## CONTENTS

Acknowledgements and Financial Disclosures ................................................................. xi
Acronyms and Abbreviations ............................................................................................. xix
Preface ................................................................................................................................. xxii

### Section 1, Introduction ......................................................................................... 1

**Overall Methods Used To Develop This Report** ....................................................... 2

- Background .................................................................................................................. 2
- Systematic Evidence Review Overview ...................................................................... 3
  - Inclusion/Exclusion Criteria ....................................................................................... 3
  - Search Strategies ....................................................................................................... 3
  - Literature Review Process .......................................................................................... 3
  - Preparation of Evidence Tables ................................................................................. 6
- Ranking the Evidence .................................................................................................... 7
- Panel Discussion ............................................................................................................ 8
- Report Preparation ....................................................................................................... 8

References ....................................................................................................................... 9

### Section 2, Definition, Pathophysiology and Pathogenesis of Asthma, and Natural History of Asthma ................................................................. 11

**Key Points: Definition, Pathophysiology and Pathogenesis of Asthma, and Natural History of Asthma** ................................................................................. 11

**Key Differences From 1997 and 2002 Expert Panel Reports** .................................. 12

**Introduction** ................................................................................................................ 12

**Definition of Asthma** ................................................................................................. 12

**Pathophysiology and Pathogenesis of Asthma** ......................................................... 14

  - Pathophysiologic Mechanisms in the Development of Airway Inflammation .......... 16
    - Inflammatory Cells ................................................................................................. 16
    - Inflammatory Mediators ....................................................................................... 18
    - Immunoglobulin E ................................................................................................. 19
    - Implications of Inflammation for Therapy ......................................................... 19
  - Pathogenesis ............................................................................................................. 20
    - Host Factors ........................................................................................................... 20
    - Environmental Factors ......................................................................................... 22

**Natural History of Asthma** ....................................................................................... 23

  - Natural History of Persistent Asthma ........................................................................ 24
    - Children .................................................................................................................. 24
    - Adults .................................................................................................................... 25
    - Summary ............................................................................................................... 27
  - Effect of Interventions on Natural History of Asthma ............................................. 27

**Implications of Current Information About Pathophysiology and Pathogenesis, and Natural History for Asthma Management** ......................................................... 28

