JAMA Network Clinical Guideline Synopsis

Updates to the Pediatrics Asthma Management Guidelines

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GUIDELINE TITLE: 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group

DEVELOPER: An expert panel assembled by the National Heart, Lung, and Blood Institute of the National Institutes of Health

RELEASE DATE: December 2020

PRIOR VERSION: 2007

FUNDING SOURCE: National Heart, Lung, and Blood Institute

TARGET POPULATION: Children and adolescents with suspected or confirmed asthma

MAJOR RECOMMENDATIONS AND QUALITY/EVIDENCE RATINGS:

Asthma Pharmacotherapy

- In children aged 0 to 4 years with recurrent wheezing with respiratory tract infections (RTIs) and no wheezing between RTIs, consider a short course of daily inhaled corticosteroid (ICS) with an as-needed short-acting beta$_2$-agonist (SABA) at RTI onset vs as-needed SABA only (conditional, high).
- In those 12 years and older with mild persistent asthma, a daily low-dose ICS and an as-needed SABA remain appropriate, or consider as-needed ICS and SABA concomitantly (conditional, moderate).
- In children 4 years and older with mild to moderate persistent asthma taking daily ICS, do not increase dosage for short periods when symptoms increase (conditional, low).
- For children 4 years and older with moderate to severe persistent asthma who are taking low-dose or medium-dose ICS, use a single inhaler with ICS-formoterol daily and as needed (ie, single maintenance and reliever therapy [SMART]) (strong, moderate [4-11 years], high [≥12 years]).
- In those 12 years and older with moderate to severe persistent asthma, consider using ICS-formoterol in a single inhaler as a daily controller and SMART, vs higher-dose ICS-LABA as daily controller therapy and SABA for quick-relief therapy (conditional, high).
- For those 12 years and older with persistent asthma not controlled by ICS therapy alone, add a long-acting beta$_2$-agonist (LABA) to daily ICS rather than a long-acting muscarinic antagonist (LAMA) (conditional, moderate).
- In individuals 12 years and older with uncontrolled asthma taking daily ICS-LABA, add LAMA (conditional, moderate).

Fractional Exhaled Nitric Oxide (FENO) Testing

- In children ages 5 years and older with uncertain or diagnosed allergic asthma, FENO testing is conditionally recommended as an adjunctive diagnostic test (conditional, moderate [uncertain] and low [diagnosed]).
- In children ages 0 to 4 years, FENO testing is not recommended to assess the likelihood of asthma development (strong, low).

Allergen Mitigation and Immunotherapy

- No allergen mitigation is recommended in those with asthma without sensitization or symptoms associated with specific indoor allergens (conditional, low).
- In individuals with asthma and sensitization or symptoms from dust mites, impermeable pillow and mattress covers should be used only with multicomponent allergen mitigation (conditional, moderate).
- In children 5 years and older with mild to moderate allergic asthma, consider subcutaneous immunotherapy as an adjunct to standard pharmacotherapy (conditional, moderate).

Summary of the Clinical Problem

Asthma is the most common chronic respiratory disease of childhood, affecting 7.5% of US children.[1] Asthma exacerbations are among the leading reasons for emergency department visits and hospitalizations in youths,[2] as well as school absenteeism.[1]

Characteristics of the Guideline Source

This National Heart, Lung, and Blood Institute–funded guideline update was developed by volunteer experts in pulmonology, allergy-immunology, primary care, emergency medicine, pharmacology, and health policy. All abided by Institute of Medicine conflict of interest standards; no sources of bias related to funding were found. Priority topic selection was based on input from prior guideline developers, national asthma organizations, and the public.[3] Consulting experts in Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methods steered the process. Guidance on practical implementation of recommendations used input from focus groups of patients, caregivers, and clinicians (**Table**).

Evidence Base

This focused update chose 6 priority topics identified by prior published methods.[4] Key questions in the priority areas informed systematic reviews conducted by the Agency for Healthcare Research and Quality.[4-7] Topical pediatric areas included optimal use of inhaled corticosteroid (ICS), ICS-formoterol, long-acting muscarinic antagonist (LAMA), and immunotherapy in asthma management; fractional expired nitric oxide testing in diagnosis and management; and allergen mitigation in symptom management. Before the expert panel convened in October 2018, Westat conducted a literature review to find additional articles that met inclusion criteria and were published after systematic reviews were completed.

