

KEYNOTE ADDRESS:
Asthma Yardstick(s)

AAE Annual Meeting
 Friday, August 5, 2022
 Chattanooga, TN

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Disclosures

- Speaker/Advisory/Honorarium/Research
 - Aimmune, AstraZeneca, GSK, Kaleo, Perrigo, Regeneron, Sanofi/Genzyme
 - Honorarium from: Association of Medical Technologists, ACAAI, American Academy of Pediatrics

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Objectives

- Be able to Outline the Asthma Yardstick practical recommendations for step-up therapy
- Summarize the Pediatric Yardstick practical recommendations for step-up therapy
- Review the Asthma Controller Step-Down Yardstick

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Definition of Asthma

A chronic inflammatory disease of the airways with the following clinical features:

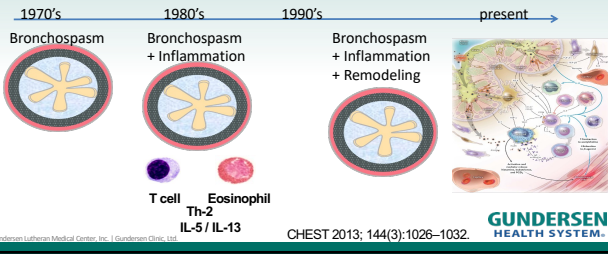
- Episodic and/or chronic symptoms of airway obstruction
- Bronchial hyperresponsiveness to triggers
- Evidence of at least partial reversibility of the airway obstruction
- Alternative diagnoses are excluded



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Asthma pathophysiology

Key components: inflammation, bronchial hyper-reactivity, airway remodeling



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Bradley E. Chipps, MD
DIPLOMAT

During the leadership of Bradley E. Chipps, MD, (2017-2018) the corresponding allergy extracts, USP 797, continued to surface as a major issue for the College which required a rapid multi-thought-out response to provide protection for the allergist's current practices.

Responding to this challenge, Dr. Chipps proposed a novel practice gap arose, involving the need for practical guidelines to assist the allergist with day-to-day clinical management decisions not currently provided by current guidelines. Recognizing the lag between the speed of science and need for clinical guidelines, he was instrumental in putting into operation the "Yardstick" concept. It emerged to provide practical, concise, evidence-based documents to assist with every day clinical decision making. The first product of this series, "The Asthma Yardstick," was published in the Annals in February (Ann Allergy Asthma Immunol. 2017 Feb; 118(2):132-142 e3). Led by Bradley Chipps, MD, FACAAI, the authors of this document specifically addressed important areas that were not included in other guidelines. Other Practice Yardsticks were developed with atopic dermatitis and three with autism which were published in the Annals. In addition, two innovative programs of shared decision making and need confirmation standards were developed and introduced during the stewardship of Dr. Chipps.

Annals of Allergy & Immunology-June 04, 2022DOI:https://doi.org/10.1016/j.anaai.2022.05.027

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Yardstick concept: Dr. Bradley Chipps, ACAAI President 2017-2018

Another practice gap arose, involving the need for practical guidelines to assist the allergist with day-to-day clinical management decisions not currently provided by guidelines. Recognizing the lag between the speed of science and need for clinical guidelines, he was instrumental in putting into operation the "Yardstick" concept. It emerged to provide practical, concise, evidence-based documents to assist with every day clinical decision making.



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NIH/NHLBI Guidelines

- In 1989, the US National Heart, Lung, and Blood Institute (NHLBI) and the National Asthma Education and Prevention Program (NAEPP) convened two expert panels to compile guidelines for the diagnosis and management of asthma based on contemporary scientific developments. The first Expert Panel Report (EPR-1), Guidelines for the Diagnosis and Management of Asthma, was published in 1991.
- In 1997, the second Expert Panel Report (EPR-2) by the NAEPP was published, and selected topics were updated in 2002.
- EPR-3, published in 2007 was the first to provide a grade for each recommendation and the first panel to include evidence-based medicine (EBM).
- The 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group, December 2020. This update addresses six priority topic areas as determined by the state of the science at the time of a needs assessment, and input from multiple stakeholders: Fractional Exhaled Nitric Oxide Testing, Indoor Allergen Mitigation, Intermittent Inhaled Corticosteroids, Long-Acting Muscarinic Antagonists, Immunotherapy in the Treatment of Allergic Asthma, Bronchial Thermoplasty