References ....................................................................................................................... 28
<table>
<thead>
<tr>
<th>Section 3, The Four Components of Asthma Management</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>35</td>
</tr>
<tr>
<td><strong>Section 3, Component 1: Measures of Asthma Assessment and Monitoring</strong></td>
<td>36</td>
</tr>
<tr>
<td>Introduction</td>
<td>36</td>
</tr>
<tr>
<td>Overview of Assessing and Monitoring Asthma Severity, Control, and Responsiveness in Managing Asthma</td>
<td>36</td>
</tr>
<tr>
<td>Key Points: Overview of Measures of Asthma Assessment and Monitoring</td>
<td>36</td>
</tr>
<tr>
<td>Key Differences From 1997 and 2002 Expert Panel Reports</td>
<td>37</td>
</tr>
<tr>
<td>Diagnosis of Asthma</td>
<td>40</td>
</tr>
<tr>
<td>Key Points: Diagnosis of Asthma</td>
<td>40</td>
</tr>
<tr>
<td>Key Differences From 1997 and 2002 Expert Panel Reports</td>
<td>41</td>
</tr>
<tr>
<td><strong>Medical History</strong></td>
<td>41</td>
</tr>
<tr>
<td><strong>Physical Examination</strong></td>
<td>42</td>
</tr>
<tr>
<td><strong>Pulmonary Function Testing (Spirometry)</strong></td>
<td>43</td>
</tr>
<tr>
<td><strong>Differential Diagnosis of Asthma</strong></td>
<td>45</td>
</tr>
<tr>
<td>Initial Assessment: Characterization of Asthma and Classification of Asthma Severity</td>
<td>47</td>
</tr>
<tr>
<td>Key Points: Initial Assessment of Asthma</td>
<td>47</td>
</tr>
<tr>
<td>Key Differences From 1997 and 2002 Expert Panel Reports</td>
<td>48</td>
</tr>
<tr>
<td>Identify Precipitating Factors</td>
<td>48</td>
</tr>
<tr>
<td>Identify Comorbid Conditions That May Aggravate Asthma</td>
<td>49</td>
</tr>
<tr>
<td>Assess the Patient’s Knowledge and Skills for Self-Management</td>
<td>49</td>
</tr>
<tr>
<td>Classify Asthma Severity</td>
<td>49</td>
</tr>
<tr>
<td><strong>Assessment of Impairment</strong></td>
<td>50</td>
</tr>
<tr>
<td><strong>Assessment of Risk</strong></td>
<td>51</td>
</tr>
<tr>
<td>Periodic Assessment and Monitoring of Asthma Control Essential for Asthma Management</td>
<td>52</td>
</tr>
<tr>
<td>Key Points: Periodic Assessment of Asthma Control</td>
<td>52</td>
</tr>
<tr>
<td>Key Differences From 1997 and 2002 Expert Panel Reports</td>
<td>54</td>
</tr>
<tr>
<td><strong>Goals of Therapy: Asthma Control</strong></td>
<td>55</td>
</tr>
<tr>
<td><strong>Asthma Control</strong></td>
<td>55</td>
</tr>
<tr>
<td>Measures for Periodic Assessment and Monitoring of Asthma Control</td>
<td>56</td>
</tr>
<tr>
<td><strong>Monitoring Signs and Symptoms of Asthma</strong></td>
<td>57</td>
</tr>
<tr>
<td><strong>Monitoring Pulmonary Function</strong></td>
<td>58</td>
</tr>
<tr>
<td><strong>Spirometry</strong></td>
<td>58</td>
</tr>
<tr>
<td><strong>Peak Flow Monitoring</strong></td>
<td>59</td>
</tr>
<tr>
<td><strong>Peak Flow Versus Symptom-Based Monitoring Action Plan</strong></td>
<td>60</td>
</tr>
<tr>
<td>Monitoring Quality of Life</td>
<td>61</td>
</tr>
<tr>
<td>Monitoring History of Asthma Exacerbations</td>
<td>63</td>
</tr>
<tr>
<td>Monitoring Pharmacotherapy for Adherence and Potential Side Effects</td>
<td>63</td>
</tr>
<tr>
<td>Monitoring Patient–Provider Communication and Patient Satisfaction</td>
<td>63</td>
</tr>
<tr>
<td>Monitoring Asthma Control With Minimally Invasive Markers and Pharmacogenetics</td>
<td>64</td>
</tr>
<tr>
<td>Pharmacogenetics in Managing Asthma</td>
<td>66</td>
</tr>
<tr>
<td>Methods for Periodic Assessment and Monitoring of Asthma Control</td>
<td>66</td>
</tr>
<tr>
<td>Clinician Assessment</td>
<td>67</td>
</tr>
<tr>
<td>Patient Self-Assessment</td>
<td>67</td>
</tr>
<tr>
<td>Population-Based Assessment</td>
<td>67</td>
</tr>
<tr>
<td>Referral to an Asthma Specialist for Consultation or Comanagement</td>
<td>68</td>
</tr>
<tr>
<td>References</td>
<td>82</td>
</tr>
</tbody>
</table>
Section 3, Component 3: Control of Environmental Factors and Comorbid Conditions That Affect Asthma

Key Points: Control of Environmental Factors and Comorbid Conditions That Affect Asthma .......................................................... 165
Key Differences From 1997 Expert Panel Report .......................................................... 165
Introduction .......................................................................................................................... 167
Inhalant Allergens .................................................................................................................. 167
    Diagnosis—Determine Relevant Inhalant Sensitivity .......................................................... 167
    Management—Reduce Exposure ....................................................................................... 169
    Immunotherapy .................................................................................................................. 172
    Assessment of Devices That May Modify Indoor Air ......................................................... 174
    Occupational Exposures ..................................................................................................... 175
Irritants ..................................................................................................................................... 175
    Environmental Tobacco Smoke ......................................................................................... 175
    Indoor/Outdoor Air Pollution and Irritants ....................................................................... 176
        Formaldehyde and Volatile Organic Compounds .......................................................... 176
    Gas Stoves and Appliances ............................................................................................... 176
Comorbid Conditions ............................................................................................................. 177
    Allergic Bronchopulmonary Aspergillosis ....................................................................... 177
    Gastroesophageal Reflux Disease .................................................................................... 178
    Obesity .................................................................................................................................. 179
    Obstructive Sleep Apnea ..................................................................................................... 179
    Rhinitis/Sinusitis .................................................................................................................. 180
    Stress, Depression, and Psychosocial Factors in Asthma .................................................. 180
Other Factors .......................................................................................................................... 181
    Medication Sensitivities ...................................................................................................... 181
        Aspirin ............................................................................................................................. 181
        Beta-Blockers ................................................................................................................. 182
        Sulfite Sensitivity ............................................................................................................ 182
    Infections .............................................................................................................................. 182
        Viral Respiratory Infections .......................................................................................... 182
        Bacterial Infections ......................................................................................................... 183
        Influenza Infection .......................................................................................................... 183
    Female Hormones and Asthma ......................................................................................... 183
    Diet ......................................................................................................................................... 184
Primary Prevention of Allergic Sensitization and Asthma ................................................... 184
References .................................................................................................................................. 190