Table. Guideline Rating

Standard	Rating
Establishing transparency	Good
Management of conflict of interest in the guideline development group	Good
Guideline development group composition	Good
Clinical practice guideline-systematic review intersection	Good
Establishing evidence foundations and rating strength for each of the guideline recommendations	Good
Articulation of the recommendations	Good
External review	Good
Updating	Fair
Implementation issues	Fair

The expert panel used GRADE to review evidence, create evidence profiles for important outcomes, and write recommendations. Tables using the evidence-to-decision framework were created for key questions. These tables described certainty of evidence, net benefit of interventions, and judgments on feasibility and equity of interventions. Discussions reviewing these tables and available evidence took place in subcommittees and aggregate. Recommendations are graded as either strong or conditional and based on a low, moderate, or high degree of certainty. For each, the expert panel indicated for or against the intervention and the strength of recommendation. These guidelines should be considered highly generalizable to US children in the indicated ages.

Benefits and Harms

Multiple pediatric treatments are discussed in this update, including ICS, LAMA, and immunotherapy. Treatment benefits include better symptom control, decreased numbers or severity of exacerbations, and decreased hospitalizations, but they require use in the right patients (by age and asthma severity) and settings. For instance, brief courses of ICS can reduce exacerbations requiring systemic corticosteroids in young children, specifically those with a history of wheezing, especially when used at respiratory infection symptom onset. Because ICS can affect growth, monitoring of height and weight is recommended for short-term or long-term use of ICS. Inhaled corticosteroid and ICS-formoterol products can be expensive, and clinicians should assess different options' costs and long-term feasibility before prescribing. Because of implementation challenges and concerns about adverse effects, the strengths of several recommendations were only conditional, and choices should consider patient-specific factors and include shared decision-making. Subcutaneous immunotherapy adverse effects are not trivial, and treatment should be overseen only by trained personnel. Fractional expired nitric oxide testing can be expensive and is not always covered by third-party payers. It is of conditional value when used with symptom assessment and lung function testing in asthma diagnosis, phenotyping, and monitoring.

Discussion

Poorly controlled asthma is a public health problem and leading reason children miss school or are hospitalized. These updates are important for pediatric clinicians; they provide the latest clinical recommendations on 6 priority asthma topics with new evidence. We also recognized the importance of integrating this information into the well-known asthma step diagrams from the 2007 guidelines. While many of the recommendations from this guideline are now first-line treatments on the step diagrams, there were only a few strong recommendations. This is because of asthma phenotype variations, plus study design issues and a lack of standardized outcome measures. There was an emphasis on single maintenance and reliever therapy (SMART), which is felt to have many benefits from a patient perspective, including ease of use, regimen simplification, and ability to avoid office visits if a patient has been provided appropriate anticipatory education. Unlike the Global Initiative for Asthma guidelines,[8] the recommendation for step 1 intermittent asthma treatment continues to allow as-needed albuterol without concurrent ICS. Children currently well controlled on the old guidelines (daily ICS plus an short-acting $beta_2$-agonist as needed) are not required to change to SMART therapy. Clinicians may be challenged to implement these recommendations because of a lack of US Food and Drug Administration approval for SMART and intermittent ICS strategies and payer restrictions.

Areas in Need of Future Study or Ongoing Research

Given known health disparities in asthma outcomes, more focus is needed on racial/ethnic differences in risks and benefits of treatments. Cost-effectiveness and comparative effectiveness data to better represent real-world contexts will be essential, especially for children aged 0 to 4 years prescribed short-course ICS during respiratory infections and SMART therapy in children younger than 12 years. Several important trials involving anti-asthma biologics in children with moderate to severe asthma are published or ongoing, and the roles of these agents in children require clarification in future guidelines. Finally, no schedule was given for a future update, although allusions were made to making the guideline development process more agile and cognizant of emerging personalized medicine.

ARTICLE INFORMATION

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