Initial Outpatient Evaluation and Ongoing Management of Asthma

Asthma Management Pathway

Diagnosis Tools:
- Classifying Asthma Severity
- Differential Diagnoses for Asthma
- Modifiable Risk Factors
- Classifying Exacerbation Severity

Medications Charts:
- Acute Exacerbation Dosing
- Short-Acting Medications
- Inhaled Corticosteroids (ICS)
- SMART Dosing
- ICS – Long-Acting Beta Agonist

Follow-up and Education Tools:
- Asthma Action Plan
- Mediglyphs
- General Education Handouts
- Referrals

Last updated 7/5/2022 by PFK Pharmacy
Initial Outpatient Evaluation and Ongoing Management of Asthma

**Diagnosis**
- Concern for new asthma diagnosis
  - Are symptoms consistent with asthma?
    - Yes: Consider differential diagnosis
    - No: Classify asthma severity
  - No: Consider step-up therapy
- Are there modifiable risk factors?
  - Yes: Address risk factors
  - No: Maintain current therapy
  - Controlled for ≥ 3 months?
    - Yes: Consider Step-down therapy
    - No: Refer to ED
- Intermittent
  - Age: 0-4
    - SABA PRN and short course daily ICS at start of RTI
  - Age: 5-11
    - SABA PRN
  - Age: 12+
    - SABA PRN
- Moderate Persistent
  - Daily low-dose ICS and prn SABA
  - Daily medium-dose ICS and prn ICS-formoterol
  - Daily and prn medium-dose ICS-formoterol
- Severe Persistent
  - Daily high-dose ICS-LABA + OCS and prn SABA
  - Daily high-dose ICS-LABA + OCS and prn SABA
  - Daily high-dose ICS-LABA + OCS and prn SABA

**Age**
- Step 1:
- Step 2:
- Step 3:
- Step 4:
- Step 5:
- Step 6:

**Treatment**
- Intermittent
  - Age: 0-4
    - SABA PRN and short course daily ICS at start of RTI
  - Age: 5-11
    - SABA PRN
  - Age: 12+
    - SABA PRN
- Mild Persistent
  - Age: 0-4
    - Daily low-dose ICS and prn SABA
  - Age: 5-11
    - Daily low-dose ICS and prn SABA
  - Age: 12+
    - Daily low-dose ICS and prn SABA
- Moderate Persistent
  - Daily medium-dose ICS-LABA and prn SABA
  - Daily high-dose ICS-LABA and prn SABA
  - Daily high-dose ICS-LABA and prn SABA
- Severe Persistent
  - Daily medium-dose ICS-LABA and prn SABA
  - Daily high-dose ICS-LABA and prn SABA
  - Daily high-dose ICS-LABA + OCS and prn SABA

**Exacerbation**
- Acute asthma exacerbation
- Can it be managed outpatient?
  - Yes: Select treatment
  - No: Refer to ED
- Classify exacerbation severity

**Education/Follow-up**
- Poorly Controlled?
  - Yes: 1-2 months while gaining control
  - No: Intermittent
  - Persistent
  - Stepping down

**Follow-up**
- 2 weeks to review symptom control and medications

**Patient Education Tools**
- Mediglyphs (In each Med table)
  - Asthma Action Plan
  - Mask and Spacer Helping Hands
  - Inflamed Airway Visual
  - NCH Asthma Program Resources

**Referrals**
- School-based Asthma Therapy
  - Asthma Express
Differential Diagnosis Considerations for Asthma

Upper airway disease
- Allergic rhinitis and sinusitis

Obstruction involving large airways
- Foreign body in trachea or bronchus
- Vocal cord dysfunction
- Vascular ring or laryngeal web
- Laryngotracheomalacia, tracheal stenosis, or bronchostenosis
- Enlarged lymph nodes or tumor

Obstruction involving small airways
- Viral bronchiolitis or obliterative bronchiolitis
- Cystic fibrosis
- Bronchopulmonary dysplasia
- Heart disease

Other Causes
- Recurrent cough not due to asthma
- Aspiration from swallowing mechanism dysfunction or gastroesophageal reflux


Return to Pathway
<table>
<thead>
<tr>
<th>Classification of Asthma Severity: Clinical Features before Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Modeled after NHLBI Guidelines)</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Intermittent</th>
<th>Mild Persistent</th>
<th>Moderate Persistent</th>
<th>Severe Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daytime symptoms</strong></td>
<td>≤ 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Daily</td>
<td>Throughout the day</td>
</tr>
<tr>
<td><strong>Nighttime symptoms</strong></td>
<td>≤ 2 times/month</td>
<td>3 – 4 times/month</td>
<td>&gt; 1 time/week</td>
<td>Nightly</td>
</tr>
<tr>
<td><strong>Rescue inhaler use</strong></td>
<td>≤ 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Daily</td>
<td>Several times a day</td>
</tr>
<tr>
<td><strong>Exercise limitation</strong></td>
<td>None</td>
<td>Minor</td>
<td>Some</td>
<td>Extremely</td>
</tr>
<tr>
<td><strong>FEV1</strong></td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>60 – 80%</td>
<td>&lt;60%</td>
</tr>
<tr>
<td><strong>FEV1/FVC</strong></td>
<td>&gt;85%</td>
<td>&gt;80%</td>
<td>75 – 80%</td>
<td>&lt;75%</td>
</tr>
<tr>
<td><strong>“Risk”</strong></td>
<td>0 – 1 oral steroids/year</td>
<td>≥ 2 oral steroids per year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Modifiable Risk Factors to Assess

Medication self-management barriers
- Poor controller adherence
- Lack of understanding of inhaler technique
- Poor understanding of asthma action plan
- Unable to access medication at the pharmacy
- Unable to obtain spacer

Asthma triggers
- Seasonal/environmental allergens
- Tobacco smoke (including vaping, second or third hand exposure)
- Mold
- Cockroaches
- Rodents
- Chemical exposures (e.g. incense)

Consider referral to asthma express

Consider referral to school based asthma therapy (SBAT)

Return to Pathway
### Classification of Asthma Control
(Modified from 2007 NHLBI guidelines)

