

MANAGEMENT OF

ASTHMA

2023 Update

An Intermountain system-wide team comprised of Pulmonary, Allergy, and Children's Health experts created this Care Process Model to improve and standardize asthma care. Its primary purpose is to encourage the use of evidence-based guidelines for asthma management in patients of all ages. The streamlined asthma management workflows were created using the National Heart, Lung, and Blood Institute (NHLBI) guidelines with select additions from the Global Initiative for Asthma designated as (*GINA)* within the document.

Initiate asthma therapy based on presenting symptoms and then step-up and step-down therapy as needed.

- Utilize newly-developed powerplans to guide age-appropriate initial dosing. Search for **PUL ASTHMA** in iCENTRA. Asthma steps / orders can be documented by autotext using **.ambasthma**
- For patients who are poorly controlled at presentation, consider starting treatment at step 3 or higher. A short course of OCS may also be appropriate.

Prescribing **S**ingle **M**aintenance **A**nd **R**eliever **T**herapy (SMART) is recommended for patients age 4 + with moderate persistent asthma (steps 3 and 4).

- SMART uses a single inhaler containing an ICS and formoterol as both a daily and quick-relief therapy. Examples include budesonide + formoterol (Symbicort) and mometasone + formoterol (Dulera).
- Medications NOT appropriate for SMART are ICS + salmeterol or vilanterol inhalers such as Advair, AirDuo, Wixela Inhub, or Breo Ellipta.

Consider starting ICS dosing earlier.

- A short course of ICS with PRN SABA is recommended at the beginning of an RTI in children age 0–4 years with recurrent wheezing (episodes of wheezing triggered by RTI and no symptoms between RTIs).
- Patients age 12+ with mild asthma may benefit from daily low-dose ICS with PRN SABA or PRN ICS + SABA.

What's new in this update?

- **Leukotriene Receptor antagonists (LTR's) such as montelukast (Singular)** were not considered in this guideline, though they remain an alternative option. Decreased effectiveness compared to ICS and ICS + LABA as well as the FDA boxed warning for montelukast regarding serious mood changes discourage routine usage.
- **Temporarily increasing the daily ICS dose** during times of reduced asthma control is not recommended by the 2020 NHLBI updated guidelines.

ICS-inhaled corticosteroids (e.g. budesonide); **LABA**-long-acting beta agonist (e.g. formoterol; salmeterol); **OCS**-oral corticosteroids (e.g.prednisolone, prednisone); **PRN**-as needed; **RTI**-respiratory tract infection; **SABA**-short-acting beta-agonist (e.g. albuterol, levalbuterol)

ASTHMA MANAGEMENT

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INTERMOUNTAIN MEASURES

To determine if implementation of these guidelines improves patient outcomes, Intermountain will track the following:

- Usage of Intermountain evidence-based powerplans to guide management of asthma therapy
- Usage of SMART in moderate asthma for patients ≥ 4 years of age
- Frequency of ED visits and inpatient admissions for asthma exacerbations (EDK, IPK)

SUPPORTING EVIDENCE

2020 focused Updates to the ASTHMA MANAGEMENT Guidelines
National Heart, Lung, and Blood Institute (NHLBI)

2022 Global Strategy for Asthma Management and Prevention
Global Initiative for Asthma (GINA)

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ASTHMA MANAGEMENT AGES 0–4

FIRST ASSESS

- ☐ Confirm diagnosis
- ☐ Comorbidities
- ☐ Symptom control
- ☐ Modifiable risk factors
- ☐ Inhaler technique and adherence
- ☐ Child and parent preferences and goals

IF INITIATING TREATMENT

Intermittent	Mild Persistent	Moderate Persistent → Severe Persistent		
Symptoms ≤2 days/week + No night awakenings	Symptoms >2 days/week but not daily + Night awakenings 1–2 times/month	Symptoms daily + Night awakenings 3–4 times/month	Symptoms daily + Night awakenings >1 time/week	Symptoms daily + Night awakenings 3–4 times/week

Refer to *asthma control tables* for guidance on step-up and step-down for those on existing therapy

STEPWISE TREATMENT

Step 1	Step 2	Step 3	Step 4	Steps 5 & 6
PRN SABA At the beginning of an RTI: Add a short course of daily ICS	Daily low-dose ICS and PRN SABA	Daily medium-dose ICS and PRN SABA **If 4 yrs old, use *Asthma Management Ages 5-11 (pg 3)* for steps 3 and 4**	Daily medium-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA and PRN SABA Consider adding OCS in select patients

Consider a short course of OCS if poorly controlled at presentation **

Consider Referral to Asthma Specialist

Refer to Asthma Specialist

Use powerplans **PUL ASTHMA** for dosages

Use autotext **.ambasthma** for documentation

* If patient is poorly controlled at presentation, consider starting at Step 3 or higher
** Temporarily increasing the daily ICS dose during times of reduced asthma control is NOT recommended by the NHLBI updated guidelines

ICS-inhaled corticosteroids(e.g. budesonide); **LABA**- long-acting beta agonist (e.g. formoterol; salmeterol); **OCS**- oral corticosteroids (e.g. prednisolone, prednisone); **PRN**-as needed; **RTI**- respiratory tract infection; **SABA**- short-acting beta-agonist (e.g. albuterol, levalbuterol);

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ASTHMA MANAGEMENT AGES 5 – 11

FIRST ASSESS

- □ Confirm diagnosis
- □ Comorbidities
- □ Symptom control
- □ Modifiable risk factors
- □ Inhaler technique and adherence
- □ Child and parent preferences and goals