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GINA Guidelines

- The Global Initiative on Asthma (GINA) was launched in 1993 in collaboration with the National Heart, Lung, and Blood Institute, the National Institutes of Health (USA) and the WHO.
- The first report published in 1995, A Global Strategy for Asthma Management and Prevention, updated annually 1999-2002.
- The GINA and other guidelines were primarily based on consensus of expert opinion in order to employ a severity-based classification system as a guide to treatment. However, in the late 1990s, guidelines underwent a major paradigm shift from opinion- to evidence-based classification as the foundation for asthma management.
- A second major shift involved the classification of asthma according to the level of disease control as a guide to treatment, which was realized for the first time in the revised 2006 GINA guidelines. Continues to be updated annually.



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Practice Parameters vs Yardsticks

Practice Parameters:

- Are developed by the Joint Taskforce on Practice Parameters and establish guidelines for diagnosis and management of allergic and immunologic diseases.
- Have evolved over time from peer-reviewed consensus documents to parameters developed from evidence-based medicine.
- Have seen a drastic reduction in the number of summary statements and the breadth of each practice parameter over the past few years due to adopting a new "GRADE" system for defining the quality of evidence. As a result, practice parameters are now more focused and are developed from evidence-based medicine.
- Have gained increasing importance as tools used by third party payers.
- Are scheduled to be updated every five years based on new treatments or technology. Timely response to new clinical developments is limited.



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Practice Parameters vs Yardsticks

Yardsticks:

- Are chosen by the College's Yardstick Task Force and ratified by the Board of Regents. Usually 2 yardsticks are published each year. No pharmaceutical support is accepted for yardsticks.
- Are developed by College experts and others.
- Provide practical, concise, evidence-based recommendations to assist with every day clinical decision-making.
- Address important areas that are not included in other guidelines. For example, the Asthma yardstick details how to conduct a sustained step-up in asthma therapy for patients with uncontrolled asthma.
- Can reflect standards of care that do not meet "GRADE" criteria yet are based on evidence and best practice consensus.
- Can be rapidly updated to reflect new treatment options.

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Yardsticks

Unlike practice parameters, yardsticks can be rapidly updated to reflect new treatment options and reflect best practices that don't meet strict practice parameter criteria. Some yardsticks also have eYardstick and webinar options.

Current Yardsticks

- Adult asthma**
- Asthma controller step down**
- Atopic dermatitis**
- Chronic Rhinosinusitis**
- Genetic testing for primary immunodeficiencies**
- Idiopathic anaphylaxis**
- Pediatric severe asthma**

In development:
Chronic Cough
Vocal Cord Dysfunction

Updates to: Atopic Dermatitis
and
Asthma

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Resources

- ACAAI.org website
<https://college.acaa.org/toolkits/practice-parameter-and-yardstick-toolkit/>
- Slides presented are from the yardstick articles, or the eYardstick available on the website, or the GINA slides from Global Initiative for Asthma 2022, www.ginasthma.org

Examples from acaai.org website

Pediatric severe asthma

Right into two parts: one for children and one for adolescents. This yardstick defines additional interventions required to address the lack of asthma response control in children with asthma at the GINA management steps 3, 4, 5 (comparable NREL steps 3, 4, 5, 6), and helps identify patients appropriate for such interventions. The yardstick will help you better treat your pediatric patients with asthma, particularly those who do not always respond to recommended therapies.

- Yardstick
- eYardstick
- Webinar: Step Up Care for Childhood Asthma - The Pediatric Asthma Yardstick
- Medscape CME article (description required)

Adult asthma

Provides practical recommendations for sustained step up in asthma therapy for poorly controlled asthma. This yardstick helps you navigate the influx of new medications and approaches that are not covered by existing guidelines. The yardstick is intended to complement the more updated national and international guidelines and it follows the NREL/GINA guideline framework.



- Yardstick
- eYardstick
- Webinar: The Asthma Yardstick Webinar: Maximize 10!
- Medscape CME article (description required)

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Ann Allergy Asthma Immunol 118 (2017) 133–142

Contents lists available at ScienceDirect



Special Article

Asthma Yardstick

Practical recommendations for a sustained step-up in asthma therapy for poorly controlled asthma

Bradley E. Chipps, MD¹; Jonathan Corren, MD¹; Elliot Israel, MD¹; Rohit Katial, MD¹; David M. Lang, MD¹; Reynold A. Panettieri, Jr, MD¹; Stephen P. Peters, MD, PhD¹; Judith R. Farrar, PhD¹*

Used patient profiles to help understand the recommendations.