Section 3, Component 4: Medications .................................................................................... 213
Key Points: Medications ........................................................................................................ 213
Key Differences From 1997 and 2002 Expert Panel Reports ............................................ 215
Introduction ............................................................................................................................ 215
Overview of the Medications ............................................................................................... 216
Long-Term Control Medications .......................................................................................... 216
    Inhaled Corticosteroids ....................................................................................................... 216
        Mechanism ...................................................................................................................... 216
        Inhaled Corticosteroid Insensitivity ................................................................................. 217
        Efficacy of Inhaled Corticosteroids as Compared to Other Long-Term Control Medications as Monotherapy ......................................................... 217
        Efficacy of Inhaled Corticosteroid and Adjunctive Therapy (Combination Therapy) .............................................................................................................. 217
    Dose-Response and Delivery Device ............................................................................... 218
    Variability in Response and Adjustable Dose Therapy ...................................................... 219
    Safety of Inhaled Corticosteroids ....................................................................................... 220
Section 4, Stepwise Approach for Managing Asthma in Youths ≥ 12 Years of Age and Adults .......................................................... 328

Key Points: Managing Asthma Long Term in Youths ≥ 12 Years of Age and Adults .......................................................... 326

Section 4, Managing Asthma Long Term in Youths ≥ 12 Years of Age and Adults .......................................................... 326

Treatment: Principles of Stepwise Therapy in Youths ≥ 12 Years of Age and Adults .......................................................... 328

Achieving Control of Asthma .......................................................... 329

Selecting Initial Therapy for Patients Not Currently Taking Long-Term Control Medications .......................................................... 329

Adjusting Therapy .......................................................... 329

Impairment Domain .......................................................... 330

Risk Domain .......................................................... 330

Maintaining Control of Asthma .......................................................... 331

Treatment: Pharmacologic Steps .......................................................... 333

Intermittent Asthma .......................................................... 333

Step 1 Care .......................................................... 333

Persistent Asthma .......................................................... 334

Step 2 Care, Long-Term Control Medications .......................................................... 335

Step 3 Care, Long-Term Control Medications .......................................................... 336

Step 4 Care, Long-Term Control Medications .......................................................... 338

Step 5 Care, Long-Term Control Medications .......................................................... 338

Step 6 Care, Long-Term Control Medications .......................................................... 339

Special Issues for Adolescents .......................................................... 339

Assessment Issues ............................................................................ 339

Treatment Issues ............................................................................ 340
School Issues .............................................................................................................. 340
Sports Issues ........................................................................................................... 340
Special Issues for Older Adults ............................................................................. 341
Assessment Issues ................................................................................................. 341
Treatment Issues ................................................................................................... 341
References .............................................................................................................. 353

Section 4, Managing Asthma Long Term—Special Situations ......................... 362
  Introduction .............................................................................................................. 362
  Exercise-Induced Bronchospasm ......................................................................... 362
  Diagnosis ............................................................................................................... 362
  Management Strategies ......................................................................................... 363
  Surgery and Asthma ............................................................................................. 364
  Pregnancy and Asthma ......................................................................................... 364
  Racial and Ethnic Disparity in Asthma ................................................................. 365
  References .............................................................................................................. 367

Section 5, Managing Exacerbations of Asthma ................................................... 372
  Key Points: Managing Exacerbations of Asthma ................................................. 372
  Key Differences From 1997 and 2002 Expert Panel Reports ................................ 373
  Introduction ........................................................................................................... 373
  General Considerations ......................................................................................... 375
  Treatment Goals ................................................................................................... 377
  Home Management of Asthma Exacerbations ....................................................... 380
  Pre-hospital Management of Asthma Exacerbations ............................................. 383
  Emergency Department and Hospital Management of Asthma Exacerbations .... 384
    Assessment ......................................................................................................... 384
    Treatment ............................................................................................................ 391
    Repeat Assessment ............................................................................................ 395
    Hospitalization ................................................................................................... 395
    Impending Respiratory Failure ......................................................................... 396
    Patient Discharge ............................................................................................... 398
    References ........................................................................................................... 405

