



# Update on National Asthma Education and Prevention Program (NAEPP) Guidelines for the Treatment of Asthma EPR-3

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# Asthma Is Prevalent: Significant Morbidity and Mortality

32.6 Million People Have Had an Asthma Diagnosis in  
Their Lifetime

22.2 Million People Are Currently  
Diagnosed With Asthma

12.2 Million People Suffer From  
Asthma Attacks Annually

Approximately 4000 Asthma-  
Related Deaths Occur Annually

Approximately 11 People Die From Asthma Each Day





# Asthma Assessment and Monitoring: Key Differences from 1997 and 2002 Expert Panel Reports

- Key elements of assessment and monitoring
  - Severity
  - Control
  - Responsiveness to treatment
- Severity emphasized for initiating therapy
- Control emphasized for monitoring and adjusting therapy
- Severity and control defined in terms of 2 domains
  - Impairment
  - Risk



# Asthma Severity and Control: Impairment Domain

**Impairment = Frequency and Intensity of  
Symptoms and Functional Limitations**

## Symptoms

- Nighttime awakenings
- Need for short-acting  $\beta_2$ -agonists (SABAs) for quick relief of symptoms
- Work/school days missed
- Ability to engage in normal daily activities or desired activities
- Quality-of-life assessments

## Lung Function

- Spirometry
- Peak flow



# Asthma Severity and Control: Risk Domain

- Likelihood of asthma exacerbations, progressive decline in lung function, or risk of adverse effects from medications
- Assessment
  - Frequency and severity of exacerbations
  - Oral corticosteroid use
  - Urgent-care visits
  - Lung function
  - Noninvasive biomarkers may play an increased role in future




# Goal of Asthma Therapy: Achieve Control

## Reduce Impairment

- Prevent chronic and troublesome symptoms
- Require infrequent use of inhaled SABA ( $\leq 2$  days/week)
- Maintain (near) “normal” pulmonary function
- Maintain normal activity levels
- Meet patients’ expectations of, and satisfaction with, asthma care

## Reduce Risk

- Prevent recurrent exacerbations
- Minimize need for emergency department visits or hospitalizations
- Prevent progressive loss of lung function
- Provide optimal pharmacotherapy, with minimal or no adverse effects



# Assessment of Asthma Control Recommended (1- to 6-Month Intervals)

- Are goals of therapy being met?
- Are adjustments in treatment necessary?
- Measure
  - Signs and symptoms
  - Pulmonary function
  - Quality of life (QOL)/functional status
  - History of exacerbations
  - Pharmacotherapy
  - Patient-provider communication and patient satisfaction



# Classifying Asthma Severity and Assessing Asthma Control

- In patients not on controller medications
  - Severity based upon domains of impairment and risk
  - Level of severity based upon most severe category in which any feature appears
- In patients on controller medication
  - Severity based upon lowest step required to maintain clinical control
  - Control of asthma based upon domains of impairment and risk
    - Level of control based upon most severe impairment or risk category
    - Validated questionnaires may be used in patients aged  $\geq 12$  years



# Categories of Evidence Used to Support NAEPP Recommendations

## Evidence Category

## Description

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- |   |  |
|---|--|
| A | Randomized, controlled trials (rich body of data)    |
| B | Randomized, controlled trials (limited body of data) |
| C | Nonrandomized trials and observational studies       |
| D | Panel consensus judgment                             |
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# Evidence Supporting ICS Use in Children Aged 0 to 4 Years

Recommendation	Evidence Category
ICS, especially at low doses even for extended periods of time, is generally safe	A
When initiating long-term controller therapy, daily ICS is preferred	A
Step 2: Preferred treatment is low-dose, daily ICS	A
Step 3: Preferred treatment is medium-dose ICS	D
Step 4: Preferred treatment is medium-dose ICS and either montelukast or LABA	D
Step 5: Preferred treatment is high-dose ICS and either montelukast or LABA	D
Step 6: High-dose ICS and either montelukast or LABA and oral systemic corticosteroids may be given	D

# Estimated Comparative Daily Dosages for ICS in Children Aged 0 to 4 Years

Drug	Low Daily Dose	Medium Daily Dose	High Daily Dose
Beclomethasone HFA 40 or 80 µg/puff	—	—	—
Budesonide DPI 200 µg/inhalation	—	—	—
Budesonide inhalation suspension for nebulization (child dose)	0.25-0.5 mg	0.5-1.0 mg	>1.0 mg
Flunisolide 250 µg/puff	—	—	—
Flunisolide HFA 80 µg/puff	—	—	—
Fluticasone HFA MDI: 44, 110, or 220 µg/puff	176 µg	176-352 µg	352 µg
Fluticasone DPI 50, 100, or 250 µg/inhalation	—	—	—
Mometasone DPI 200 µg/inhalation	—	—	—
Triamcinolone acetonide 75 µg/puff	—	—	—

