1 inhalation daily
Mometasone	Asmanex	DPI	110 mcg/inhalation	1 inhalation daily	-	-
			220 mcg/inhalation	1 inhalation daily	1 inhalation BID	2 inhalations BID
		HFA	50 mcg/inhalation	2 inhalations BID	-	-
			100 mcg/inhalation	-	2 inhalations BID	-
			200 mcg/inhalation	-	-	2 inhalations BID
	Dulera	HFA	50/5 mcg/inhalation	2 inhalations BID	-	-
			100/5 mcg/inhalation	-	2 inhalations BID	-
			200/5 mcg/inhalation	-	-	2 inhalations BID

Inhaled Corticosteroid Component - 5-11 years						
Inhaled Corticosteroid	**Brand Name**	**Form**	**Concentration**	**Low Dose**	**Medium Dose**	**High Dose**
Beclomethasone	QVAR	HFA	40 mcg/puff	2 inhalations BID	-	-
			80 mcg/puff	-	2 inhalations BID	-
Budesonide	Pulmicort	DPI	90 mcg/inhalation	1 inhalation BID	-	-
			180 mcg/inhalation	-	1 inhalation BID	2 inhalations BID
		Neb	0.25 mg/ 2 ml	1 vial BID	-	-
			0.5 mg/ 2 ML	1 vial daily	1 vial BID	-
			1 mg/ 2 ml	-	1 vial daily	1 vial BID
	Symbicort/ Breyna	HFA	80/4.5 mcg/inhalation	1 inhalation BID	2 inhalations BID	-
			160/4.5 mcg/inhalation	-	-	2 inhalations BID
Fluticasone Propionate	Flovent	HFA	44 mcg/inhalation	2 inhalations BID	-	-
			110 mcg/inhalation	-	1 inhalation BID	2 inhalations BID
			220 mcg/inhalation	-	-	-
	Flovent Diskus	DPI	50 mcg/inhalation	1 inhalation BID	-	-
			100 mcg/inhalation	-	1 inhalation BID	-
			250 mcg/inhalation	-	-	1 inhalation BID
	Advair	HFA	45/21 mcg/inhalation	1 inhalation BID	2 inhalations BID	-
			115/21 mcg/inhalation	-	1 inhalation BID	2 inhalations BID
			230/21 mcg/inhalation	-	-	-
	Advair Diskus/ Wixela	DPI	100/50 mcg/inhalation	-	1 inhalation BID	-
			250/50 mcg/inhalation	-	-	1 inhalation BID
			500/50 mcg/inhalation	-	-	-
Fluticasone Furoate	Arnuity Ellipta	DPI	50 mcg/inhalation	1 inhalation daily		-
			100 mcg/inhalation	-	-	-
			200 mcg/inhalation	-	-	-
	Breo	DPI	50/25 mcg/inhalation	1 inhalation daily		-
			100/25 mcg/inhalation	-	-	-
			200/25 mcg/inhalation	-	-	-
Mometasone	Asmanex	DPI	110 mcg/inhalation	1 inhalation daily	-	-
			220 mcg/inhalation	-	-	-
		HFA	50 mcg/inhalation	1 inhalation BID		2 inhalations BID
			100 mcg/inhalation	-	-	-
			200 mcg/inhalation	-	-	-
	Dulera	HFA	50/5 mcg/inhalation	1 inhalation BID		2 inhalations BID
			100/5 mcg/inhalation	-	-	-
			200/5 mcg/inhalation	-	-	-

Chronic Asthma, PC

Asthma Control Test (ACT) ≥ 12 yo						
	In the Past 4 Weeks	1 Point	2 Points	3 Points	4 Points	5 Points
1	How much of the time did your asthma keep you from getting as much done at school or at home?	All the time	Most of the time	Some of the time	A little of the time	None of the time
2	How often have you had shortness of breath?	More than once a day	Once a day	3 to 6 time a week	Once or twice a week	Not at all
3	How often did your asthma symptoms wake you up at night or earlier than usual in the morning?	4 or more nights a week	2 or 3 nights a week	Once a week	Once or twice	Not at all
4	How often have you used your rescue inhaler or nebulizer medication?	3 or more times per day	1 or 2 times per day	2 or 3 times per week	Once a week or less	Not at all
5	How would you rate your asthma control?	Not controlled at all	Poorly controlled	Somewhat controlled	Well controlled	Completely controlled