For More Information ............................................................................................. 415
List of Boxes And Figures

FIGURE 1–1. LITERATURE RETRIEVAL AND REVIEW PROCESS: BREAKDOWN BY COMMITTEE ................................................................. 4
FIGURE 1–2. LITERATURE RETRIEVAL AND REVIEW PROCESS: OVERALL SUMMARY ................................................................. 6

BOX 2–1. CHARACTERISTICS OF CLINICAL ASTHMA ................................................................. 12
FIGURE 2–1. THE INTERPLAY AND INTERACTION BETWEEN AIRWAY INFLAMMATION AND THE CLINICAL SYMPTOMS AND PATHOPHYSIOLOGY OF ASTHMA ......................................................... 13
FIGURE 2–2. FACTORS LIMITING AIRFLOW IN ACUTE AND PERSISTENT ASTHMA ............ 15
BOX 2–2. FEATURES OF AIRWAY REMODELING ........................................................................ 16
FIGURE 2–3. AIRWAY INFLAMMATION .................................................................................... 17
FIGURE 2–4. HOST FACTORS AND ENVIRONMENTAL EXPOSURES ...................................... 20
FIGURE 2–5. CYTOKINE BALANCE .......................................................................................... 21

BOX 3–1. KEY INDICATORS FOR CONSIDERING A DIAGNOSIS OF ASTHMA .................... 42
BOX 3–2. IMPORTANCE OF SPIROMETRY IN ASTHMA DIAGNOSIS ........................................ 43
BOX 3–3. DIFFERENTIAL DIAGNOSTIC POSSIBILITIES FOR ASTHMA ................................. 46
BOX 3–4. INSTRUMENTS FOR ASSESSING ASTHMA-SPECIFIC AND GENERIC QUALITY OF LIFE ................................................................................................................................. 62
FIGURE 3–1. SUGGESTED ITEMS FOR MEDICAL HISTORY* .................................................. 69
FIGURE 3–2. SAMPLE QUESTIONS* FOR THE DIAGNOSIS AND INITIAL ASSESSMENT OF ASTHMA ................................................................................................................................. 70
FIGURE 3–3a. SAMPLE SPIROMETRY VOLUME TIME AND FLOW VOLUME CURVES .................. 71
FIGURE 3–3b. REPORT OF SPIROMETRY FINDINGS PRE- AND POSTBRONCHODILATOR ...................... 71
FIGURE 3–4a. CLASSIFYING ASTHMA SEVERITY IN CHILDREN 0–4 YEARS OF AGE ................. 72
FIGURE 3–4b. CLASSIFYING ASTHMA SEVERITY IN CHILDREN 5–11 YEARS OF AGE ................ 73
FIGURE 3–4c. CLASSIFYING ASTHMA SEVERITY IN YOUTHS ≥12 YEARS OF AGE AND ADULTS ................................................................. 74
FIGURE 3–5a. ASSESSING ASTHMA CONTROL IN CHILDREN 0–4 YEARS OF AGE ................. 75
FIGURE 3–5b. ASSESSING ASTHMA CONTROL IN CHILDREN 5–11 YEARS OF AGE ................. 76
FIGURE 3–5c. ASSESSING ASTHMA CONTROL IN YOUTHS ≥12 YEARS OF AGE AND ADULTS ................................................................. 77
FIGURE 3–6. SAMPLE QUESTIONS FOR ASSESSING AND MONITORING ASTHMA CONTROL ................................................................................................................................. 78
FIGURE 3–7. COMPONENTS OF THE CLINICIAN’S FOLLOWUP ASSESSMENT: SAMPLE ROUTINE CLINICAL ASSESSMENT QUESTIONS* ................................................................. 79
FIGURE 3–8. VALIDATED INSTRUMENTS FOR ASSESSMENT AND MONITORING OF ASTHMA ................................................................................................................................. 80
FIGURE 3–9. SAMPLE* PATIENT SELF-ASSESSMENT SHEET FOR FOLLOWUP VISITS ..................... 81
FIGURE 3–10a. ASTHMA ACTION PLAN ................................................................................. 117