# Stepwise Approach for Managing Asthma in Children Aged 0 to 4 Years: NAEPP Draft Guidelines

Intermittent

Mild  
Persistent

Moderate to Severe Persistent

## Step 1

**Preferred:**  
SABA prn

## Step 2

**Preferred:**  
Low-Dose ICS (A)

**Alternative:**  
Montelukast (A)  
or  
Cromolyn (B)

## Step 3

**Preferred:**  
Medium-Dose  
ICS (D)

## Step 4

**Preferred:**  
Medium-Dose  
ICS

**and either**  
Montelukast  
or  
LABA (D)

## Step 5

**Preferred:**  
High-Dose  
ICS

**and either**  
Montelukast  
or  
LABA (D)

## Step 6

**Preferred:**  
High-Dose  
ICS  
**and either**  
Montelukast  
or LABA  
**and**  
Oral  
Corticosteroids (D)

# Evidence Supporting ICS Use in Children Aged 5 to 11 Years

<b>Recommendation</b>	<b>Evidence Category</b>
Step 2: Daily low-dose ICS is preferred	A
Step 3: Medium-dose ICS or low-dose ICS plus the addition of some form of adjunctive therapy are equivalent options	B
Step 4: Medium-dose ICS and LABA are preferred Step 4 treatment	B
Step 5: High-dose ICS and LABA are preferred	B
Step 6: High-dose ICS and LABA and oral corticosteroids long term are preferred	D

# Estimated Comparative Daily Dosages for ICS in Children Aged 5 to 11 Years

Drug	Low Daily Dose	Medium Daily Dose	High Daily Dose
Beclomethasone HFA 40 or 80 µg/puff	80-160 µg	>160-320 µg	>320 µg
Budesonide DPI 200 µg/inhalation	200-400 µg	>400-800 µg	>800 µg
Budesonide inhalation suspension for nebulization (child dose)	0.5 mg	1.0 mg	2.0 mg
Flunisolide 250 µg/puff	500-750 µg	1000-1250 µg	>1250 µg
Flunisolide HFA 80 µg/puff	160 µg	320 µg	≥640 µg
Fluticasone HFA MDI 44, 110, or 220 µg/puff	88-176 µg	176-352 µg	>352 µg
Fluticasone DPI 50, 100, or 250 µg/inhalation	100-200 µg	200-400 µg	>400 µg
Mometasone DPI 200 µg/inhalation	NA	NA	NA
Triamcinolone acetonide 75 µg/puff	300-600 µg	600-900 µg	>900 µg

NA = not approved and no data available for children less than 12 years of age.

Available at: <http://www.nhlbi.nih.gov/guidelines/asthma/epr3/resource.pdf>. Accessed February 5, 2007.

# Stepwise Approach for Managing Asthma in Children Aged 5 to 11 Years: NAEPP Guidelines

Intermittent

Mild  
Persistent

Moderate  
Persistent

Severe Persistent

## Step 1

**Preferred:**  
SABA prn

## Step 2

**Preferred:**  
Low-Dose ICS (A)

**Alternative:**  
LTRA (B),  
Cromolyn (B),  
Nedocromil (B),  
or  
Theophylline (B)

## Step 3

**Preferred:**  
Medium-Dose  
ICS (B)

or

Low-Dose ICS  
**and either**  
LABA (B),  
LTRA (B),  
or  
Theophylline (B)

## Step 4

**Preferred:**  
Medium-Dose  
ICS + LABA (B)

**Alternative:**  
Medium-Dose  
ICS  
**and either**  
LTRA (B)  
or  
Theophylline (B)

## Step 5

**Preferred:**  
High-Dose ICS  
+ LABA (B)

**Alternative:**  
High-Dose ICS  
**and either**  
LTRA (B)  
or  
Theophylline (B)

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**and**  
Omalizumab  
May Be  
Considered for  
Patients Who  
Have Allergies

## Step 6

**Preferred:**  
High-Dose ICS +  
LABA + Oral  
Corticosteroid (D)

**Alternative:**  
High-Dose ICS  
**and either**  
LTRA or  
Theophylline  
**and Oral**  
Corticosteroid (D)

-----  
**and**  
Omalizumab May  
Be Considered  
for Patients Who  
Have Allergies

# Evidence Supporting ICS Use in Patients Aged $\geq 12$ Years

Recommendation	Evidence Category
Daily long-term controller medication is recommended for patients with persistent asthma. Of the available medications, ICS is the most effective single agent	A
Step 2: Preferred treatment is daily ICS at a low dose	A
Step 3: Preferred options are to <ul style="list-style-type: none"><li>• Continue the ICS as monotherapy by increasing the dose to the medium-dose range or</li><li>• Add a LABA to a low dose of ICS</li></ul>	A
Step 4: Preferred option is to increase the dose of ICS to the medium-dose range and add a LABA	B
Step 5: High-dose ICS and LABA are preferred	B

