

## Clinical Guideline Highlights for the Hospitalist: Focused Updates to Pediatric Asthma Management

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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 (NAEPPCC) Expert Panel Working Group<sup>1</sup>

**RELEASE DATE:** Online: December 3, 2020

**PRIOR VERSIONS:** 1991, 1997, 2002, 2007

**DEVELOPER:** NAEPPCC Expert Panel Working Group

(referred to as “the Expert Panel”) of the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health

**FUNDING SOURCE:** NHLBI of the National Institutes of Health

**TARGET POPULATION:** Adults and children with asthma and recurrent wheezing

Asthma is a heterogeneous condition characterized by airway hyperresponsiveness and obstruction, with associated airway inflammation and remodeling.<sup>2</sup> Asthma affects 25 million people in the United States and 334 million people worldwide, with significant healthcare disparities across race and ethnicity.<sup>2-6</sup> Asthma is the third most common reason for hospitalizations in pediatrics, accounting for 180,000 annual hospitalizations for children and adults.<sup>3,7</sup> In 2020, the National Heart, Lung, and Blood Institute (NHLBI) Expert Panel provided a focused update to the Asthma Management Guidelines, centered on six topics with sufficient new evidence. The management of status asthmaticus was not included in this update. We spotlight four of the recommendations applicable to the practice of pediatric hospital medicine.

### KEY RECOMMENDATIONS FOR THE HOSPITALIST

**Recommendation 1.** Children 0 to 4 years old with recurrent wheezing triggered by a respiratory tract infection (RTI) and no wheezing between infections should receive a short course of daily inhaled corticosteroids (ICS) at the onset of a RTI, with an as-needed short-acting beta agonist (SABA) for quick-relief therapy compared to SABA alone (evidence quality: high; recommendation strength: conditional).

Recurrent wheezing is defined as clinically significant periods of wheezing that are reversible or consistent with bronchospasm and as  $\geq 3$  episodes in a lifetime or 2 episodes in the past year. It is important to adhere to this definition to prevent inappropri-

ate use of ICS for bronchiolitis. This treatment is associated with a reduction of use of systemic steroids (relative risk [RR], 0.67; 95% CI, 0.46-0.98) without a statistical decrease in acute care visits (RR, 0.90; 95% CI, 0.77-1.05) or hospitalizations (RR, 0.77; 95% CI, 0.06-9.68). Improved transition of care is essential between the primary care provider, hospitalist, and family to ensure an understanding of how/when to initiate ICS at the onset of a RTI. Potential harms include effect on growth and overprescribing. Growth should be monitored because data are conflicting.

**Recommendation 2.** Individuals ages 12 years and older with mild persistent asthma should use as-needed SABA and may use either daily low-dose ICS or as-needed ICS when symptoms flare (evidence quality: moderate; recommendation strength: conditional).

In intermittent therapy, patients take a SABA followed by an ICS as needed for acute asthma symptoms. This recommendation is driven by asthma-control and quality-of-life outcomes, with caregivers reporting that intermittent dosing could “offer flexibility and potentially reduce side effects.” There were no differences between management regimens with respect to systemic steroid use (RR, 0.70; 95% CI, 0.30-1.64) or urgent care visits (RR, 0.25; 95% CI, 0.05-1.16). Differing perception of symptoms by individuals may lead to undertreating or overtreating, and intermittent administration makes it challenging for clinicians to assess the need to adjust therapy.

**Recommendation 3.** Children 4 years and older with moderate to severe persistent asthma should use ICS-formoterol in a single inhaler used as both daily controller and reliever therapy compared to either (a) higher-dose ICS as daily controller therapy and SABA for quick-relief therapy or (b) a same-dose ICS-long-acting beta agonist (LABA) as daily controller therapy and SABA for quick-relief therapy (evidence quality: high for ages  $\geq 12$  years, moderate for ages 4-11 years; recommendation strength: strong).