FIGURE 3–10b. ASTHMA ACTION PLAN ................................................................................. 118
<table>
<thead>
<tr>
<th>Figure/Box</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE 3–10c</td>
<td>ASTHMA ACTION PLAN</td>
<td>119</td>
</tr>
<tr>
<td>FIGURE 3–11</td>
<td>HOW TO USE YOUR PEAK FLOW METER</td>
<td>122</td>
</tr>
<tr>
<td>FIGURE 3–12</td>
<td>KEY EDUCATIONAL MESSAGES: TEACH AND REINFORCE AT EVERY OPPORTUNITY</td>
<td>124</td>
</tr>
<tr>
<td>FIGURE 3–13</td>
<td>DELIVERY OF ASTHMA EDUCATION BY CLINICIANS DURING PATIENT CARE VISITS</td>
<td>126</td>
</tr>
<tr>
<td>FIGURE 3–14</td>
<td>HOW TO USE YOUR METERED-DOSE INHALER</td>
<td>128</td>
</tr>
<tr>
<td>FIGURE 3–15</td>
<td>HOW TO CONTROL THINGS THAT MAKE YOUR ASTHMA WORSE</td>
<td>129</td>
</tr>
<tr>
<td>FIGURE 3–16a</td>
<td>SCHOOL ASTHMA ACTION PLAN</td>
<td>137</td>
</tr>
<tr>
<td>FIGURE 3–16b</td>
<td>SCHOOL ASTHMA ACTION PLAN</td>
<td>139</td>
</tr>
<tr>
<td>BOX 3–5</td>
<td>THE STRONG ASSOCIATION BETWEEN SENSITIZATION TO ALLERGENS AND ASTHMA: A SUMMARY OF THE EVIDENCE</td>
<td>168</td>
</tr>
<tr>
<td>BOX 3–6</td>
<td>RATIONALE FOR ALLERGY TESTING FOR PERENNIAL INDOOR ALLERGENS</td>
<td>169</td>
</tr>
<tr>
<td>FIGURE 3–17</td>
<td>ASSESSMENT QUESTIONS* FOR ENVIRONMENTAL AND OTHER FACTORS THAT CAN MAKE ASTHMA WORSE</td>
<td>186</td>
</tr>
<tr>
<td>FIGURE 3–18</td>
<td>COMPARISON OF SKIN TESTS WITH IN VITRO TESTS</td>
<td>187</td>
</tr>
<tr>
<td>FIGURE 3–19</td>
<td>PATIENT INTERVIEW QUESTIONS* FOR ASSESSING THE CLINICAL SIGNIFICANCE OF POSITIVE ALLERGY TESTS</td>
<td>187</td>
</tr>
<tr>
<td>FIGURE 3–20</td>
<td>SUMMARY OF MEASURES TO CONTROL ENVIRONMENTAL FACTORS THAT CAN MAKE ASTHMA WORSE</td>
<td>188</td>
</tr>
<tr>
<td>FIGURE 3–21</td>
<td>EVALUATION AND MANAGEMENT OF WORK-AGGRAVATED ASTHMA AND OCCUPATIONAL ASTHMA</td>
<td>189</td>
</tr>
<tr>
<td>FIGURE 3–22</td>
<td>LONG-TERM CONTROL MEDICATIONS</td>
<td>243</td>
</tr>
<tr>
<td>FIGURE 3–23</td>
<td>QUICK-RELIEF MEDICATIONS</td>
<td>247</td>
</tr>
<tr>
<td>FIGURE 3–24</td>
<td>AEROSOL DELIVERY DEVICES</td>
<td>249</td>
</tr>
<tr>
<td>BOX 4–1</td>
<td>SAMPLE PATIENT RECORD. MONITORING THE RISK DOMAIN IN CHILDREN: RISK OF ASTHMA PROGRESSION (INCREASED EXACERBATIONS OR NEED FOR DAILY MEDICATION, OR LOSS OF LUNG FUNCTION), AND POTENTIAL ADVERSE EFFECTS OF CORTICOSTEROID THERAPY</td>
<td>283</td>
</tr>
<tr>
<td>FIGURE 4–1a</td>
<td>STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 0–4 YEARS OF AGE</td>
<td>305</td>
</tr>
<tr>
<td>FIGURE 4–1b</td>
<td>STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5–11 YEARS OF AGE</td>
<td>306</td>
</tr>
<tr>
<td>FIGURE 4–2a</td>
<td>CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN CHILDREN 0–4 YEARS OF AGE</td>
<td>307</td>
</tr>
<tr>
<td>FIGURE 4–2b</td>
<td>CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN CHILDREN 5–11 YEARS OF AGE</td>
<td>308</td>
</tr>
<tr>
<td>FIGURE 4–3a</td>
<td>ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 0–4 YEARS OF AGE</td>
<td>309</td>
</tr>
<tr>
<td>FIGURE 4–3b</td>
<td>ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 5–11 YEARS OF AGE</td>
<td>310</td>
</tr>
<tr>
<td>FIGURE 4–4a</td>
<td>USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS IN CHILDREN*</td>
<td>311</td>
</tr>
<tr>
<td>FIGURE 4–4b</td>
<td>ESTIMATED COMPARATIVE DAILY DOSAGES FOR INHALED CORTICOSTEROIDS IN CHILDREN</td>
<td>314</td>
</tr>
<tr>
<td>FIGURE 4–4c</td>
<td>USUAL DOSAGES FOR QUICK-RELIEF MEDICATIONS IN CHILDREN*</td>
<td>317</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS AND FINANCIAL DISCLOSURES