<table>
<thead>
<tr>
<th>Components of control</th>
<th>Well-Controlled</th>
<th>Not Well-Controlled</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>≤ 2 days/week*</td>
<td>&gt; 2 days per week#</td>
<td>Throughout the day</td>
</tr>
<tr>
<td><strong>Nighttime awakenings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4</td>
<td>≤ 1x/month</td>
<td>&gt; 1x/month</td>
<td>&gt;1x/week</td>
</tr>
<tr>
<td>5 to 11</td>
<td>≤ 1x/month</td>
<td>&gt; 2x/month</td>
<td>&gt; 2x/week</td>
</tr>
<tr>
<td>≥ 12</td>
<td>≤ 2x/month</td>
<td>1-3x/week</td>
<td>≥ 4x/week</td>
</tr>
<tr>
<td><strong>Interference with normal activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>None</td>
<td>Some limitation</td>
<td>Extremely limited</td>
</tr>
<tr>
<td><strong>Short-acting beta2-agonist use for symptom control (not prevention of EIB)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>≤ 2 days/week</td>
<td>&gt; 2 days per week</td>
<td>Several times per day</td>
</tr>
<tr>
<td><strong>FEV1 or peak flow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 5</td>
<td>&gt; 80% predicted/ personal best</td>
<td>60-80% predicted/ personal best</td>
<td>&lt; 60% predicted/ personal best</td>
</tr>
<tr>
<td><strong>FEV1/FVC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 5</td>
<td>&gt; 80%</td>
<td>75-80%</td>
<td>&lt; 75%</td>
</tr>
<tr>
<td><strong>Validated Questionnaires</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>≥ 4</td>
<td>≥ 20</td>
<td>16-19</td>
</tr>
<tr>
<td>ATAQ</td>
<td>&gt; 12</td>
<td>0</td>
<td>3-4</td>
</tr>
<tr>
<td>ACQ</td>
<td>≥ 12</td>
<td>≤ 0.75</td>
<td>≥ 1.5</td>
</tr>
<tr>
<td><strong>Exacerbations requiring oral systemic corticosteroids</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>0-1/year</td>
<td>2-3/year</td>
<td>&gt; 3/year</td>
</tr>
</tbody>
</table>

**Recommended Action for Treatment**

All

Maintain current step or consider step-down if well controlled for at least 3 months. Schedule regular follow-up in 1-6 months.

**Suggestion for stepping down therapy:**
The dose of ICS may be reduced about 25–50 percent every 3 months to the lowest dose possible required to maintain control.

* For 5-11 yrs: < 2 days/week but not more than once on each day
# For 5-11 yrs: > 2 days/week or multiple times on < 2 days/week
¥ Consider severity and interval since last exacerbation

Before stepping-up therapy, review adherence to medications, inhaler technique and environmental control.
### CLASSIFYING SEVERITY OF ASTHMA EXACERBATIONS IN THE URGENT OR EMERGENCY CARE SETTING

**Note:** Patients are instructed to use quick-relief medications if symptoms occur or if PEF drops below 80 percent predicted or personal best. If PEF is 50–79 percent, the patient should monitor response to quick-relief medication carefully and consider contacting a clinician. If PEF is below 50 percent, immediate medical care is usually required. In the urgent or emergency care setting, the following parameters describe the severity and likely clinical course of an exacerbation.

<table>
<thead>
<tr>
<th>Symptoms and Signs</th>
<th>Initial PEF (or FEV₁)</th>
<th>Clinical Course</th>
</tr>
</thead>
</table>
| **Mild**           | PEF ≥70 percent predicted or personal best | • Usually cared for at home  
                    |                        | • Prompt relief with inhaled SABA  
                    |                        | • Possible short course of oral systemic corticosteroids |
| Dyspnea only with activity (assess tachypnea in young children) | | |
| **Moderate**       | PEF 40-69 percent predicted or personal best | • Usually requires office or ED visit  
                    |                        | • Relief from frequent inhaled SABA  
                    |                        | • Oral systemic corticosteroids; some symptoms last for 1-2 days after treatment is begun |
| Dyspnea interferes with or limits usual activity | | |
| **Severe**         | PEF <40 percent predicted or personal best | • Usually requires ED visit and likely hospitalization  
                    |                        | • Partial relief from frequent inhaled SABA  
                    |                        | • Oral systemic corticosteroids; some symptoms last for >3 days after treatment is begun  
                    |                        | • Adjunctive therapies are helpful |
| Dyspnea at rest; interferes with conversation | | |
| **Subset: Life-Threatening** | PEF <25 percent predicted or personal best | • Requires ED/hospitalization; possible ICU  
                                           |                        | • Minimal or no relief from frequent inhaled SABA  
                                           |                        | • Intravenous corticosteroids  
                                           |                        | • Adjunctive therapies are helpful |
| Too dyspneic to speak; perspiring | | |

Key: ED, emergency department; FEV₁, forced expiratory volume in 1 second; ICU, intensive care unit; PEF, peak expiratory flow; SABA, short-acting beta₂-agonist

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## FORMAL EVALUATION OF ASTHMA EXACERBATION SEVERITY IN THE URGENT OR EMERGENCY CARE SETTING

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Subset: Respiratory Arrest Imminent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breathlessness</strong></td>
<td>While walking</td>
<td>While at rest (infant—softer, shorter cry, difficulty feeding)</td>
<td>While at rest (infant—stops feeding)</td>
<td>Sits upright</td>
</tr>
<tr>
<td><strong>Talks in</strong></td>
<td>Sentences</td>
<td>Phrases</td>
<td>Words</td>
<td></td>
</tr>
<tr>
<td><strong>Alertness</strong></td>
<td>May be agitated</td>
<td>Usually agitated</td>
<td>Usually agitated</td>
<td>Drowsy or confused</td>
</tr>
</tbody>
</table>

### Signs

<table>
<thead>
<tr>
<th>Respiratory Rate</th>
<th>Increased</th>
<th>Guide to rates of breathing in awake children:</th>
<th>Increased</th>
<th>Guide to rates of breathing in awake children:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>Normal Rate</td>
<td>Age</td>
<td>Normal Rate</td>
</tr>
<tr>
<td></td>
<td>&lt;2 months</td>
<td>&lt;60/minute</td>
<td>2-12 months</td>
<td>&lt;50/minute</td>
</tr>
<tr>
<td></td>
<td>1-5 years</td>
<td>&lt;40/minute</td>
<td>1-2 years</td>
<td>&lt;30/minute</td>
</tr>
<tr>
<td></td>
<td>6-8 years</td>
<td>&lt;30/minute</td>
<td>2-8 years</td>
<td>&lt;30/minute</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of accessory muscles; suprasternal reactions</th>
<th>Usually not</th>
<th>Commonly</th>
<th>Usually</th>
<th>Paradoxical thoracoabdominal movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheeze</td>
<td>Moderate, often only end expiratory</td>
<td>Loud; throughout exhalation</td>
<td>Usually loud; throughout inhalation and exhalation</td>
<td>Absence of wheeze</td>
</tr>
<tr>
<td>Pulse/minute</td>
<td>&lt;100</td>
<td>100-120</td>
<td>&gt;120</td>
<td>Bradycardia</td>
</tr>
<tr>
<td>Pulsus paradoxus</td>
<td>Absent &lt;10 mmHg</td>
<td>May be present 10-25 mmHg</td>
<td>Often present &gt;25 mmHg (adult) 20-40 mmHg (child)</td>
<td>Absence suggests respiratory muscle fatigue</td>
</tr>
</tbody>
</table>

### Functional Assessment

| PEF Percent predicted or percent personal best | ≥70 percent | Approx. 40–69 percent or response lasts <2 hours | <40 percent | <25 percent | Note: PEF testing may not be needed in very severe attacks |
| PaO2 (on air) Normal (test not usually necessary) | ≥60 mmHg (test not usually necessary) | <60 mmHg: possible cyanosis |
| And/or PCO2 ≤42 mmHg (test not usually necessary) | ≤42 mmHg (test not usually necessary) | ≥42 mmHg: possible respiratory failure |
| SaO2 percent (on air) at sea level ≥95 percent (test not usually necessary) | 90–95 percent (test not usually necessary) | <90 percent |

Hypercapnia (hypoventilation) develops more readily in young children than in adults and adolescents.