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Loss of Asthma Control

- Can be identified by...
 - Use of a validated tool (e.g. ACQ, ACT)
 - Frequency of unscheduled rescue treatments
 - Rate and frequency of exacerbations
 - QOL/Impact on function (sleep, exercise, missed work)


Why Not in Control?

- Difficultly using treatment (inhaler technique)
- Environmental triggers
- Co-morbid conditions (e.g. rhinosinusitis)
- Co-occurrence of another condition that may be interpreted as loss of control
- Lack of access to care
- Costs of care

Why Not in Control?

- Poor adherence to current treatment
 - How to identify
 - Non-intentional (just forget, not part of routine)
 - Depression/anxiety as barriers
 - Fear of medicine adverse effects
 - Belief that medicine not helping
 - Belief that medicine not needed
 - Confusion about controller and rescue medicines
 - Inconvenience of using medicines
 - Dislike or distrust of health care practitioner

From The Asthma Yardstick Webinar: Measure Up!, B Chipps & M Rank, acaai.org




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Asthma eYardstick


Follow the steps or click on a Step or Step Up below for more detail.



This eYardstick was developed by the American College of Allergy, Asthma, and Immunology with the assistance and cooperation of the article authors: Bradley E. Chipps MD, Jonathan Corren MD, Elliot Israel MD, Rohit Katial MD, David M. Lang MD, Reynold A. Panettieri Jr MD, Stephen P. Peters MD, PhD, Judith R. Farrar PhD.

*GINA - Global Initiative for Asthma

Please take a moment to provide us with your thoughts and feedback about the eYardstick.



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Starts with the GINA guidelines, Yardstick used 2017, would now update with 2022, also they did not deal with Step 1...

Approach to Step Up

Published in Chappell BE, et al. Ann Allergy Asthma Immunol 2017 and adapted from GINA 2019 guidelines.

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Adults & adolescents 12+ years

Personalized asthma management

Assess, Adjust, Review for individual patient needs

CONTROLLER and PREFERRED RELIEVER (Track 1): Using ICS-formoterol as reliever reduces the risk of exacerbations compared with using a SABA reliever.

CONTROLLER and ALTERNATIVE RELIEVER (Track 2): Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller.

Other controller options for either track (limited indications, or less evidence for efficacy or safety):

STEP 1 Low-dose ICS whenever SABA taken	STEP 2 Low-dose maintenance ICS	STEP 3 Low-dose maintenance ICS-LABA	STEP 4 Medium-high dose maintenance ICS-formoterol	STEP 5 Add biologics (available in LTRA). As not used consider adding low-dose OCS but consider side effects
---------------------------------------------------	-------------------------------------------	------------------------------------------------	--------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------

RELIEVER: As-needed short-acting beta-agonist

RELIEVER: As-needed low-dose ICS-formoterol

See GINA 2022 asthma guide

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Not in Yardstick, but let's discuss - Why not treat with SABA alone?

- Inhaled SABA has been first-line treatment for asthma for 50 years
 - Asthma was thought to be a disease of bronchoconstriction
 - Role of SABA reinforced by rapid relief of symptoms and low cost
- Regular use of SABA, even for 1-2 weeks, is associated with increased AHR, reduced bronchodilator effect, increased allergic response, increased eosinophils (e.g. Hancox, 2000; Atridge, 2000)
 - Can lead to a vicious cycle encouraging overuse
 - Over-use of SABA associated with ↑ exacerbations and ↑ mortality (e.g. Swiss 1994, Nwaru 2020)
- Starting treatment with SABA trains the patient to regard it as their primary asthma treatment
- The only previous option was daily ICS even when no symptoms, but adherence is extremely poor
- GINA changed its recommendation once evidence for a safe and effective alternative was available

GINA 2019: a fundamental change in asthma management

Treatment of asthma with short-acting bronchodilators is no longer recommended for adults and adolescents.