External Review and Comment Overview

In response to a recommendation by the National Asthma Education and Prevention Program (NAEPP) Coordinating Committee, an Expert Panel was convened by the National Heart, Lung, and Blood Institute (NHLBI) to update the asthma guidelines.

Several measures were taken in the development of these asthma guidelines to enhance transparency of the evidence review process and to better manage any potential or perceived conflict of interest. In addition to using a methodologist to guide preparation of the Evidence Tables, several layers of external content review were also embedded into the guidelines development process. Expert Panel members and consultant reviewers completed financial disclosure forms that are summarized below. In addition to review by consultants, an early draft of the guidelines was circulated to a panel of guidelines end-users (the Guidelines Implementation Panel) appointed specifically for their review and feedback on ways to enhance guidelines utilization by primary care clinicians, health care delivery organizations, and third-party payors. Finally, a draft of the guidelines was posted on the NHLBI Web Site for review and comment by the NAEPP Coordinating Committee and to allow opportunity for public review and comment before the guidelines were finalized and released.

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ACRONYMS AND ABBREVIATIONS

AAI  acute asthma index
A. artemisiifolia  *Ambrosia artemisiifolia*
ABG  arterial blood gas
ABPA  allergic bronchopulmonary aspergillosis
ACE  angiotensin converting enzyme
ACIP  Advisory Committee on Immunization Practices (CDC)
ACT  Asthma Control Test
AHRQ  Agency for Healthcare Research and Quality
ALT  alanine aminotransferase (enzyme test of liver function)
Amb a 1  *Ambrosia artemisiifolia*
AQLQ  asthma-related quality of life questionnaire
ATAQ  Asthma Therapy Assessment Questionnaire
ATS  American Thoracic Society

BDP  beclomethasone dipropionate
Bla g1  *Blattella germanica* 1 (cockroach allergen)
BMD  bone mineral density
BPT  bronchial provocation test

CAMP  Childhood Asthma Management Program
CBC  complete blood count
CC  Coordinating Committee
CDC  Centers for Disease Control and Prevention
CFC  chlorofluorocarbon (inhaler propellant being phased out because it harms atmosphere)
CI  confidence interval
COPD  chronic obstructive pulmonary disease
COX-2  cyclooxygenase (an enzyme)
CPAP  continuous positive airway pressure
CT  computer tomography

Der f  *Dermatophagoides farinae* (American house-dust mite)
Der p  *Dermatophagoides pteronyssinus* (European house-dust mite)
DEXA  dual energy x-ray absorptiometry
DHHS  U.S. Department of Health and Human Services
DPI  dry powder inhaler