Key: PaO2, arterial oxygen pressure; PCO2, partial pressure of carbon dioxide; PEF, peak expiratory flow; SaO2, oxygen saturation

**Notes:**
- The presence of several parameters, but not necessarily all, indicates the general classification of the exacerbation.
- Many of these parameters have not been systematically studied, especially as they correlate with each other. Thus, they serve only as general guides (Cham et al. 2002; Chey et al. 1999; Gorelick et al. 2004b; Karras et al. 2000; Kelly et al. 2002b and 2004; Keogh et al. 2001; McCarren et al. 2000; Rodrigo and Rodrigo 1998b; Rodrigo et al. 2004; Smith et al. 2002).
- The emotional impact of asthma symptoms on the patient and family is variable but must be recognized and addressed and can affect approaches to treatment and followup (Ritz et al. 2000; Strunk and Mrazek 1986; von Leupoldt and Dahme 2005).
# Asthma Exacerbation Severity and Treatments

<table>
<thead>
<tr>
<th>Severity Classification</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medication</strong></td>
<td><strong>Dosage form</strong></td>
<td><strong>Weight</strong></td>
<td><strong>Dose</strong></td>
</tr>
<tr>
<td>Albuterol</td>
<td>Albuterol MDI (90mcg)</td>
<td>&lt; 15 kg</td>
<td>4 puffs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 15 kg</td>
<td>8 puffs</td>
</tr>
<tr>
<td></td>
<td>Albuterol Nebulization (2.5mg/3mL vial)</td>
<td>All</td>
<td>3 mL</td>
</tr>
<tr>
<td>Ipratropium (use in combo with albuterol)</td>
<td>DuoNeb® (Ipratropium 0.5mg and albuterol 2.5mg per 3mL vial)</td>
<td>All</td>
<td>3 mL</td>
</tr>
<tr>
<td>Oral Steroids</td>
<td>*Prednisolone or prednisone</td>
<td>All</td>
<td>2 mg/kg (Max 60 mg)</td>
</tr>
<tr>
<td></td>
<td>*Dexamethasone</td>
<td>All</td>
<td>0.6 mg/kg (Max 16 mg)</td>
</tr>
</tbody>
</table>

### Next Steps
- If incomplete response, consider DuoNeb® treatment (Moderate dosing)
- If responds well, review asthma action plan and send home
- Patient should continue albuterol treatment scheduled every 4 hours for 24-48 hours and then use PRN dosing

*For patients presenting with mild symptoms that have NOT tried albuterol to relieve symptoms, albuterol treatment should be completed first. If a complete response is observed, oral steroids may not be necessary.*

Call 911

**Monitoring:** Continuous HR, RR and pulse oximetry

**Initiate Treatment, as outlined for Moderate severity**

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*Return to Pathway*
# Short-Acting Beta-2 Agonists (SABA)

**BOLD = Preferred, no PA required for Medicaid patients**

<table>
<thead>
<tr>
<th>Mechanism of delivery</th>
<th>Drug</th>
<th>Strength</th>
<th>As Needed Dose and Frequency</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metered-dose Inhalers (MDI)</strong></td>
<td><strong>Ventolin®, Proair®, Proventil® Albuterol HFA</strong></td>
<td>90 mcg</td>
<td><strong>Symptom relief</strong></td>
<td>2 puffs Every 4 hours</td>
</tr>
<tr>
<td></td>
<td><strong>Mediglyph</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Nebulizer Solution**                  | **AccuNeb® Albuterol** | 2.5 mg/3 mL (0.083%) | 1 vial Every 4 hours | 1 vial every 20 minutes for 2-3 doses | $17 |
|                                       | **Mediglyph**          |          |                                  |       |

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# Systemic Corticosteroids

**BOLD = Preferred, no PA required for Medicaid patients**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Strength</th>
<th>Dose, Frequency and Duration*</th>
<th>Maximum daily dose</th>
<th>Clinical Considerations</th>
</tr>
</thead>
</table>
| **Orapred® Prednisolone** | Liquid: 15mg/5mL | 2mg/kg Daily for 5 days | 60 mg/day | Take with food  
Solution does NOT contain alcohol |
|                       | ODT: 10mg, 15mg, 30mg |                       |                |
|                       | Tablet: 5mg            |                       |                |
| **Deltasone® Prednisone** | Liquid: 5mg/5mL        | 2mg/kg Daily for 5 days | 60 mg/day | Take with food  
Solution contains alcohol (5%) |
|                       | Tablets: 1mg, 2.5mg, 5mg, 10mg, 20mg, 50mg |                       |                |

* Duration of 5 days is average and typical duration. Treatment may be shorter or longer depending on patient.  
Range 3 – 10 days of treatment. Do not need to taper due to short course.

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[Return to Pathway](#)
Inhaled Corticosteroids (ICS) – Low and Medium Dose