For children 4 years and older, it is recommended to use “single maintenance and reliever therapy” (SMART) with a

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single-inhaler containing either low- or medium-dose ICS and formoterol when stepping up from Step 2 (daily low-dose ICS and as-needed SABA) to Step 3 (daily and as-needed low-dose ICS-formoterol) and Step 4 (daily and as-needed medium-dose ICS-formoterol). It is preferred to use this single inhaler as needed when symptoms flare rather than an additional as-needed SABA. However, this may be impractical if insurance does not cover multiple prescriptions per month. Formoterol is specified because it is the only LABA studied. Studies have shown reductions in hospitalizations, systemic corticosteroids, and ED visits with this regimen. "ICS-formoterol should be administered as maintenance therapy with 1-2 puffs once to twice daily and 1-2 puffs as needed for asthma symptoms. The maximum number of puffs per day is 12 (54 mcg formoterol) for individuals ages 12 years and older and 8 (36 mcg formoterol) for children ages 4-11 years."<sup>1</sup>

**Recommendation 4.** If individuals with asthma have symptoms related to indoor allergens, confirmed by history or allergy testing, they should use a multicomponent allergen-specific mitigation intervention. Allergen mitigation interventions should not be a part of routine asthma management for individuals with asthma who do not have symptoms related to exposure to specific indoor allergens (evidence quality: low; recommendation strength: conditional).

Providers often emphasize exposure to potential indoor allergens such as carpets and pets when taking an asthma history and counsel removal of these triggers. However, all recommendations related to allergies in the 2020 updates have low-moderate evidence quality and conditional recommendation strength. Hospitalists should instead focus their questions on allergy symptoms and triggers and recommend multicomponent mitigation intervention only if there is a confirmed allergy history. Families should continue routine good practices such as house cleaning and laundering, but other interventions are not evidence-based.

## CRITIQUE

### Methods

The Expert Panel included a diverse group of clinicians, a pharmacist, and health policy experts. In 2015, a needs assessment identified 6 out of 17 priority topics with sufficient new information for updates. Key questions were drafted, and systematic reviews were published through 2018. The Expert Panel made its recommendations using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach. The Expert Panel informed its recommendations with input from focus groups, including individuals with asthma and caregivers. The NHLBI posted the draft report for public review, and comments were considered. We believe these methods effectively developed evidence-based recommendations, and the diversity of stakeholders increases the value of this guideline. However, the infrequency of updates limits the utility of the NHLBI guidelines as compared with annual GINA (Global Initiative for Asthma) updates.

There are important considerations in assessing these guidelines. Specifically, the validity of systemic steroid courses

as an outcome for children ages 0 to 4 years is controversial. Second, the studies cited in defense of intermittent ICS use in children >12 years of age excluded pediatric patients and did not include readmissions as a primary outcome, which is of particular interest to the hospitalist.

### Potential Conflicts for Guideline Authors

The Expert Panel reported all potential conflicts of interest (COIs), which were rated by the Expert Panel Chair and *Journal of Allergy and Clinical Immunology* editors. Individuals with high COIs were excluded from the Expert Panel. Those with moderate COIs were recused for that topic. Low COIs were not related to the guideline.

### Generalizability of the Guideline

These guidelines are based on systematic reviews with large sample sizes and patients of all ages. They are generalizable. However, the authors recognize that variations in asthma require individualized approaches. They identify this as a reason for the lack of strong recommendations for asthma standards of care.

## AREAS OF FUTURE STUDY

Biologics have progressed considerably since revision of the guidelines. The 2020 guidelines did not address these to prevent delay of the guideline release, but recommendations should be included in future guidelines. Future studies should address healthcare disparities in asthma, barriers to equitable care, and how to eliminate them, as guided by the President's Task Force.<sup>8</sup> Status asthmaticus should be included in future updates.

Disclosures: The authors reported no conflicts of interest.

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