Helen K. Reddel¹, Mark FitzGerald², Eric D. Bateman³, Leonard B. Bacharier⁴, Allan Becker⁵, Guy Brusselle⁶, Roland Bush⁷, Alison A. Cruz⁸, Ligorio Ferrero⁹, Wessam Hooval¹⁰, Fanny Hecquembourg¹¹, Jerry A. Krishnan¹², Mark L. Levy¹³, Jungtae Lim¹⁴, Sarah E. Pedersen¹⁵, Anca Shek¹⁶, Anca Vergara¹⁷, and Louis-Philippe Boulet¹⁸

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As-needed low dose ICS-formoterol in mild asthma (n=9,565)

COMPARED WITH AS-NEEDED SABA

- The risk of severe exacerbations was reduced by 60–64% (SYGMA 1, Novel START)

COMPARED WITH MAINTENANCE LOW DOSE ICS

- The risk of severe exacerbations was similar (SYGMA 1 & 2), or lower (Novel START, PRACTICAL)
- Small differences in other asthma outcomes, favoring maintenance ICS, but all were less than the minimal clinically important difference
 - ACQ-5 mean difference 0.15 (MCID 0.5)
 - FEV1 mean difference -54 mL
 - FeNO mean difference -10ppb (Novel START, PRACTICAL)
- No evidence of progressive worsening over 12 months
- In Novel START and PRACTICAL, outcomes were independent of baseline features including blood eosinophils, FeNO, lung function, and exacerbation history
- Average ICS dose was ~50–100mcg budesonide/day

O'Byrne et al. NEJM 2018

*Budesonide-formoterol 200/6 mcg, 1 inhalation as needed for symptom relief

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New evidence for as-needed ICS-formoterol in mild asthma

- Meta-analysis of all four RCTs, n=9,565 (Crossingham, Cochrane 2021)
 - 55% reduction in severe exacerbations compared with SABA alone
 - Similar risk of severe exacerbations as with daily ICS + as-needed SABA

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New evidence for as-needed ICS-formoterol in mild asthma

- Meta-analysis of four all RCTs, n=9,565 (Crossingham, Cochrane 2021)
 - 55% reduction in severe exacerbations compared with SABA alone
 - Similar risk of severe exacerbations as with daily ICS + as-needed SABA
 - ED visits or hospitalizations
 - 65% lower than with SABA alone
 - 37% lower than with daily ICS

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New evidence for as-needed ICS-formoterol in mild asthma

- Meta-analysis of four all RCTs, n=9,565 (Cossington, Cochrane 2021)
 - 55% reduction in severe exacerbations compared with SABA alone
 - Similar risk of severe exacerbations as with daily ICS + as-needed SABA
 - ED visits or hospitalizations
 - 65% lower than with SABA alone
 - 37% lower than with daily ICS
- Analysis by previous treatment
 - Patients taking SABA alone had lower risk of severe exacerbations with as-needed ICS-formoterol compared with daily ICS + as-needed SABA (Bateman, Annals ATS 2021; Beasley, NEJM 2019)

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When should sustained step-up be considered?

Figure 3. When should a sustained step-up in asthma therapy be considered?¹⁰ FEV₁, forced expiratory volume in 1 second; FEV₁, peak expiratory flow.

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Step 2 to 3

Stepping Up from GINA Step 2 to Step 3 - Patient Profile:
Symptomatic* ≥2 months or 2 or more exacerbations requiring OCS in past year, despite preferred treatment for mild, persistent asthma (i.e., low-dose ICS monotherapy) and optimal adherence**

GINA 2022, would just have step to low-dose ICS/LABA (formoterol)

Switch to low-dose ICS/LABA OR increase ICS dose OR add LTRA or SRT

3-month therapeutic trial with reassessment at 2-6 weeks

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Step 3 to 4

Stepping Up from GINA Step 3 to Step 4 - Patient Profile:
Symptomatic* ≥ 2 months or 2 or more exacerbations requiring OCS in past year, despite using low dose ICS/LABA (OR medium-dose ICS, ICS and SRT, OR ICS and LTRA) and optimal adherence**

Refer to asthma specialist

Continue to optimize medication:

- Increase to medium, then high dose ICS/LABA, AND/OR
- Add tiotropium soft mist inhaler, AND/OR
- Add small particle ICS (or use small-particle ICS/LABA)

3-month therapeutic trial with reassessment at 2-6 weeks

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Other changes in medication recommendations for ≥12 years