<table>
<thead>
<tr>
<th>Inhaler Mechanism</th>
<th>Drug</th>
<th>Age (years)</th>
<th>Low Dose Inhaler Strength</th>
<th>Dose and Frequency</th>
<th>Medium Dose Inhaler Strength</th>
<th>Dose and Frequency</th>
<th>Cost per Inhaler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metered-dose Inhalers (MDI)</td>
<td>Flovent® HFA Fluticasone propionate Mediglyph</td>
<td>0-4</td>
<td>44 mcg</td>
<td>2 puffs BID</td>
<td>110 mcg</td>
<td>1 puff BID</td>
<td>$351</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-11</td>
<td>44 mcg</td>
<td>2 puffs BID</td>
<td>110 mcg</td>
<td>2 puffs BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 12</td>
<td>44 mcg</td>
<td>2 puffs BID</td>
<td>110 mcg</td>
<td>2 puffs BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asmanex® HFA Mometasone furoate Mediglyph</td>
<td>0-4</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>$250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-11</td>
<td>NA</td>
<td>NA</td>
<td>50 mcg</td>
<td>1 puff BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 12</td>
<td>100 mcg</td>
<td>1 puff BID</td>
<td>100 mcg</td>
<td>2 puffs BID</td>
<td></td>
</tr>
<tr>
<td>Dry Powder Inhalers (DPI)</td>
<td>Asmanex® Twisthaler® Mometasone furoate Mediglyph</td>
<td>≥ 12*</td>
<td>110 mcg</td>
<td>2 inhalations Daily</td>
<td>220 mcg</td>
<td>2 inhalations Daily</td>
<td>$238</td>
</tr>
<tr>
<td></td>
<td>Pulmicort® Flexhaler® Budesonide Mediglyph</td>
<td>≥ 12*</td>
<td>90 mcg</td>
<td>2 inhalations BID</td>
<td>180 mcg</td>
<td>2 inhalations BID</td>
<td>$269</td>
</tr>
<tr>
<td></td>
<td>Qvar® Redihaler® Budesonide</td>
<td>≥ 12*</td>
<td>40 mcg</td>
<td>2 inhalations BID</td>
<td>80 mcg</td>
<td>2 inhalations BID</td>
<td>$260</td>
</tr>
<tr>
<td></td>
<td>Arnuity® Elixia® Fluticasone furoate</td>
<td>≥ 12*</td>
<td>100 mcg</td>
<td>1 inhalation Daily</td>
<td>100 mcg</td>
<td>1 inhalation Daily</td>
<td>$220</td>
</tr>
<tr>
<td>Nebulizer Solution</td>
<td>Pulmicort® Respules Budesonide</td>
<td>≤ 6</td>
<td>0.25 mg/2mL solution</td>
<td>2 ampules Daily</td>
<td>0.5 mg/2mL solution</td>
<td>2 ampules Daily</td>
<td>$106</td>
</tr>
</tbody>
</table>

For patients ages 5 and older, the medium and low doses are suggestions based on the 2020 GINA guidelines. For patients ages 0-4, the NHLBI EPR3 2007 guidelines were referenced. These doses are based on available studies and product information, and are not steroid equivalencies. NA: There is not sufficient evidence to recommend a dose for this age and medication. *DPIs may also be used in patients < 12 with shared decision-making. A younger patient may have the inspiratory capacity and coordination to use a DPI, but an MDI with mask and spacer is the optimal delivery method for patients < 12.


### ICS + Long-Acting Beta Agonist (LABA)

**BOLD** = Preferred, no PA required for Medicaid patients

<table>
<thead>
<tr>
<th>Inhaler Mechanism</th>
<th>Drug</th>
<th>Age (years)</th>
<th>Low Dose Inhaler Strength</th>
<th>Medium Dose Inhaler Strength</th>
<th>Dose and Frequency</th>
<th>Max Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metered-dose Inhalers (MDI)</td>
<td><strong>Symbicort® HFA</strong> Budesonide / formoterol</td>
<td>4-11</td>
<td>80-4.5 mcg</td>
<td>160-4.5 mcg</td>
<td>2 puffs BID and 1 puff PRN</td>
<td>8 puffs</td>
</tr>
<tr>
<td></td>
<td><strong>Mediglyph</strong></td>
<td>≥ 12</td>
<td>80-4.5 mcg</td>
<td>160-4.5 mcg</td>
<td>2 puffs BID and 2 puffs PRN</td>
<td>12 puffs</td>
</tr>
<tr>
<td></td>
<td><strong>Dulera® HFA</strong> Mometasone / formoterol</td>
<td>4-11</td>
<td>50-5 mcg</td>
<td>100-5 mcg</td>
<td>2 puffs BID and 1 puff PRN</td>
<td>8 puffs</td>
</tr>
<tr>
<td></td>
<td><strong>Mediglyph</strong></td>
<td>≥ 12</td>
<td>50-5 mcg</td>
<td>100-5 mcg</td>
<td>2 puffs BID and 2 puffs PRN</td>
<td>12 puffs</td>
</tr>
</tbody>
</table>

### Example Prescription – Low Dose ICS + LABA

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Drug</th>
<th>Strength</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-11</td>
<td><strong>Symbicort® HFA</strong> Budesonide / formoterol</td>
<td>80-4.5 mcg</td>
<td>Inhale 2 puffs twice a day. May also inhale 1 puff every 4 hours, as needed for symptoms (Max: 8 puffs per day). Dispense 2 inhalers for 30-day supply.</td>
</tr>
<tr>
<td>≥ 12</td>
<td><strong>Symbicort® HFA</strong> Budesonide / formoterol</td>
<td>80-4.5 mcg</td>
<td>Inhale 2 puffs twice a day. May also inhale 2 puffs every 4 hours, as needed for symptoms (Max: 12 puffs per day). Dispense 2 inhalers for 30 day supply.</td>
</tr>
</tbody>
</table>

[Return to Pathway]
<table>
<thead>
<tr>
<th>Inhaler Mechanism</th>
<th>Drug</th>
<th>Age (years)</th>
<th>Low Dose Inhaler Strength</th>
<th>Medium Dose Inhaler Strength</th>
<th>Dose and Frequency</th>
<th>Cost per Inhaler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metered-dose Inhalers (MDI)</td>
<td>Symbicort® HFA Budesonide / formoterol</td>
<td>0-4*</td>
<td>80-4.5 mcg</td>
<td>160-4.5 mcg</td>
<td>1-2 puffs BID</td>
<td>$359</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td>5-11</td>
<td>80-4.5 mcg</td>
<td>160-4.5 mcg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥ 12</td>
<td>80-4.5 mcg</td>
<td>160-4.5 mcg</td>
<td>2 puffs BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dulera® HFA Mometasone / formoterol</td>
<td>0-4*</td>
<td>50-5 mcg</td>
<td>50-5 mcg</td>
<td>1-2 puffs BID</td>
<td>$374</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td>5-11</td>
<td>50-5 mcg</td>
<td>50-5 mcg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥ 12</td>
<td>100-5 mcg</td>
<td>100-5 mcg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advair® HFA Fluticasone / salmeterol</td>
<td>0-4*</td>
<td>45-21 mcg</td>
<td>115-21 mcg</td>
<td>1-2 puffs BID</td>
<td>$327</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td>5-11</td>
<td>45-21 mcg</td>
<td>115-21 mcg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥ 12</td>
<td>45-21 mcg</td>
<td>115-21 mcg</td>
<td>2 puffs BID</td>
<td></td>
</tr>
<tr>
<td>Dry Powder Inhalers (DPI)</td>
<td>Advair® Diskus® Fluticasone / salmeterol</td>
<td>≥ 12</td>
<td>100-50 mcg</td>
<td>250-50 mcg</td>
<td>1 inhalation BID</td>
<td>$182</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airduo® Respiclick® Fluticasone / salmeterol</td>
<td>≥ 12</td>
<td>55-14 mcg</td>
<td>113-14 mcg</td>
<td>1 inhalation BID</td>
<td>$120</td>
</tr>
</tbody>
</table>

*Bolded = Preferred, no PA required for Medicaid patients

*Dosages for products used in these age groups are not referenced in clinical guidelines and there are limited studies available. The suggested reference doses provided are the expert opinion of clinicians at Nationwide Children’s Hospital.