IF INITIATING TREATMENT

Intermittent	Mild Persistent	Moderate Persistent → Severe Persistent		
Symptoms ≤2 days/week + Night awakenings ≤2 times/month	Symptoms >2 days/week but not daily + Night awakenings 3–4 times/month	Symptoms daily + Night awakenings >1 time/week	Symptoms daily + Night awakenings >1 time/week with lower lung function	Symptoms throughout the day + Nightly

Refer to *asthma control tables* for guidance on step-up and step-down for those on existing therapy

STEPWISE TREATMENT

Step 1	Step 2	Step 3	Step 4	Steps 5 & 6
PRN SABA Option: Low dose ICS whenever SABA is taken (*GINA*)	Daily low-dose ICS and PRN SABA	Low-dose SMART or Daily low-dose ICS-LABA and PRN SABA or Daily medium-dose ICS and PRN SABA	Medium-dose SMART or Daily medium-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA and PRN SABA In select patients: Consider adding OCS and/or biologics

SMART

Single **M**aintenance **A**nd **R**eliever **T**herapy

- Appropriate: ICS + formoterol such as budesonide + formoterol (Symbicort), or mometasone + formoterol (Dulera)
- **NOT** appropriate for SMART: ICS + salmeterol or vilanterol inhalers such as Advair, AirDuo, Wixela Inhub, or Breo Ellipta

Although off-label, both NHLBI and GINA guidelines recommend SMART

Consider short course of OCS if poorly controlled at presentation **

Consider Referral to Asthma Specialist

Refer to Asthma Specialist

Use powerplans **PUL ASTHMA** for dosages

Use autotext **.ambasthma** for documentation

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GINA- Global Initiative for Asthma; **ICS**- inhaled corticosteroids(e.g. budesonide); **LABA**- long-acting beta agonist (e.g. formoterol; salmeterol); **NHLBI**- National Heart, Lung, and Blood Institute; **OCS**- oral corticosteroids(e.g. prednisolone, prednisone); **PRN**-as needed; **RTI**- respiratory tract infection; **SABA**-short-acting beta-agonist (e.g. albuterol, levalbuterol);**SMART**-Single Maintenance an Reliever Therapy using ICS + formoterol inhaler

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ASTHMA MANAGEMENT AGES 12 – ADULT

FIRST ASSESS

- ☐ Confirm diagnosis
- ☐ Comorbidities
- ☐ Symptom control
- ☐ Modifiable risk factors
- ☐ Inhaler technique and adherence
- ☐ Child and parent preferences and goals

IF INITIATING TREATMENT

Intermittent	Mild Persistent	Moderate Persistent → Severe Persistent		
Symptoms ≤2 days/week + Night awakenings ≤2 times/month	Symptoms >2 days/week but not daily + Night awakenings 3–4 times/month	Symptoms daily + Night awakenings >1 time/week	Symptoms daily + Night awakenings >1 time/week with lower lung function	Symptoms throughout the day + Nightly

Refer to *asthma control tables* for guidance on step-up and step-down for those on existing therapy

STEPWISE TREATMENT

Step 1	Step 2	Step 3	Step 4	Steps 5 & 6
PRN SABA	Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA Option: PRN Low-dose ICS-formoterol (*GINA*)	Low-dose SMART or Daily low-dose ICS-LABA and PRN SABA or Daily medium-dose ICS and PRN SABA	Medium-dose SMART or Daily medium-dose ICS-LABA and PRN SABA	Daily med/high-dose ICS-LABA and PRN SABA Consider add-on LAMA In select patients: Consider adding OCS and/or biologics

SMART

Single **M**aintenance **A**nd **R**eliever **T**herapy

- Appropriate: ICS + formoterol such as budesonide + formoterol (Symbicort), or mometasone + formoterol (Dulera)
- **NOT** appropriate for SMART: ICS + salmeterol or vilanterol inhalers such as Advair, AirDuo, Wixela Inhub, or Breo Ellipta

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GINA- Global Initiative for Asthma; **ICS**- inhaled corticosteroids(e.g. budesonide); **LABA**- long-acting beta agonist (e.g. formoterol; salmeterol);**LAMA**-long acting muscarinic antagonists,**NHLBI**- National Heart, Lung, and Blood Institute; **OCS**- oral corticosteroids(e.g. prednisolone, prednisone); **PRN**-as needed; RTI- respiratory tract infection; **SABA**-short-acting beta-agonist (e.g. albuterol, levalbuterol);**SMART**-Single Maintenance an Reliever Therapy using ICS + formoterol inhaler

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TABLE 1: CPM Responsibility Matrix

Content and Updates	Measurement	Implementation and Adherence
Responsible: • Pulmonary Medicine (Adult & Pediatric) • Allergy & Immunology **Consulted:** • Pediatric Medicine • Family Medicine • Internal Medicine • Pharmacy Services **Informed:** • Ambulatory Care Leadership • Children's Health • Respiratory Care Services	**Responsible:** • Pulmonary Medicine (Adult & Pediatric) • Allergy & Immunology **Consulted:** • Enterprise Analytics • Medical Specialties Clinical Program **Informed:** • Ambulatory Care Leadership • Children's Health • Respiratory Care Services	**Responsible:** • Pulmonary Medicine (Adult & Pediatric) • Allergy & Immunology **Consulted:** • Primary Care leadership • Castell • Children's Health **Informed:** • Ambulatory Care Leadership • Hospitalist Operations Lane

This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to Peter Crossno, MD; Associate Medical Director of Pulmonary and Respiratory Care, Intermountain Healthcare; peter.crossno@imail.org

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