# Evidence Supporting ICS/LABA Use in Patients Aged $\geq 12$ Years

Recommendation	Evidence Category
LABAs are used as an adjunct to ICS therapy for providing long-term control of symptoms	A
Of the adjunctive therapies available, a LABA is the preferred treatment to combine with an ICS in youths $\geq 12$ years of age and adults	A
The addition of a LABA for patients whose asthma is incompletely controlled on a low- or medium-dose ICS improves lung function, decreases symptoms, and reduces use of rescue medication and exacerbations in most patients	A
LABAs are not recommended for use as monotherapy for long-term control of persistent asthma	A

# Estimated Comparative Daily Dosages for ICS in Patients Aged $\geq 12$ Years

Drug	Low Daily Dose	Medium Daily Dose	High Daily Dose
Beclomethasone HFA 40 or 80 $\mu\text{g}/\text{puff}$	80-240 $\mu\text{g}$	>240-480 $\mu\text{g}$	>480 $\mu\text{g}$
Budesonide DPI 200 $\mu\text{g}/\text{inhalation}$	200-600 $\mu\text{g}$	>600-1200 $\mu\text{g}$	>1200 $\mu\text{g}$
Flunisolide 250 $\mu\text{g}/\text{puff}$	500-1000 $\mu\text{g}$	1000-2000 $\mu\text{g}$	>2000 $\mu\text{g}$
Flunisolide HFA 80 $\mu\text{g}/\text{puff}$	320 $\mu\text{g}$	320-640 $\mu\text{g}$	>640 $\mu\text{g}$
Fluticasone HFA MDI 44, 110, or 220 $\mu\text{g}/\text{puff}$	88-264 $\mu\text{g}$	264-440 $\mu\text{g}$	>440 $\mu\text{g}$
Fluticasone DPI 50, 100, or 250 $\mu\text{g}/\text{inhalation}$	100-300 $\mu\text{g}$	300-500 $\mu\text{g}$	>500 $\mu\text{g}$
Mometasone DPI 200 $\mu\text{g}/\text{inhalation}$	200 $\mu\text{g}$	400 $\mu\text{g}$	>400 $\mu\text{g}$
Triamcinolone acetonide 75 $\mu\text{g}/\text{puff}$	300-750 $\mu\text{g}$	750-1500 $\mu\text{g}$	>1500 $\mu\text{g}$

# Stepwise Approach for Managing Asthma in Patients Aged $\geq 12$ Years: NAEPP Draft Guidelines

Intermittent

Mild  
Persistent

Moderate  
Persistent

Severe Persistent

## Step 1

**Preferred:**  
SABA prn

## Step 2

**Preferred:**  
Low-Dose ICS (A)

**Alternative:**  
Cromolyn (B),  
Nedocromil (B),  
LTRA (B),  
or  
Theophylline (B)

## Step 3

**Preferred:**  
Medium-Dose  
ICS (A)

**or**

Low-Dose ICS +  
LABA (A)

**Alternative:**  
Low-Dose ICS  
**and either**  
LTRA (A),  
Theophylline (B),  
or Zileuton (D)

## Step 4

**Preferred:**  
Medium-Dose  
ICS + LABA (B)

**Alternative:**  
Medium-Dose  
ICS  
**and either**  
LTRA (B),  
Theophylline (B),  
or Zileuton (D)

## Step 5

**Preferred:**  
High-Dose ICS +  
LABA (B)

**and**

Consider  
Omalizumab  
for Patients  
Who Have  
Allergies (B)

## Step 6

**Preferred:**  
High-Dose ICS +  
LABA  
+ Oral  
Corticosteroid

**and**

Consider  
Omalizumab for  
Patients Who  
Have Allergies



# Conclusions

- Severity, control, and responsiveness to treatment are key elements of asthma assessment and monitoring
- The goal of asthma therapy is to achieve control, based on NAEPP guidelines
- Clinical assessment and patient self-assessment are primary methods for monitoring asthma control
- ICS is preferred monotherapy for controller therapy in patients with persistent asthma, across all ages
- LABAs are preferred adjunctive agents in patients aged  $\geq 12$  years who cannot be controlled with ICS monotherapy

# Objectives – GIP Report

- Prioritize the 5-10 key messages of the Asthma Guidelines
- Identify and overcome barriers to implementation
- Serve as a platform for development of collaborative initiatives
- Develop resources/networking that help implement
  - Guideline adoption
  - By clinical , educators, advocates, other stakeholders