- Long-acting muscarinic antagonists (LAMA) should not be used as monotherapy for asthma (i.e. without ICS) because of increased risk of severe exacerbations (*Baan, Pulm Pharmacol Ther 2021*)
- Adding LAMA to ICS-LABA: GRADE review and meta-analysis (*Kim, JAMA 2021*) confirms previous findings
 - Small increase in lung function (mean difference 0.08 L)
 - No clinically important benefits for symptoms or quality of life → don't prescribe for dyspnea
 - Modest overall reduction in exacerbations compared with ICS-LABA (risk ratio 0.83 [0.77, 0.90])

Source	Mean annualized exacerbation rate†	Incidence rate ratio (95% CI)	Favors long-acting therapy	Favors dual therapy	Weight, %
Karapınar et al. ¹⁰ 2022	0.53	0.86	0.80 (0.66-0.96)		21
Karapınar et al. ¹⁰ 2020*	0.56	0.83	0.78 (0.63-0.98)		17
Karapınar et al. ¹⁰ 2020*	0.38	0.41	0.33 (0.24-0.47)		14
Lee et al. ¹¹ 2020*	0.38	0.41	1.00 (0.82-1.20)		14
Lee et al. ¹¹ 2020*	0.39	0.38	0.52 (0.40-0.72)		9
Pooni-Thompson et al. ¹² 2017	0.44	0.55	0.79 (0.68-0.90)		6
Wright et al. ¹³ 2018	0.27	0.83	0.70 (0.46-0.92)		23
Overall, P=0%			0.83 (0.78-0.92)		100

† Incidence rate ratio (95% CI)

- Patients with exacerbations should receive at least medium dose ICS-LABA before considering add-on LAMA
- Chromone pMDIs (sodium cromoglycate, nedocromil sodium) have been discontinued globally

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Step 4 to 5

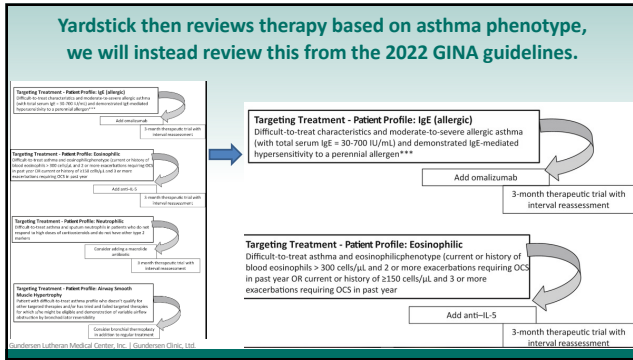
Stepping Up from GINA Step 4 to Step 5 - Patient Profile:
Difficult-to-treat asthma: Symptomatic* ≥ 2 months or 2 or more exacerbations requiring OCS in past year, despite using high doses of anti-inflammatory and bronchodilator medications and optimal adherence**

Asthma specialist care required

Consider treatment targeted to the patient's phenotype or characteristics

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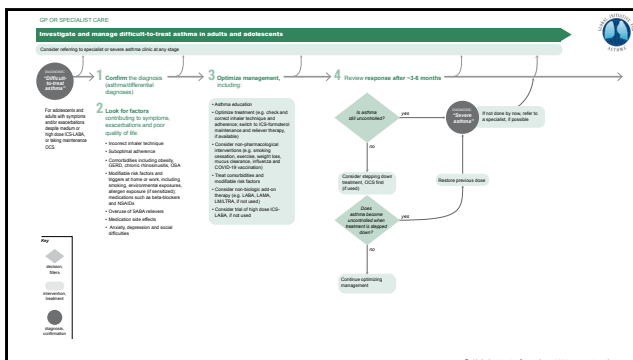
Key changes to GINA severe asthma guide in 2022

- Anti-IL4R* (dupilumab) for severe eosinophilic/Type 2 asthma
 - Not suggested if blood eosinophils (current or historic) >1500/ μ L
 - Dupilumab now also approved for children \geq 6 years with severe eosinophilic/Type 2 asthma, not on maintenance OCS (Bacharier, NEJM 2021)
- Anti-TSLP* (tezepelumab) now approved for severe asthma (age \geq 12 years)
 - Greater clinical benefit with higher blood eosinophils and/or higher FeNO
 - Insufficient evidence in patients taking maintenance OCS