For patients ages 5 and older, the medium and low doses are suggestions based on the 2020 GINA guidelines or Lexicomp® reference doses. These doses are based on available studies and product information, and are not steroid equivalencies.


Return to Pathway
<table>
<thead>
<tr>
<th>Inhaler Mechanism</th>
<th>Drug</th>
<th>High Dose Inhaler Strength</th>
<th>Dose and Frequency</th>
<th>Cost per Inhaler</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metered-dose Inhalers (MDI)</strong></td>
<td><strong>Dulera® HFA</strong> Mometasone / formoterol</td>
<td>200-5 mcg</td>
<td>2 puffs BID</td>
<td>$374</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advair® HFA</strong> Fluticasone/ salmeterol</td>
<td>230-21 mcg</td>
<td>2 puffs BID</td>
<td>$327</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dry Powder Inhalers (DPI)</strong></td>
<td><strong>Advair® Diskus®</strong> Fluticasone / salmeterol</td>
<td>500-50 mcg</td>
<td>1 inhalation BID</td>
<td>$182</td>
</tr>
<tr>
<td></td>
<td>Mediglyph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Airduo® Respiclick®</strong> Fluticasone / salmeterol</td>
<td>232-14 mcg</td>
<td>1 inhalation BID</td>
<td>$120</td>
</tr>
</tbody>
</table>

Ages are not specified on this chart. If a patient has progressed to step 5 or 6 and requires a high dose ICS-LABA, consult with or refer patient to an asthma specialist to assess patient specific dosing.

**ICS + Long-Acting Beta Agonist (LABA) – High Dose**

**BOLD** = Preferred, no PA required for Medicaid patients

**Inhaler Mechanism**
- **Metered-dose Inhalers (MDI)**
  - Aerosolized inhalation that is pushed to activate
  - Shake before use
  - Needs primed
  - Use with spacer
- **Dry Powder Inhalers (DPI)**
  - Breath-actuated
  - Spacer Incompatible

**Return to Pathway**
Asthma Express is a home visit program designed to assist a patient and/or caregiver in understanding and succeeding in the management of asthma. During the home visits a nurse will perform a physical and environment assessment, assist with identification of triggers, review medications and action plan and provide education.

**Program Logistics:**
- Two to three home visits, one visit every one to two weeks
- Home Environmental assessment
- Provision of environmental material such as a bed/pillow case covers to assist in trigger reduction for severe persistent asthma patients
- Summary of findings provided to the practitioner after completion
- Additional visits can be ordered by a physician if further intervention needed

**Program Patient Goals:**
- Knowledgeable of asthma action plan
- Environmental triggers identified with resolution assistance
- Compliance with medications
- Identify education opportunities

**Referral Process:**
Call (614) 355-1100 or (800) 466-2727. Have the following available so we may respond quickly to your referral:
- Type of insurance/payer
- Patient name, address, date of birth, diagnosis
- Physician ordering care
- Patient care/equipment/infusion need
School-Based Asthma Therapy (SBAT)

Frequently Asked Questions: for Primary Care Providers

What is SBAT?
School-Based Asthma Therapy (SBAT) is a program where children with uncontrolled persistent asthma can receive controller medication doses at school to improve compliance with these therapies. Patients in the SBAT program have experienced reduced emergency room utilization, reduced hospital admissions and reduced ICU stays.

How does SBAT compare to other school-based programs offered by Nationwide Children’s Hospital?
SBAT is a Nationwide Children’s school-based community outreach program that supports asthma medication compliance and regular assessment of asthma control. Management of the patient’s asthma remains in the primary care medical home (or at their pulmonary or allergy specialist’s office if the specialist has taken over the management of the asthma).

This differs from the Nationwide Children’s Care Connection program in which Nationwide Children’s sponsored nurse practitioners offer select health care services for students who do not have a medical home and for those who do not routinely seek care via a primary care physician. Nationwide Children’s has also partnered with area schools to provide in-school behavioral health programming and services.

How does it work?
• Asthma patients who have poor asthma control (e.g. frequent in school symptoms or frequent Emergency Department use) are referred to the program by a school nurse or clinician.

Nationwide Children’s
When your child needs a hospital, everything matters.

Return to Pathway
• The SBAT advanced practice nurse contacts the family to describe the program, obtain consent, and review current symptoms, medication use and asthma care provider.

• The child’s primary asthma provider (usually his/her primary care physician) is then contacted to make the final decision on enrollment and arrangements are made to handle the patient’s prescriptions.

• SBAT staff arrange for the delivery of asthma medication, spacer and administration orders to the school AND delivery of asthma medication to the home.

• The SBAT nurses (registered nurses) maintain close contact with the patient and family to perform follow up asthma controller test (ACT) scores, monitor symptoms, medication use and refills.

• SBAT staff will notify the primary asthma provider when the patient needs refills, or when the patient does not seem to be in good control to determine a course of action.

• SBAT staff can assist the patients in making appointments with the patient’s primary asthma provider, and remind parents of upcoming appointments.

Do I need to do anything differently in my practice?

To facilitate delivery of controller inhalers to both school and home, prescriptions need to be written in a standardized way, including “SBAT” designation in the “sig” section and sent or called to a Nationwide Children’s Pharmacy. SBAT staff can help pre-populate these prescriptions if desired.

Be prepared for SBAT-relayed patient asthma information from school staff. We’ve found parents are often unaware of (or underreport) poor asthma control during the day at school.

In patients with persistent poor control, SBAT staff may suggest strategies (e.g. higher dosing or BID dosing at school) that we’ve seen help other children in the program. Asthma care providers always have the “last word” on any medication changes.

Are there any costs to this program?

The program is free for all patients. For some patients with private insurance, there is a greater financial burden to receive two controller prescriptions at a time. In these cases, the SBAT staff tries to provide samples and refer patients to any assistance programs offered by the manufacturer.

Can I refer a patient to SBAT?