EBC  exhaled breath concentrate
ECP  eosinophilic cationic protein
ED  emergency department
EIB  exercise-induced bronchospasm
EMS  emergency medical services
eNO  exhaled nitric oxide
EPR  Expert Panel Report
     EPR 1991, EPR 1997 (EPR—2), EPR—Update 2002,
ER  emergency room
ERS  European Respiratory Society
ETS  environmental tobacco smoke
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>FCRI</td>
<td>high-affinity IgE receptor</td>
</tr>
<tr>
<td>FDA</td>
<td>U.S. Food and Drug Administration</td>
</tr>
<tr>
<td>FEF</td>
<td>forced expiratory flow</td>
</tr>
<tr>
<td>FEF&lt;sub&gt;25–75&lt;/sub&gt;</td>
<td>forced expiratory flow between 25 percent and 75 percent of the vital capacity</td>
</tr>
<tr>
<td>FeNO</td>
<td>fractional exhaled nitric oxide</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt;</td>
<td>forced expiratory volume in 1 second</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;6&lt;/sub&gt;</td>
<td>forced expiratory volume in 6 seconds</td>
</tr>
<tr>
<td>FiO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>fractional inspired oxygen</td>
</tr>
<tr>
<td>FRC</td>
<td>functional residual capacity</td>
</tr>
<tr>
<td>FVC</td>
<td>forced vital capacity</td>
</tr>
<tr>
<td>GERD</td>
<td>gastroesophageal reflux disease</td>
</tr>
<tr>
<td>GINA</td>
<td>Global Initiative for Asthma</td>
</tr>
<tr>
<td>GIP</td>
<td>Guidelines Implementation Panel (at NHLBI)</td>
</tr>
<tr>
<td>GM-CSF</td>
<td>granulocyte-macrophage colony-stimulating factor</td>
</tr>
<tr>
<td>HEPA</td>
<td>high-efficiency particulate air (a type of filter)</td>
</tr>
<tr>
<td>HFA</td>
<td>hydrofluoroalkane (inhaler propellant)</td>
</tr>
<tr>
<td>HMO</td>
<td>health maintenance organization</td>
</tr>
<tr>
<td>HPA</td>
<td>hypothalamic-pituitary-adrenal (usually used with “axis”)</td>
</tr>
<tr>
<td>HRT</td>
<td>hormone replacement therapy</td>
</tr>
<tr>
<td>ICS</td>
<td>inhaled corticosteroid(s)</td>
</tr>
<tr>
<td>ICU</td>
<td>intensive care unit</td>
</tr>
<tr>
<td>IFN-γ</td>
<td>interferon-gamma</td>
</tr>
<tr>
<td>IgE</td>
<td>immunoglobulin E (and similar types, such as IgG)</td>
</tr>
<tr>
<td>IL-4, IL-12, etc.</td>
<td>interleukin-4, interleukin-12 (and similar)</td>
</tr>
<tr>
<td>IL-4R</td>
<td>interleukin-4 receptor (and similar)</td>
</tr>
<tr>
<td>INR</td>
<td>international normalized ratio</td>
</tr>
<tr>
<td>IVIG</td>
<td>intravenous immunoglobulin</td>
</tr>
<tr>
<td>IV Mg</td>
<td>intravenous magnesium sulfate</td>
</tr>
<tr>
<td>LABA/LABAs</td>
<td>long-acting beta&lt;sub&gt;2&lt;/sub&gt;-agonist(s)</td>
</tr>
<tr>
<td>LTRA</td>
<td>leukotriene receptor antagonist</td>
</tr>
<tr>
<td>Mab or MAb</td>
<td>monoclonal antibody</td>
</tr>
<tr>
<td>MDC</td>
<td>macrophage-derived chemokines</td>
</tr>
<tr>
<td>MDI</td>
<td>metered-dose inhaler</td>
</tr>
<tr>
<td>MDI/DED</td>
<td>metered-dose inhaler (MDI) with delivery enhancement device (DED)</td>
</tr>
<tr>
<td>MeSH</td>
<td>Medical Subject Headings (in MEDLINE)</td>
</tr>
<tr>
<td>MIP</td>
<td>macrophage inflammatory protein</td>
</tr>
<tr>
<td>NAEPP</td>
<td>National Asthma Education and Prevention Program</td>
</tr>
<tr>
<td>NCHS</td>
<td>National Center for Health Statistics</td>
</tr>
<tr>
<td>NHANES</td>
<td>National Health and Nutrition Examination Survey</td>
</tr>
<tr>
<td></td>
<td>(with roman numeral)</td>
</tr>
<tr>
<td>NHIS</td>
<td>National Health Information Survey</td>
</tr>
<tr>
<td>NHLBI</td>
<td>National Heart, Lung, and Blood Institute</td>
</tr>
<tr>
<td>NIH</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>NK</td>
<td>natural killer cells</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>NO or NO₂</td>
<td>nitric oxide</td>
</tr>
<tr>
<td>NSAID</td>
<td>nonsteroidal anti-inflammatory drug</td>
</tr>
<tr>
<td>OR</td>
<td>odds ratio</td>
</tr>
<tr>
<td>OSA</td>
<td>obstructive sleep apnea</td>
</tr>
<tr>
<td>PCO₂</td>
<td>partial pressure of carbon dioxide</td>
</tr>
<tr>
<td>PCP</td>
<td>primary care provider (or physician)</td>
</tr>
<tr>
<td>PD₂₀</td>
<td>20 percent of provocative dose</td>
</tr>
<tr>
<td>PEF</td>
<td>peak expiratory flow</td>
</tr>
<tr>
<td>PEFR</td>
<td>PEF rate</td>
</tr>
<tr>
<td>PI</td>
<td>pulmonary index</td>
</tr>
<tr>
<td>PIₘₐₓ</td>
<td>maximal pulmonary inspiration</td>
</tr>
<tr>
<td>PICU</td>
<td>pediatric intensive care unit</td>
</tr>
<tr>
<td>PIV</td>
<td>parainfluenza virus</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>particulate matter ≤10 micrometers</td>
</tr>
<tr>
<td>RANTES</td>
<td>Regulated on Activation, Normal T Expressed and Secreted</td>
</tr>
<tr>
<td>RCT</td>
<td>randomized controlled trial</td>
</tr>
<tr>
<td>RR</td>
<td>relative risk</td>
</tr>
<tr>
<td>RSV</td>
<td>respiratory syncytial virus</td>
</tr>
<tr>
<td>RV</td>
<td>residual volume</td>
</tr>
<tr>
<td>SABA/SABAs</td>
<td>short-acting beta₂-agonist(s) (inhaled)</td>
</tr>
<tr>
<td>SaO₂</td>
<td>oxygen saturation</td>
</tr>
<tr>
<td>SMART</td>
<td>Salmeterol Multicenter Asthma Research Trial</td>
</tr>
<tr>
<td>START</td>
<td>Inhaled Steroid Treatment as Regular Therapy in Early Asthma study</td>
</tr>
<tr>
<td>TAA</td>
<td>triamcinolone acetonide</td>
</tr>
<tr>
<td>TAO</td>
<td>troleandomycin (antibiotic)</td>
</tr>
<tr>
<td>Th₁, Th₂</td>
<td>T cell helper 1, T cell helper 2</td>
</tr>
<tr>
<td>TLC</td>
<td>total lung capacity</td>
</tr>
<tr>
<td>TNF-α</td>
<td>tumor necrosis factor-alpha</td>
</tr>
<tr>
<td>TRUST</td>
<td>The Regular Use of Salbutamol Trial</td>
</tr>
<tr>
<td>USDA</td>
<td>U.S. Department of Agriculture</td>
</tr>
<tr>
<td>VC</td>
<td>vital capacity</td>
</tr>
<tr>
<td>VCD</td>
<td>vocal cord dysfunction</td>
</tr>
<tr>
<td>VHC</td>
<td>valved holding chamber</td>
</tr>
<tr>
<td>VOC</td>
<td>volatile organic compounds (e.g., benzene)</td>
</tr>
</tbody>
</table>
PREFACE