# Methods of GIP Report

- Evidence based data
- Public call to action that results in better asthma control
- Encourage Networking
- You , or your organization, must become the standard bearer

## More on the GIP Report --

- Not a regulatory document
- Is based on lessons learned
- Focuses resources on activities that actually work
- Apply resources that extend outreach and impact
- Afford avenues for us to assume leadership roles
  - Voluntary, local, and state

# Goals of the GIP Report

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- An evidenced based approach
  - Glean conclusions from the data that leads to adoption of EPR-3
  - QOL, Efficiency
  - Morbidity, and Mortality
-

# Priority Messages from EPR-3

- I. Inhalers ICS are the most effective treatment
  - A. Long-term controller meds require long-term use
  - ICS are consistently effective
  - They are the most potent
  - The evidence - A

## II. Asthma Action Plans

- All People with Asthma
- To Guide Self Management
- Consistent daily treatment (medications, envir. Controls)
- How to recognize – handle worsening asthma
- Evid. - B

# III. ASTHMA SEVERITY ASSESSMENT

- Current impairment
  - Pulmonary Function
  - Recent History – restricted activities
  - Asthma control test
- Future risk – likelihood of adverse events
  - Recent history of hospitalization
  - Recent history of ER visits
  - History of ICU admission, intubation
- Evid. – C & D

## IV Asthma Control - FOCUS

- At follow-up visits – providers should...
- Multiple measures of current impairment
  - Evid. – A
  - PFT, PFM, Eval. of future risk
- Decision Making - maintain or adjust therapy to decrease impairment and risk  
Evid. - B

## V. Plan Follow-up Visits -

- Regular and Strategic follow-up visits
- Assess control (monitoring), ACT, check PFM readings evid – B
- Adjust medications, increase as needed Evid – A
- Modify or decrease medications as able, Evid – C & D
- Goal is to achieve and maintain control

## VI. Environmental – Allergen, Irritant Control

- Clinicians need tools to eval. /assess. allergens and irritants in patient's environment
  - Questionnaires, blood tests, **skin tests**, clinical observation Evid - A
- EPR-3 Recs:
  - All patients should be queried re: exposures, inhalant allergen (evid - A)
  - Tobacco smoke exposure, or other gaseous irritants, re: effect on symptoms; (evid.- C)
  - Approach to avoidance measures must be multifaceted to be effective (evid.- A )

# GIP Recommendations and Strategies

- Focus on only one key message, or ...
- Focus on all 6 messages
- Tailor –make your approach to fit your role/org.
- Promote the Primary message(s) – ICS are preferred;
- The benefits outweigh the risks

# Implementation Activities

- Gather Data – re: message barriers
- Convene the knowledge brokers
- Pilot –test the Strategies
- Impact Professional Education
- Point of service prompting
- Conduct/Influence Quality Assurance
- Direct – patient/family self-management Educ.

# More Activities to Implement

- Promote Financing support structures
- Develop the business case (insurance/costs)
- Reimburse for education and case management
- Reimburse for quality of care criteria – “incentivize”
- Revise CPT codes to allow primary care to devote time
- Other activities: data churning; NACI, work with payers
  - Thru feedback, formularies, access etc.

## Other Items for Focus - AAP

- Study the EMR / EHR
- Devise the best AAP for primary care
- Promote through free access to the preferred AAP
- Ensure the EPR-3 components are included (KISS Princ.)
- Make for easy installation of the AAP into the EMR

# Severity Assessment

- Current Impairment:
  - Symptoms, timing; recency
  - Restricted activities
- Assess future Risk;  
hosp. ventilation, near death
- Base Treatment on the above
- Base Follow up on the above

# Follow-Up Monitoring

- Caution – who's guarding the hen house;
- Monitor the gate keepers, esp. with disincentives
- If little or no specialty referrals, ask why.
- Should follow EPR-3 guidelines
  - For monitoring, follow-up intervals, and specialty referral
- Require PFM and PFT / Spirometry / Pulm Fnxn testing

# Follow-Up Monitoring

- School Nurses are an excellent impact resource
- These special resource providers could require
  - Proof of eval. at beginning of term
  - A copy of AAP in school record
  - Coordinate with the asthma outreach program
  - Engage multicultural and multilingual resources

# Environmental Control Focus

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- Environmental Questionnaire
  - Those in use; please share
  - Download forms AAAAI, ACAAI
  - Patient and Family interviews
  - Potential and apparent triggers
  - Sick building/ sick school investigations
  - Referral for Skin testing – if not doing well
-

# Final Thoughts; “If no one moves, nothing gets done”

- Provide Modes of communication
- Bring in Payors – show them the cost savings
- Utilize and incent via the EMR – EHR
- May support limited very limited skin testing or RAST
  - In hands of primary care providers.
  - Preferred in hands of board cert. specialists