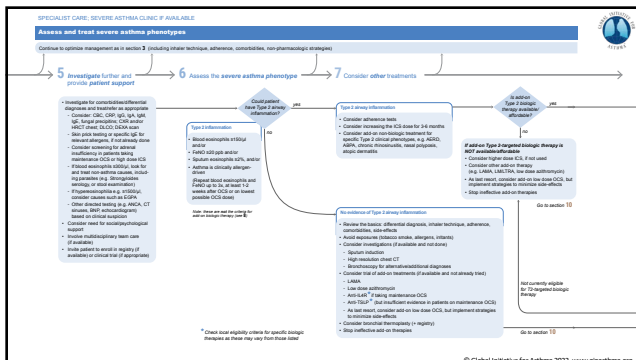
Class	Name	Age*	Asthma indication*	Other indications*
Anti-IgE	Omalizumab (SC)	\geq 6 years	Severe allergic asthma	Nasal polyposis, chronic spontaneous urticaria
Anti-IL5	Mepolizumab (SC)	\geq 6 years	Severe eosinophilic/Type 2 asthma	Mepolizumab; EGPA, CRSwNP, hypereosinophilic syndrome
Anti-IL5R	Reslizumab (IV)	\geq 18 years		
Anti-IL5R	Benralizumab (SC)	\geq 12 years		
Anti-IL4R	Dupilumab (SC)	\geq 6 years	Severe eosinophilic/Type 2 asthma, or maintenance OCS	Moderate-severe atopic dermatitis, CRSwNP, EoE
Anti-TSLP	Tezepelumab (SC)	\geq 12 years	Severe asthma	

*Check local eligibility criteria for specific biologic therapies; TSLP, thymic stromal lymphopoietin

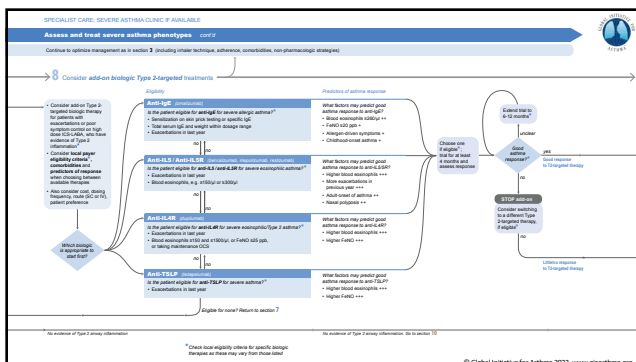
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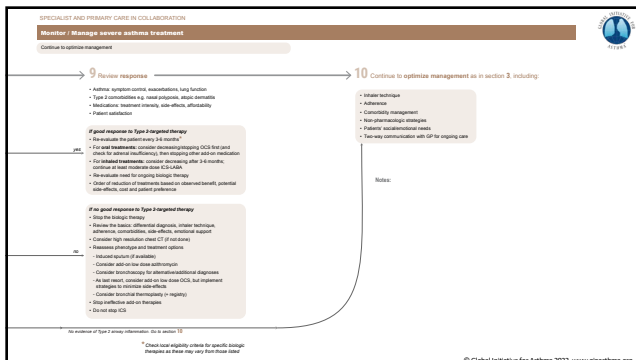
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Ann Allergy Asthma Immunol 121 (2018) 660–661


Contents lists available at ScienceDirect

Asthma Yardstick Update
 Practical recommendations for a sustained step-up in asthma therapy for poorly controlled asthma
 John J. Oppenheimer, MD^a; Larry Borish, MD^a

[Check for updates](#)

This short update just dealt with the new biologics for asthma.





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Ann Allergy Asthma Immunol 120 (2018) 559–579

Contents lists available at ScienceDirect

Special Article
The pediatric asthma yardstick
 Practical recommendations for a sustained step-up in asthma therapy for children with inadequately controlled asthma
 Bradley E. Chipps, MD^a; Leonard B. Bacharier, MD^b; Judith R. Farrar, PhD^c; Daniel J. Jackson, MD^d; Kevin R. Murphy, MD^e; Wanda Phipatanakul, MD, MS^f; Stanley J. Szefler, MD^g; W. Gerald Teague, MD^h; Robert S. Zeiger, MD, PhD^h

[Check for updates](#)

Well referenced and uses patient profiles and step-up strategies.




