Chapter 12

Nonsteroidal Antiasthma Agents
Three Subgroups of Agents

- Cromolyn-like drugs (mast cell stabilizers)
- Antileukotrienes (anti-LTs)
- Monoclonal antibodies
Clinical Indication for Nonsteroidal Antiasthma Agents

- Prophylactic management of mild persistent asthma
  
  Step 2 asthma, 1997 NAEPP guidelines:
  
  - Symptoms more than 2 times/week but less than 1 time/day
  - Nighttime symptoms more than 2 nights/month
  - FEV$_1$ or peak expiratory flow (PEF) 80% or greater; PEF variability 20% to 30%
# Identification of Nonsteroidal Antiasthma Agents

<table>
<thead>
<tr>
<th>Generic Drug</th>
<th>Brand Name</th>
<th>Formulation and Dosage</th>
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<tbody>
<tr>
<td><strong>Cromolyn-like agents (mast cell stabilizers)</strong></td>
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<tr>
<td>Cromolyn sodium</td>
<td>Intal</td>
<td>MDI: 800 µg/actuation&lt;br&gt;Adults and children ≥ 5 yr: 2 inhalations 4 times daily&lt;br&gt;SVN: 20 mg/ampoule or 20 mg/2 ml&lt;br&gt;Adults and children ≥ 2 yr: 20 mg inhaled 4 times daily</td>
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<tr>
<td>Nasalcrom</td>
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<td>Spray: 40 mg/ml (4%)&lt;br&gt;Adults and children ≥ 2 yr: 1 spray each nostril, 3–6 times daily every 4–6 hr</td>
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<tr>
<td><strong>Nedocromil sodium</strong></td>
<td>Tilade</td>
<td>MDI: 1.75 mg/actuation&lt;br&gt;Adults and children ≥ 6 yr: 2 inhalations 4 times daily</td>
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<tr>
<td><strong>Antileukotrienes</strong></td>
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<tr>
<td>Zafirlukast</td>
<td>Accolate</td>
<td>Tablets: 10 and 20 mg&lt;br&gt;Adults and children ≥ 12 yr: 20 mg twice daily, without food&lt;br&gt;Children 5–11 yr: 10 mg twice daily</td>
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<tr>
<td>Montelukast</td>
<td>Singulair</td>
<td>Tablets: 10 mg and 4- and 5-mg cherry-flavored chewable; 4-mg packet of granules&lt;br&gt;Adults and children ≥ 15 yr: one 10-mg tablet daily&lt;br&gt;Children 6–14 yr: one 5-mg chewable tablet daily&lt;br&gt;Children 2–5 yr: one 4-mg chewable tablet or one 4-mg packet of granules daily&lt;br&gt;6–23 months: one 4-mg packet of granules daily</td>
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<tr>
<td>Zileuton</td>
<td>Zyflo</td>
<td>Tablets: 600 mg&lt;br&gt;Adults and children ≥ 12 yr: one 600-mg tablet 4 times per day</td>
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<td><strong>Monoclonal Antibody</strong></td>
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<tr>
<td>Omalizumab</td>
<td>Xolair</td>
<td>Adults and children ≥ 12 yr: Subcutaneous injection every 4 weeks; dose dependent on weight and serum IgE level</td>
</tr>
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</table>

*Detailed prescribing information should be obtained from the manufacturer’s package insert.*
Mechanisms of Inflammation in Asthma

- The immunological (allergic) response
  - Involves mast cells and IgE
  - Mast cells release
    - Leukotrienes
    - Prostaglandins
    - Proteases
    - Histamines
    - Platelet-activating factor (PAF)
    - Cytokines
Cromolyn-like (Mast Cell-stabilizing) Agents

- Cromolyn sodium (disodium cromoglycate)
  - Dosage and administration
    - SVN
    - MDI
    - Nasal solution
  - Mode of action
  - Pharmacokinetics
  - Side effects
Cromolyn-like (Mast Cell-stabilizing) Agents (cont’d)

- Cromolyn Sodium (Disodium Cromoglycate) (cont’d)
  - Clinical efficacy of cromolyn sodium
    - MDI strength
    - Use in angiotensin-converting enzyme (ACE) inhibitor cough
    - Anti-sickle cell effects
  - Clinical application of cromolyn sodium
    - Dosage regulation
Cromolyn-like (Mast Cell-stabilizing) Agents (cont’d)

- Nedocromil sodium (Tilade)
  - Dosage and administration
  - Mode of action
  - Pharmacokinetics
  - Side effects
  - Clinical efficacy
    - In adults
    - In children
Antileukotriene Agents

- Leukotrienes and inflammation
  - Cell sources of leukotrienes
  - Biochemical pathways
  - Leukotriene production
  - Cysteinyl leukotriene (CysLT) receptors and effects of leukotrienes
Antileukotriene Agents (cont’d)

- Zileuton (Zyflo)
  - Dosage and administration
  - Mode of action
  - Pharmacokinetics
  - Hazards and side effects
Antileukotriene Agents (cont’d)

- Zafirlukast (Accolate)
  - Dosage
  - Mode of action
  - Pharmacokinetics
  - Hazards and side effects
Antileukotriene Agents (cont’d)

- Montelukast (Singulair)
  - Dosage and administration
  - Mode of action
  - Pharmacokinetics
  - Hazards and side effects
Antileukotriene Agents (cont’d)

- Role of antileukotriene drugs in asthma management
  - Protection against specific asthma triggers
  - Chronic persistent asthma
  - Antileukotrienes in relation to corticosteroids
  - Churg-Strauss syndrome
  - Respiratory syncytial virus (RSV)
  - Summary of clinical use of antileukotriene therapy
Antileukotriene Agents (cont’d)

- Monoclonal antibodies (Omalizumab)
  - Dosage and administration
  - Mode of action
  - Pharmacokinetics
  - Hazards and side effects
  - Role of omalizumab in asthma management
  - Summary of clinical use of omalizumab
Respiratory Care Assessment of Nonsteroidal Antiasthma Agents

- Appropriate delivery formulation
- Appropriate use of delivery device
- Controller…not a rescue agent
- Use of peak flow meter
- Long term:
  - Severity of symptoms
  - Exacerbations, ER visits, missed work/school, PFT
- Side effects