The Expert Panel Report 3 (EPR–3) Full Report 2007: Guidelines for the Diagnosis and Management of Asthma was developed by an expert panel commissioned by the National Asthma Education and Prevention Program (NAEPP) Coordinating Committee (CC), coordinated by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health.

Using the 1997 EPR–2 guidelines and the 2002 update on selected topics as the framework, the expert panel organized the literature review and updated recommendations for managing asthma long term and for managing exacerbations around four essential components of asthma care, namely: assessment and monitoring, patient education, control of factors contributing to asthma severity, and pharmacologic treatment. Subtopics were developed for each of these four broad categories.

The EPR–3 Full Report has been developed under the excellent leadership of Dr. William Busse, Panel Chair. The NHLBI is grateful for the tremendous dedication of time and outstanding work of all the members of the expert panel, and for the advice from an expert consultant group in developing this report. Sincere appreciation is also extended to the NAEPP CC and the Guidelines Implementation Panel as well as other stakeholder groups (professional societies, voluntary health, government, consumer/patient advocacy organizations, and industry) for their invaluable comments during the public review period that helped to enhance the scientific credibility and practical utility of this document.

Ultimately, the broad change in clinical practice depends on the influence of local primary care physicians and other health professionals who not only provide state-of-the-art care to their patients, but also communicate to their peers the importance of doing the same. The NHLBI and its partners will forge new initiatives based on these guidelines to stimulate adoption of the recommendations at all levels, but particularly with primary care clinicians at the community level. We ask for the assistance of every reader in reaching our ultimate goal: improving asthma care and the quality of life for every asthma patient with asthma.

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