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Pediatric Asthma eYardstick
 Follow the steps or click on a Step or Step Up below for more detail.



Step 1: Select age group

Young Children | School-age Children | Adolescents


Step 2: Select Level of Severity and Control

Young Children Yardstick

GINA Step 1 | Step Up 1 to 2 | GINA Step 2 | Step Up 2 to 3 | GINA Step 3 | Step Up 3 to 4 | GINA Step 4

This eYardstick was developed by the American College of Allergy, Asthma, and Immunology with the assistance and cooperation of the article authors: Bradley E. Chipps, MD; Leonard B. Bacharier, MD; Judith R. Farrar, PhD; Daniel J. Jackson, MD; Kevin R. Murphy, MD; Wanda Phipatanakul, MD, MS; Stanley J. Szefler, MD; W. Gerald Teague, MD; Robert S. Zeiger, MD, PhD

^aGINA - Global Initiative for Asthma



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Pediatric Asthma eYardstick

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Young Children **School-age Children** **Adolescents** **Select Level of Severity and Control**

Young Children Yardstick

GINA Step 1 → Step Up 1 to 2 → GINA Step 2 → Step Up 2 to 3 → GINA Step 3 → Step Up 3 to 4 → GINA Step 4

Step Up: Intermittent to mild persistent asthma

PATIENT PROFILE

Wheezing with or without coughing >2x/wk or who wakes due to wheezing >1x/mo, or has a 15 point decrease in TRACK score, and/or >2 exacerbations requiring OCS, ED visit, or hospitalization in past year despite using as-needed ICS or LTRA given at same time as SABA for intermittent asthma.
Patient should receive referral to pediatric asthma specialist

MEDICATION AND FOLLOW UP

- Daily low-dose ICS
- OR LTRA
- OR intermittent high-dose ICS
- 3-month therapeutic trial with reassessment at 2-5 weeks

➔ **Commentary** ➔

BEFORE STEPPING UP THERAPY!

Prior to stepping up therapy, confirm that the increased level of symptoms is due to asthma. The patient should be assessed for nonadherence with the management plan, potential comorbidities, and other factors that might negatively impact response to therapy. Use Table 3.1 including an age-appropriate understanding of asthma and the management plan as well as parent and/or caregiver knowledge.

➔ **Additional Information About Step Up Treatment**

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Some Common Factors Leading to Failure to Achieve or Loss of Asthma Control^{2,49}

- Environmental exposures (eg, allergens, irritants, viruses)
- Comorbid conditions contributing to morbidity (eg, rhinosinusitis, obesity; respiratory infection, gastroesophageal reflux disease)
- Difficulty using inhalers; improper technique
- Poor adherence to the management plan, which could reflect:
 - Fear of medication adverse effects
 - Poor understanding of treatment
 - Belief that the medication does not help (eg, in relation to patients reporting that they cannot feel an immediate effect)
 - Belief that even controller medication can be taken intermittently (eg, when symptoms become "noticeable")
- Inconvenience, including using multiple medications or inhalers and having to take medications several times a day
- Dislike of provider; distrust of medical establishments
- Just "not wanting" to have to take medication (particularly for adolescents)
- Not recognizing symptoms or ignoring the need for using medication; belief that the medication is not necessary (particularly for adolescents)
- Lack of parental support in following treatment plan
- Family stress, emotional upsets; violence
- Cost, including lack of insurance or medication not covered by insurance
- Lack of access to health care

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Phenotype-based approach to managing preschool children with recurrent wheezing.

574 R.E. Chipps et al. / *Ann Allergy Asthma Immunol* 120 (2018) 559–579

Recurrent wheezing in early childhood

- Episodic**
 - Atopic* (Positive mAPI)**: Boys, Caucasian, frequent episodes, ED/hospitalization in past year → **Daily ICS**
 - Non-atopic (Negative mAPI)**: Intermittent ICS for infrequent Sx; Daily LTRA for frequent** episodes; Intermittent LTRA for infrequent episodes or Asthromycin early in course of wheezing due to LRTI
- Multi-trigger (persistent asthma)**
 - Atopic***: Daily ICS
 - Non-atopic**: Daily ICS or LTRA for frequent** episodes; Intermittent ICS or LTRA for infrequent episodes

*Sensitization to common aeroallergens, eosinophilia, or a personal history of other atopic diseases (food allergy, atopic dermatitis) or first-degree family history of atopic disease
 **≥ 3 episodes/season

Figure 5. Strategies to evaluate and treat recurrent wheezing in young children.^{41,12} ED, emergency department; ICS, inhaled corticosteroid; LRTI, lower respiratory tract infection; LTRA, leukotriene receptor antagonist; mAPI, modified Asthma Predictive Index; OCS, oral corticosteroid; Sx, symptoms.

