

Clinical Practice Guideline for the Management of Asthma in Children and Adults

Assessment:

- A critical aspect of the diagnosis and management of asthma is the precise and periodic measurement of lung function – both before and after bronco-dilator therapy to determine both the severity and the effectiveness of therapeutic interventions (see severity and therapy initiation and adjustment charts below).
- When establishing the diagnosis of asthma, evaluate the:
 - complete medical history (including direct and secondary exposure to triggering agents and events; physical examination, and diagnostic lung function and imaging studies)
 - within medical history, establish that the episodic symptoms of airflow obstruction are present, and objectively demonstrate that obstruction is at least partially reversible with therapeutic agents
 - exclude the presence of any alternative diagnoses such as COPD, vocal chord obstruction, foreign body aspiration, congestive heart failure, structural abnormality and/or cystic fibrosis
 - medication requirements: requiring short-acting / rescue bronchodilators more than twice per week, should prompt the consideration of prescribing inhaled corticosteroids on a daily basis for persistent asthma
- Measures of assessment and monitoring:
 - **Spirometry:** At least once a year before and after inhaled bronchodilator therapy
 - Significant reversibility is indicated by an increase of $\geq 12\%$ and 200 ml in FEV₁
 - **Peak Flow:** Symptomatic patients with normal spirometry:
 - daily assessment of peak flow monitoring upon rising and before bedtime
 - maintain an accurate log of daily measurements to help detect subtle changes in lung function that may otherwise go unnoticed by the patient or the provider

Components of Severity and Therapy Initiation in Children (0-11 years):

| Components of Severity | | Classifying Asthma Severity and Initiating Therapy in Children | | | | | | | | |
|--|--|--|--|---------------------------------|---|---|---|---|---|--|
| | | Intermittent | | Persistent | | | | | | |
| | | Ages 0-4 | Ages 5-11 | Mild | | Moderate | | Severe | | |
| | | Ages 0-4 | Ages 5-11 | Ages 0-4 | Ages 5-11 | Ages 0-4 | Ages 5-11 | Ages 0-4 | Ages 5-11 | |
| Impairment | Symptoms | ≤2 days/week | | >2 days/week but not daily | | Daily | | Throughout the day | | |
| | Nighttime awakenings | 0 | <2x/month | 1-2x/month | 3-4x/month | 3-4x/month | >1x/week but not nightly | >1x/week | Often 7x/week | |
| | Short-acting beta ₂ -agonist use for symptom control | ≤2 days/week | | >2 days/week but not daily | | Daily | | Several times per day | | |
| | Interference with normal activity | None | | Minor limitation | | Some limitation | | Extremely limited | | |
| | Lung Function • FEV ₁ (predicted) or peak flow (personal best) • FEV ₁ /FVC | N/A | Normal FEV ₁ between exacerbations >80% >85% | N/A | >80% >80% | N/A | 60-80% 75-80% | N/A | <60% <75% | |
| Risk | Exacerbations requiring oral systemic corticosteroids (consider severity and interval since last exacerbation) 0-1/year (see notes) | | >2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥4 wheezing episodes/1 year lasting >1 day AND risk factors for persistent asthma | | ≥2x/year (see notes) Relative annual risk may be related to FEV ₁ | | | | | |
| Recommended Step for Initiating Therapy (See "Stepwise Approach for Managing Asthma" for treatment steps.) The stepwise approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs. | | Step 1 (for both age groups) | | Step 2 (for both age groups) | | Step 3 and consider short course of oral systemic corticosteroids | Step 3: medium-dose ICS option and consider short course of oral systemic corticosteroids | Step 3 and consider short course of oral systemic corticosteroids | Step 3: medium-dose ICS option OR step 4 and consider short course of oral systemic corticosteroids | |
| In 2-6 weeks, depending on severity, evaluate level of asthma control that is achieved. • Children 0-4 years old: If no clear benefit is observed in 4-6 weeks, stop treatment and consider alternative diagnoses or adjusting therapy. • Children 5-11 years old: Adjust therapy accordingly. | | | | | | | | | | |

Assessing Asthma Control and Adjusting Therapy in Children (0-11 years):