Asthma Control Test (ACT) 5-11 yo							
	In the Past 4 Weeks	0 Points	1 Point	2 Points	3 Points	4 Points	5 Points
Patient Questions:							
1	How is your asthma today?	Very bad	Bad	Good	Very Good	–	–
2	How much of a problem is your asthma when you run, exercise, or play sports?	It's a big problem, I can't do what I want to do.	It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.	–	–
3	Do you cough because of your asthma?	Yes, all the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	–	–
4	Do you wake up at night because of your asthma?	Yes, all the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	–	–
Parent Questions:							
5	How many days did your child have any daytime asthma symptoms?	Everyday	19-24 days	11-18 days	4-10 days	1-3 days	Not at all
6	How many days did your child wheeze during the day because of asthma?	Everyday	19-24 days	11-18 days	4-10 days	1-3 days	Not at all
7	How many days did your child wake up during the night because of asthma?	Everyday	19-24 days	11-18 days	4-10 days	1-3 days	Not at all
If total score is 19 or less, asthma is not well controlled.							

Allergy/ Immunology Referral Indications

- Worsening asthma with concern for allergy triggers
- If biologics are indicated
- Considering allergen immunotherapy initiation
- Allergy testing
- Concerns for food allergy
- Abnormal immunoglobulin titers
- Concern for alternative diagnosis

Asthma Differential Diagnoses

- Chronic upper airway cough syndrome
- Suppurative lung disease
- Congenital heart disease
- Bronchopulmonary dysplasia
- Cystic fibrosis
- Laryngeal cleft
- Foreign body aspiration

Clinical Pathway Abbreviations	
Abbreviation	Definition
ACT	Asthma Control Test
BID	Twice Daily
CBC with diff	Complete Blood Count with Differential
FEV1	Forced Expiratory Volume in 1 second
GERD	Gastroesophageal Reflux Disease
ICS	Inhaled Corticosteroid
IgE	Immunoglobulin E
LABA	Long-Acting Beta-Agonist
LAMA	Long-Acting Muscarinic Antagonist
LTRA	Leukotriene Receptor Antagonist
OCS	Oral Corticosteroid
PRN	As Needed
QD	Daily
SABA	Short-Acting Beta-Agonist
SMART	Single Maintenance And Reliever Therapy

VERSION MANAGEMENT

- Version 1.0 (7/15/2025): Go Live.

Questions about this pathway should be directed to **clinicalpathways@nemours.org**.

AUTHORS & REFERENCES

Central Florida Authors: Heather Ammirata (Clinical Pathways), Cara Harwell (Clinical Pathways), Alex Lopilato (Pharmacy), Christina Morris (Primary Care), Andre Rebaza (Pulmonology)

Delaware Valley Authors: Danielle Burns (Pharmacy), Swati Jain (Pharmacy), Preethi Kumar (Primary Care), Vandna Passi (Pulmonology), Arianna Phillips (Clinical Pathways), Arezoo Zomorrodi (Emergency Medicine)

- Gaillard EA, Kuehni CE, Turner S, et al. European Respiratory Society clinical practice guidelines for the diagnosis of asthma in children aged 5-16 years. Eur Respir J. 2021;58(5):2004173. doi:10.1183/13993003.04173-2020
- Global Initiative for Asthma. GINA-Main-report-2023_tracked-v-2022_202305_03-WMSA.pdf. GINA Website. https://ginasthma.org/wp-content/uploads/2023/05/GINA-Main-report-2023_tracked-v-2022_202305_03-WMSA.pdf. Published 2023. Accessed March 5, 2024.
- National Heart, Lung, and Blood Institute. 2020 Focused Updates to the Asthma Management Guidelines: Clinician's Guide. NIH Publication No. 20-HL-8141; 2020.
- Rank MA, Hagan JB, Park MA, et al. The risk of asthma exacerbation after stopping low-dose inhaled corticosteroids: a systematic review and meta-analysis of randomized controlled trials. J Allergy Clin Immunol. 2013;131(3):724-729. doi:10.1016/j.jaci.2012.11.038
- Reddel HK, Bacharier LB, Bateman ED, et al. Global Initiative for Asthma Strategy 2021: Executive Summary and Rationale for Key Changes. Am J Respir Crit Care Med. 2022;205(1):17-35. doi:10.1164/rccm.202109-2205PP