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Ann Allergy Asthma Immunol 122 (2019) 241–262

Contents lists available at ScienceDirect




Special Series

The Asthma Controller Step-down Yardstick

Bradley E. Chipps, MD¹; Leonard B. Bacharier, MD¹; Kevin R. Murphy, MD¹; David Lang, MD¹; Judith R. Farrar, PhD²; Matthew Rank, MD²; John Oppenheimer, MD¹; Robert S. Zeiger, MD, PhD^{1†}

[Check for updates](#)

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Table 1
Reasons to Step Down or Not to Step Down Asthma Therapy^{5,6}

Consider stepping down treatment to:

- Re-assess a current diagnosis of asthma
- Decrease the potential adverse effects of asthma medications
- Address patient and family preferences about taking medications
- Reduce the burden of treatment (eg, time to take medications, remembering to take medications, having to take medications at work or school)
- Reduce the costs of treatment
- Simplify therapy and enhance adherence with treatment

Consider not stepping down treatment when:

- Reducing asthma medication may lead to an increased risk of having an asthma exacerbation or loss of control
- Whether the patient is using his/her asthma medications as indicated (eg, whether the patient has already self-reduced treatment) is unclear
- A seasonal maintenance of therapy is needed (eg, during the patient's allergy season or viral season)

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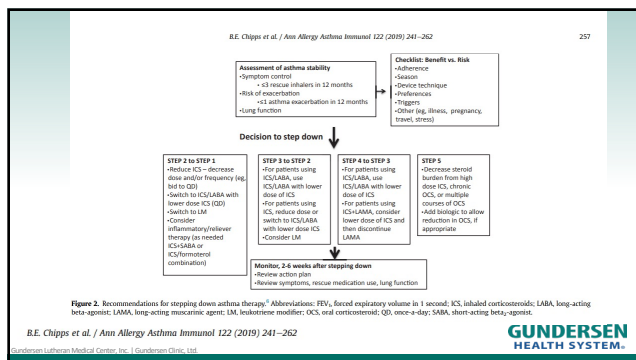
Table 2
Potential Barriers to Successfully Stepping Down Therapy⁶

- Previous hospitalization/intensive care/intubation for asthma
- Frequent urgent care visits/ED visits for asthma
- Frequent oral corticosteroids for exacerbations
- Poor perception of symptoms
- Seasonal/environmental/situational triggers (eg, allergens, irritants, viruses, stress)
- Comorbid conditions contributing to morbidity (eg, rhinosinusitis, obesity, respiratory infection, gastroesophageal reflux disease, food allergy, psychiatric diagnoses)
- Difficulty using inhalers; improper technique
- Resistance to change; fear of using less medicine
- Prior lack of adherence to the management plan, which may reflect
 - Poor understanding of treatment
 - Belief that the medication does not help (eg, in relation to patients reporting that they cannot feel an immediate effect)
 - Belief that even controller medication can be taken intermittently (eg, when symptoms become "noticeable")
 - Inconvenience, including using multiple medications/inhalers and having to take medications several times a day
 - Dislike of provider; distrust of medical establishments
 - Not recognizing symptoms or ignoring the need for using medication
 - Lack of parental support in following treatment plan
 - Family stress, emotional upsets; violence
- Nonwhite ethnicity
- Poverty
 - Lack of insurance or medication change not covered by insurance
 - Lack of access to health care
- Clinician perception of treatment (eg, lack of awareness of skewing risk/benefit analysis to ensure benefits)

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Conclusions

- The Yardstick(s) for asthma published in *Annals* provide great advice for adjusting asthma management over time and with specific ages and are helpful in both stepping-up and stepping-down therapy.
- Unfortunately, even with the best evidence-based approach, non-adherence to management plans is almost the norm – so challenges remain.
- We are in the era of personalized asthma management, and no one should be using a one-size-fits-all approach. We need shared decision making to engage the patients and families and utilize tools like the guidelines and yardsticks.

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