Yes. Providers are encouraged to refer patients if they think that poor asthma control may be due to a lack of adherence to the controller medication at home. If the patient is in a school, or district where SBAT is not currently present, there may be some limitations in that it may take longer to get the program set up or there may be geographic restrictions. Contact the program at SBAT@NationwideChildrens.org or (614) 355-5516 to refer or inquire about a referral. You can also download a referral form at NationwideChildrens.org/Asthma-Therapy-Program.
# Asthma Action Plan

<table>
<thead>
<tr>
<th>Name:</th>
<th>Asthma Severity:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exercise Induced</td>
</tr>
<tr>
<td></td>
<td>Intermittent</td>
</tr>
<tr>
<td></td>
<td>Moderate Persistent</td>
</tr>
<tr>
<td></td>
<td>Severe Persistent</td>
</tr>
</tbody>
</table>

## Green Zone: Doing Well
- All of these are true:
  - Breathing is great!
  - No coughing or wheezing
  - Asthma does not bother sleep or exercise

## Do These Things Every Day!
- Take these medicines every day:
  - Medicine
  - How to take
  - How Often
  - Use 15-20 minutes before exercise:
  - Watch out for these triggers:

## Yellow Zone: Symptoms Starting
- Any of these are happening:
  - Getting a cold
  - Coughing a lot
  - Wheezing
  - Having trouble breathing

## Start Relief Medicine!
- Medicine
  - How to take
  - How Often
  - Keep taking Green Zone Medicine

## Orange Zone: IN TROUBLE
- Relief medicine is not working:
  - Medicine not lasting 4 hours – symptoms coming back too soon
  - Constant coughing
  - Awake all night from asthma
  - Needing more than 4 doses of relief medicine in one day

## CALL YOUR DOCTOR FOR HELP!
- Doctor’s Name:  
  - Doctor’s Phone Number:  
  - Medicine
  - How to take
  - How Often
  - If you cannot reach your doctor and symptoms continue, go to urgent care or ER

## Red Zone: IN DANGER
- Breathing is bad:
  - Gasping (breathing hard and fast)
  - Ribs show when breathing
  - Neck or stomach caving in
  - Hard to talk or walk

## GET HELP NOW!
- Go to Closest ER or Dial 9-1-1
  - On the way take:
    - Medicine
    - How to take
    - How Often

---

[Nationwide Children’s](https://www.nationwidedchildrens.org)

*When your child needs a hospital, everything matters.*

[Return to Pathway](#)
Single Maintenance and Reliever Therapy (SMART) for Asthma

This therapy uses a single inhaler for both controller therapy (given every day) and reliever therapy (given during an asthma flare-up). This inhaler has a corticosteroid and a bronchodilator in the same device (Picture 1). It may be an option for children at least 4 years of age and older.

Corticosteroids, also called inhaled steroids, are medicines that prevent asthma flare-ups. Your child breathes them into the lungs. They are also called controller medicines because they help control asthma symptoms. They must be used every day. They also help your child during an asthma flare-up, and your child should still use the medicine during episodes when they have increased symptoms. Symptoms from flare-ups should get better in 2 to 3 weeks.

Bronchodilators are medicines that open up the airways. The bronchodilator in SMART therapy works as a controller by keeping airways open. It also acts as a reliever to quickly treat asthma flare-ups. During an asthma flare-up, your child uses the same inhaler for extra doses if they are having asthma symptoms.

Brand names for this medicine

- Symbicort® (budesonide/formoterol) HFA
- Dulera® (mometasone/formoterol) HFA

Picture 1 Taking the medicine with an inhaler and a spacer.
How to give this medicine

- **Controller therapy:** Typical dosing is 2 puffs, twice a day, EVERY DAY.

- **Reliever therapy:** Typical dosing FOR SYMPTOMS is based on age:
  - **4 to 11 years:** 1 puff every 4 hours, as needed (max total puffs from controller and reliever doses = 8 puffs per day)
  - **12 years and older:** 2 puffs every 4 hours, as needed (max total puffs from controller and reliever doses = 12 puffs per day)

- Read the label carefully. Make sure you are giving your child the right dose. It is easy to confuse the many different dosage forms and strengths.

- Give the exact dose of medicine that your child’s health care provider ordered.

- HFA inhalers are usually given with a spacer device, such as an AeroChamber® or OptiChamber®.

- Stay with your child until they have used the right dose of medicine.

- Shake this medicine before giving if it is a metered dose inhaler or liquid for a nebulizer.

- Do not shake this medicine if it is a dry powder inhaler.

- This medicine will usually be given twice daily. It is very important to give the medicine every day as ordered, even if your child is feeling fine. Do not change doses or stop the medicine without talking to your child’s health care provider.

- After each dose, your child should rinse their mouth with water or brush their teeth to wash out the steroid medicine.

- Keep a record of the remaining doses and when the medicine is given.

- Get this prescription refilled at least 5 days before the last dose is given. This is very important.

If you forget to give a dose

If you forget to give a scheduled dose of this medicine, give it as soon as possible. Then, give the next scheduled maintenance dose as long as it is at least 4 hours from the last dose given. **Do not** double the next dose.

Then, go back to your child’s regular dosing schedule. If you have any questions about this, check with your child’s health care provider or pharmacist.

If you need the inhaler more often than every 4 hours or the maximum doses have been used, seek emergency care or call the health care provider depending on your child’s Asthma Action Plan.
Inhalers: Spacers with Mask

Many medicines that help make breathing easier are taken by an inhaler. The inhaler must be used the right way, or the medicine will not get into the lungs to make your child feel better. A spacer is a device that helps the medicine get into the lungs. It holds the medicine from the inhaler until the person starts to breathe in. When the person breathes in, the medicine is pulled into the lungs. **Always use a spacer, no matter your child's age.**

There are many types of spacers that may work a little differently. This handout covers the type of spacer used at this hospital. If your spacer is different than the one described here, ask health care provider, respiratory therapist or pharmacist how to use it. Follow the directions for the spacer your doctor recommends.

**IMPORTANT:** Do not take more of this medicine than your health care provider prescribed. If you have any questions, or if the inhaler(s) is not helping as you think it should, contact your health care provider.

**How to use**

1. Check to make sure the spacer is clean. If it is not clean, please see how to clean the mask on page 2.
2. Remove the cap from the inhaler. If the inhaler has never been used before or has not been used in 2 weeks or longer, prime (or waste) the inhaler so medicine will come out.
   - To prime the inhaler, shake it and then push down on it 4 times. Spray the medicine into the air.
3. Put the mouthpiece of the inhaler into the rubber opening at the end of the spacer (Picture 1).
4. Hold the spacer and inhaler firmly. Shake briskly for 10 seconds.
5. Place the mask gently to the face so the nose and mouth are covered. Be sure to get a good seal between mask and face. Leaks will keep you from getting enough medicine. The valve allows you to breathe normally while the mask is held firmly in place.

6. Press down firmly on the inhaler to release only one puff of medicine (Picture 2).

7. Breathe in and out slowly 6 to 8 times.

8. If the health care provider has ordered more than one puff, wait at least 60 seconds and repeat steps 4 through 7.

![Picture 2] Press down to release one dose of medicine.