| Components of Control | | Assessing Asthma Control and Adjusting Therapy in Children | | | | | |
|---|---|---|-----------------------------|--|------------------|---|--------------|
| | | Well Controlled | | Not Well Controlled | | Very Poorly Controlled | |
| | | Ages 0-4 | Ages 5-11 | Ages 0-4 | Ages 5-11 | Ages 0-4 | Ages 5-11 |
| Symptoms | Symptoms | ≤2 days/week but not more than once on each day | | >2 days/week or multiple times on ≤2 days/week | | Throughout the day | |
| | Nighttime awakenings | ≤1x/month | | >1x/month | | >1x/week | |
| | Interference with normal activity | None | | Some limitation | | Extremely limited | |
| Impairment | Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB) | ≤2 days/week | | >2 days/week | | Several times per day | |
| | Lung function | N/A | >80% | N/A | 60-80% 75-80% | N/A | <60% <75% |
| | • FEV ₁ (predicted) or peak flow personal best • FEV ₁ /FVC | >80% | | >80% | | >80% | |
| Risk | Exacerbations requiring oral systemic corticosteroids | 0-1x/year | | 2-3x/year | | >3x/year | |
| | Reduction in lung growth | N/A | Requires long-term followup | N/A | N/A | N/A | N/A |
| | Treatment-related adverse effects | Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk. | | | | | |
| Recommended Action for Treatment | | <ul style="list-style-type: none"> Maintain current step. Regular followup every 1-6 months. Consider step down if well controlled for at least 3 months. | | Step up 1 step | | Step up at least 1 step <ul style="list-style-type: none"> Consider short course of oral systemic corticosteroids, Step up 1-2 steps | |
| (See "Stepwise Approach for Managing Asthma" for treatment steps.) The stepwise approach is meant to assist, not replace, clinical decisionmaking required to meet individual patient needs. | | <ul style="list-style-type: none"> Before step up: Review adherence to medication, inhaler technique, and environmental control. If alternative treatment was used, discontinue it and use preferred treatment for that step. Reevaluate the level of asthma control in 2-6 weeks to achieve control; every 1-6 months to maintain control. Children 0-4 years old: If no clear benefit is observed in 4-6 weeks, consider alternative diagnoses or adjusting therapy. Children 5-11 years old: Adjust therapy accordingly. For side effects, consider alternative treatment options. | | | | | |

Classifying Asthma Severity and Initiating Treatment in Youths ≥ 12 Years of Age and Adults

| Components of Severity | | Classification of Asthma Severity ≥12 years of age | | | |
|--|---|---|--|--|-------------|
| | | Intermittent | Mild | Moderate | Severe |
| Symptoms | ≤2 days/week | >2 days/week but not daily | Daily | Throughout the day | |
| | ≤2x/month | 3–4x/month | >1x/week but not nightly | Often 7x/week | |
| | ≤2 days/week | >2 days/week but not daily, and not more than 1x on any day | Daily | Several times per day | |
| | Interference with normal activity | Minor limitation | Some limitation | Extremely limited | |
| Impairment | None | Minor limitation | Some limitation | Extremely limited | |
| | • Normal FEV ₁ between exacerbations | | | | |
| | • FEV ₁ >80% predicted | • FEV ₁ >80% predicted | • FEV ₁ >60% but <80% predicted | • FEV ₁ <60% predicted | |
| | • FEV ₁ /FVC normal | • FEV ₁ /FVC normal | • FEV ₁ /FVC reduced 5% | • FEV ₁ /FVC reduced >5% | |
| Risk | 0–1/year (see note) | ≥2/year (see note) | | | |
| | Exacerbations requiring oral systemic corticosteroids | Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. | | | |
| Recommended Step for Initiating Treatment | | Step 1 | Step 2 | Step 3 | Step 4 or 5 |
| (See "Stepwise Approach for Managing Asthma" for treatment steps.) | | In 2–6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly. | | and consider short course of oral systemic corticosteroids | |

Assessing Asthma Control and Adjusting Therapy in Youths ≥ 12 years of Age and Adults

| Components of Control | | Classification of Asthma Control (≥12 years of age) | | |
|--|---|--|--|--|
| | | Well Controlled | Not Well Controlled | Very Poorly Controlled |
| Impairment | Symptoms | ≤2 days/week | >2 days/week | Throughout the day |
| | Nighttime awakenings | ≤2x/month | 1-3x/week | ≥4x/week |
| | Interference with normal activity | None | Some limitation | Extremely limited |
| | Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB) | ≤2 days/week | >2 days/week | Several times per day |
| | FEV ₁ or peak flow | >80% predicted/ personal best | 60-80% predicted/ personal best | <60% predicted/ personal best |
| | Validated questionnaires ATAQ ACQ ACT | 0 ≤0.75* ≥20 | 1-2 ≥1.5 16-19 | 3-4 N/A ≤15 |
| Risk | Exacerbations requiring oral systemic corticosteroids | 0-1/year | ≥2/year (see note) | |
| | | Consider severity and interval since last exacerbation | | |
| | Progressive loss of lung function | Evaluation requires long-term followup care. | | |
| | Treatment-related adverse effects | Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk. | | |
| Recommended Action for Treatment (See "Stepwise Approach for Managing Asthma" for treatment steps.) | | <ul style="list-style-type: none"> Maintain current step. Regular followup at every 1-6 months to maintain control. Consider step down if well controlled for at least 3 months. | <ul style="list-style-type: none"> Step up 1 step. Reevaluate in 2-6 weeks. For side effects, consider alternative treatment options. | <ul style="list-style-type: none"> Consider short course of oral systemic corticosteroids. Step up 1-2 steps. Reevaluate in 2 weeks. For side effects, consider alternative treatment options. |

Contributing Factors: Assess at the initial evaluation & additional visits based on seasonal variations:

- **Smoking and secondhand smoke.** *If the member smokes, please address the value and available resources to aid in smoking cessation.*
- Identify possible environmental inhalant allergens, indoor irritants, pet dander, air pollution
- Viral Respiratory Infection component to induction of Reactive Airways Disease
- Identify all the modifiable risk factors: sedentary lifestyle, obesity, stress, smoking, drug use
- Identify other factors: acute/chronic rhino-sinusitis, gastro-esophageal reflux, drugs (ASA/NSAIDS, sulfites, beta-adrenergic blockers in sensitive patients)

Triggers:

- Smoking and secondhand smoke
- Air pollution
- Things the member is allergic to: pet dander, dust mites, cockroaches or pollen
- For exercise induced asthma: advise members on the proper use of inhaler use before they exercise
- Dry, cold air
- Infection
- Some medicines, such as aspirin

Pharmacotherapy: Maintain optimal outcomes:

- Control chronic and nocturnal symptoms
- Maintain normal activity levels, including exercise
- Maintain near normal pulmonary function
- Prevent acute episodes of asthma exacerbation

- Avoid adverse effects of asthma medications
- In addition to allergen avoidance, enhance pharmacotherapy for environmental allergy based seasonal asthma, e.g. daily antihistamines and nasal steroid sprays to avoid asthma induction, daily inhaled corticosteroids during season even if not needed outside of season, etc.
- Annual Influenza immunization; Pneumococcal vaccination as appropriate

Pharmacotherapy based on individual’s needs:

- **Rescue Medication:**
 - Short Acting Beta2 Adrenergic Agonist Bronchodilator
 - Primary medication only for infrequent symptoms or pre-exposure prophylaxis
- **First Line Controller Medication:**
 - Inhaled Corticosteroids
 - To be added for ALL persistent disease, no matter how mild
- **Second Line Controller Medication:**
 - Long Acting Beta2 Adrenergic Agonist Bronchodilators
 - To be added for asthmatics inadequately controlled on steroids
- **Third Line Medications:**
 - Other anti-inflammatory inhalers
 - Only added for asthmatics inadequately controlled on 1st & 2nd step therapy
- **Fourth Line Medications:**
 - Methylxanthines
 - Available, but rarely required

Leukotriene modifiers: Include Leukotriene Receptor Antagonist (LTRA) and a 5-lipoxygenase inhibitor. Two LTRAs are available—montelukast (for patients >1 year of age) and zafirlukast (for patients ≥7 years of age). The 5-lipoxygenase pathway inhibitor zileuton is available for patients ≥12 years of age; liver function monitoring is essential. LTRAs are alternative, but not preferred, therapy for the treatment of mild persistent asthma. LTRAs can also be used as adjunctive therapy with ICSs, but for youths ≥12 years of age and adults they are not the preferred adjunctive therapy compared to the addition of LABAs. Zileuton can be used as alternative but not preferred adjunctive therapy in adults.

Patient Education: All patients with Asthma should have a written Asthma Action Plan which incorporates all aspects of their Asthma care. This care plan should be re-evaluated at least annually and more often if necessary to help control the patient’s changing condition. A team approach, which includes the patient, the PCP, a certified asthma educator, and a pulmonary specialist when appropriate, is the ideal delivery model for the effective and efficient treatment of Asthma. Toward this end, the patient must understand his/her Asthma Action Plan – which includes:

- Short and long term goals
- Written environmental control recommendations
- Lifestyle changes including sick day interventions
- Self-monitoring of peak flows with use of a recording system (monthly calendar charting seasonal variations in asthma symptoms)
- Basic facts about asthma (provide written material for patient reference)
- List of environmental controls (stress the importance of implementation)
- Appropriate role of Asthma medications:
 - Explain use of controller vs. reliever medications
 - Provide Asthma Action Plan for medication use
 - Provide use instructions for MDI (observe use and critique technique) and the use of Spacer devices
 - Refer to WellCare Asthma Disease Management Program

Monitoring and Reporting:

- Establish therapeutic goals: Normal Activity without restriction, rare symptoms
- Provide instructions for monitoring and reporting
 - Practice use of peak flow meter as a monitoring tool and instruct patient to record missed school/work days, altered activity, symptom changes

Follow up:

- Routine office exams seasonally or every 1 to 6 months if stable, with increased frequency in acute cases or if patient’s routine “stable” status changes
- Assess attainment of patient goals and concerns
- Adjust treatment plans as often as necessary for optimal control; add inhaled corticosteroids for all persistent (rescue meds > twice per week) asthma, no matter how mild the severity

- Update the Asthma Action Plan and self-management plan at least annually, and more often as indicated for changes in status
- Re-assess patient's peak flow and inhaler technique
- Smoking cessation program referral for smokers

Current HEDIS ® Physician Measurement and Assessment of Compliance with Guidelines

- Percent of members aged 5-56 years of age during the measurement year who were identified as having persistent asthma during the year prior to the measurement year and who were appropriately prescribed inhaled corticosteroids, leukotriene modifiers, or Nedocromil during the measurement year.

References: Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. National Heart, Lung, and Blood Institute. <http://www.nhlbi.nih.gov/guidelines/asthma/asthdln.pdf> Full Report 2007

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