**Cleaning the spacer with mask**

1. About once a week, remove the backpiece from the end that holds the inhaler and the mask. The backpiece will look like a rubber ring.

2. Place the spacer, the backpiece and the mask in the dishwasher on the top rack OR soak all of the pieces in a bowl filled with warm, soapy water. Use a dish soap detergent to loosen any dirt. Do not use a washcloth or brush to clean it (Picture 3).

3. To rinse, rotate the spacer, backpiece and mask in a bowl of clean, warm water using a gentle motion. Do not use running water. Water pressure could ruin the valve in the spacer.

4. Lightly shake away extra water and leave them on a clean surface to air-dry. **Do not dry by rubbing it with a cloth.**

5. Make sure the spacer is completely dry. Attach the backpiece and mask.

![Picture 3] Clean the spacer, backpiece and mask once a week either by hand or in the top rack of the dishwasher.
Normal Airway
- Mucus Gland
- Muscle Layer
- Airway

Inflamed Airway
- Tightening muscle around airway
- Inflamed airway wall
- Mucus in airway

Impact of Inhalers
- Relaxes airway muscles (Albuterol in rescue inhaler)
- Prevents inflammation (Steroid in daily controller inhaler)
- Clear airway for breathing

Return to Pathway
Albuterol HFA
(Ventolin HFA, Proventil HFA and ProAir HFA)

200 puffs per inhaler

Reason for taking this medicine:
- To give you quick relief by opening the airways.
- This is a rescue medicine and should be used for coughing, wheezing, or shortness of breath.
- If you are in the yellow zone on your asthma action plan, use this medicine.
- If your doctor tells you, use this medicine 15-30 minutes before exercising.

How and when to take this medicine:
- Use a spacer with this inhaler.
- Use 2 puffs for coughing, wheezing, or shortness of breath.

The first time you use this inhaler:
- Shake and then push down on the inhaler 4 times to prime or waste inhaler.
- Spray the medicine into the air.
- The dose counter will be at 200 when it is ready for use.

1. Place the inhaler in the end of spacer.
2. Shake well for 10 seconds.
3. Turn your head to the side and breathe out.
1. Close your mouth around the mouthpiece of the spacer.
   - Push down on the inhaler.
   - **Take a slow deep breath.**
   - If the spacer makes a whistle sound, breathe in slower.

2. Hold your breath for 10 seconds.

3. Wait 1 minute.

4. **Repeat steps 3-6 for second puff.**

---

**Wait at least 4 hours between uses.**

**Possible side effects:**

- Fast heartbeat
- Can make you hyper or cause your body to shake
- Can make you fussy
- Sore throat
- Headache

---

*Return to Pathway*
Call the doctor or clinic if:

- Medicine does not help your coughing, wheezing, or shortness of breath.
- You need to use your inhaler in less than 4 hours. Use 2 more puffs and go to your doctor's office, urgent care, ER, or call 9-1-1.
- You need to use your inhaler more than 2 days a week for coughing, wheezing, or shortness of breath.
- You have questions about this medicine or how to use it.

Important things to remember:

- If you do not use this inhaler in 2 weeks, prime or waste 1 puff before using.
- Never put the metal canister in water.
- Clean the inhaler each week:
  - Do not remove the metal canister. Use a cotton swab to clean the opening where the medicine sprays out.
- Clean spacer and mask each week:
  - Soak in warm soapy water for 15 minutes.
  - Run warm water through it, shake off water and set out to dry.
- This inhaler has a dose counter to tell you when the inhaler is empty. Refill your inhaler when the dose counter shows "20."

How to store:

- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
Albuterol for the nebulizer
2.5mg/3mL solution

Reason for taking this medicine:
- To give you quick relief by opening the airways.
- This is a rescue medicine and should be used for coughing, wheezing, or shortness of breath.
- If you are in the yellow zone on your asthma action plan, use this medicine.
- If your doctor tells you, use this medicine 15-30 minutes before exercising.

How and when to take this medicine:
- Use with a nebulizer machine.
- Use 1 vial for coughing, wheezing, or shortness of breath.

1. Twist open 1 vial.

2. Lift cap off nebulizer.

3. Empty the liquid into the nebulizer chamber.

4. Put cap back onto nebulizer.
5. Children 6 years and older:
   - Use a mouthpiece
   - Sit up and breathe in and out

6. Children under 6 years old:
   - Use mask
   - Sit up and breathe in and out

7. Turn on the nebulizer.

8. It will take 10-15 minutes to get the full treatment. The nebulizer will start to sputter near the end of the treatment. Turn off the nebulizer when the chamber is empty.

Wait at least 4 hours between uses.

Possible side effects:

- Fast heartbeat.
- Can make you hyper or cause your body to shake.
- Can make you fussy
- Sore throat
- Headache

Call the doctor or clinic if:

- Medicine does not help your coughing, wheezing, or shortness of breath.
- You need to use a breathing treatment in less than 4 hours. Use 1 or 2 more vials and go to your doctor's office, urgent care, ER, or call 9-1-1.
- You need to use a breathing treatment more than 2 days a week for coughing, wheezing, or shortness of breath.
- You have questions about this medicine or how to use it.
Important things to remember:
- Clean nebulizer machine daily.
  - Unscrew plastic chamber.
  - Soak in warm soapy water for 15 minutes.
  - Run water through it, shake off water, and set out to dry.

How to store:
- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
Flovent® HFA
(Fluticasone propionate with spacer and mask)
Metered dose inhaler

Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- **This is a medicine that must be used every day.**

How and when to take this medicine:
- Use a spacer and mask with this inhaler.
- Use 2 times each day – 2 puffs in the morning and 2 puffs in the evening.

1. The **first time** you use this inhaler:
   - Shake and then push down on the inhaler 4 times to prime or waste the inhaler.
   - Spray the medicine into the air.
   - Dose counter should show: “120.”

2. Place the **inhaler** in the end of spacer.

3. Shake well for 10 seconds.

4. Place mask tightly over the nose and mouth.
   - Push down on the inhaler.
   - **Take slow deep breaths.**

5. Breathe in and out 6 times.

6. Wait 1 minute.

7. Repeat steps 3–6 for second puff.

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Use the information on this sheet only after your healthcare provider has talked with you about it and explained how to use this medicine. The information on this sheet does not replace your healthcare provider's instructions or advice.

Return to Pathway
Possible side effects:
- Dry mouth
- Sore throat
- Hoarse voice
- Headache

Call the doctor or clinic if:
- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:
- Fill mouth with water
- Swish around water
- Spit out water

- **Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.**
- If you suddenly have trouble breathing, **use your rescue inhaler, albuterol.**
- Flovent® HFA may take a few weeks before it starts to work.
  - **Use this medicine until your doctor tells you to stop.**
- Never put metal canister in water.
- Clean plastic holder each week:
  - Flovent® has a built-in counter; do not remove the metal canister. Use a cotton swab to clean the opening where the medicine sprays out of the canister.
- Clean spacer and mask each week:
  - Soak in warm soapy water for 15 minutes.
  - Run warm water through it, shake off water and set out to dry.
- Flovent® HFA has a dose counter to tell you when the inhaler is empty.
  - **Refill your inhaler when the dose counter shows: “020”.**

How to store:
- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
Asmanex® HFA
(Mometasone furoate with spacer and mask)
Metered dose inhaler

Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs
- This is a controller medicine and will not work if you are coughing, wheezing, or have shortness of breath.
- This is a medicine that must be used every day.

How and when to take this medicine:
- Use a spacer and mask with this medicine.
- Use two (2) times each day – 1 or 2 puffs in the morning and 1 or 2 puffs in the evening.

1. The first time you use this inhaler:
   - Shake and then push down on the inhaler 4 times to prime or waste the inhaler.
   - Spray the medicine into the air.
   - The dose counter should show: 120.

2. Place the inhaler in the end of the spacer.

3. Shake well for 10 seconds.

4. Place mask tightly over the nose and mouth.
   - Push down on the inhaler.
   - Take slow, deep breaths.

5. Breathe in and out 6 times.

6. Wait 1 minute.

7. Repeat steps 3-5 for second puff.
Possible side effects:

- Dry mouth
- Sore throat
- Hoarse voice
- Headache

Call the doctor or clinic if:

- You are exposed to chickenpox or measles.
- You see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:

- **Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.**
- If you are suddenly having trouble breathing, **use your rescue inhaler, albuterol.**
- Asmanex® HFA may take a few weeks before it starts to work. **Use this medicine until your doctor tells you to stop.**
- Clean plastic holder each week:
  - Asmanex® HFA has a built-in counter; do not remove the metal canister.
  - Use a cotton swab to clean the opening where the medicine sprays out the canister.
  - Wipe down the outside of the plastic holder with a dry lint-free cloth.
- Clean spacer and mask each week:
  - Soak in warm soapy water for 15 minutes.
  - Run water through it, shake off water, and set out to dry.
- Asmanex® HFA has a dose counter to tell you when the inhaler is empty.
- **Refill your inhaler when the dose counter shows: “020.”**

How to store:

- Store in a cool dry cabinet.
- Do not store in bathroom.
- **Keep out of reach of children.**
Asmanex® Twisthaler®
(Mometasone furoate)
in 30, 60, or 120 doses
Dry powder inhaler

Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- This is a medicine that must be used every day.

How and when to take this medicine:

Use 1 or 2 times each day, as directed by your doctor.

1. Open the inhaler
   - Hold inhaler upright with the colored base on the bottom.
   - Hold the bottom and twist the white cap to the left, you will hear and feel a click.
   - Lift the cap off.
   - Make sure the arrow is lined up with the dose counter.
   - Do not shake the inhaler.
2. **Inhale a dose**
   - Turn your head to the side and **breathe out**
     - Do not breathe into the inhaler
   - Close mouth tightly around the mouthpiece.
   - **Breathe in fast and deep through the mouthpiece.**
     **SUCK LIKE A MILKSHAKE!**
   - You may not feel or taste the medicine.

3. **Hold your breath for 10 seconds.**

4. Replace the cap and twist it to the right until it clicks. The cap must be closed to load the next dose.

**Possible side effects:**
- Dry mouth
- Sore throat
- Hoarse voice
- Headache
Call the doctor or clinic if:

- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:

- Fill mouth with water
- Swish around water
- Spit out water

- **Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.**
- If you suddenly have trouble breathing, use your rescue inhaler, **albuterol**.
- Asmanex® may take a few weeks before it starts to work.
  - **Use this medicine until your doctor tells you to stop.**
- Wipe the mouthpiece with a dry cloth after each use.
- **Refill your inhaler every 30 days or when the dose counter shows “05”**.

How to store:

- Store in cool dry cabinet.
- Do not store in bathroom.
- **Keep out of reach of children.**
Pulmicort Flexhaler™ (Budesonide)

Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- This is a medicine that must be used every day.

How and when to take this medicine:

1. Open the inhaler:
   - Hold in the upright position with the brown base on the bottom.
   - Twist and lift off the white cover.

2. Twist and Click:
   - Hold the inhaler in the middle with your finger and thumb of one hand, and twist the brown base all the way in one direction and then all the way in the other direction.
   - You will hear it click.
   - Repeat this step a second time.
   - You will not need to prime the Flexhaler unit again.

3. Inhale a dose:
   - Turn your head to the side and breathe out – do not breathe into the inhaler.
   - Close mouth tightly around the mouthpiece.
   - Breathe in fast and deep through the mouthpiece. SUCK LIKE A MILKSHAKE!
   - You may not feel or taste the medicine.

4. Hold your breath for 10 seconds.
Possible side effects:
- Dry mouth
- Sore throat
- Hoarse voice
- Headache

Call the doctor or clinic if:
- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:
- Fill mouth with water
- Swish around water
- Spit out water

- Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.
- If you are suddenly having trouble breathing, use your rescue inhaler, albuterol.
- Pulmicort Flexhaler™ may take a few weeks before it starts to work
  - Use this medicine until your doctor tells you to stop.
- Pulmicort Flexhaler™ has a built in dose counter to tell you when the inhaler is empty.
- Refill your inhaler when the dose counter shows “20”.

How to store:
- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
**Symbicort®**
(Budesonide and Formoterol with spacer and mask)

**Metered dose inhaler**

**Reason for taking this medicine:**
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- **This is a medicine that must be used every day.**

**How and when to take this medicine:**

1. Use a **spacer and mask with this inhaler.**
2. Use 2 times each day - 2 puffs in the morning and 2 puffs in the evening.
3. The **first time** you use this inhaler:
   - Shake and then push down on the inhaler 4 times to prime or waste the inhaler.
   - Spray the medicine into the air.
   - The dose counter should show “120.”
4. Place **inhaler** in the end of spacer.
5. Shake well for 10 seconds.
6. Place mask tightly over the nose and mouth.
   - Push down on the inhaler.
   - **Take slow deep breaths.**
7. Breathe in and out 6 times.
8. Wait 1 minute
   - Repeat steps 3-5 for second puff.
Possible side effects:
- Dry mouth
- Sore throat
- Hoarse voice
- Headache
- Fast heartbeat
- Can make you hyper or cause your body to shake.

Call the doctor or clinic if:
- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:
- Fill mouth with water
- Swish around water
- Spit out water
- Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.
- If you suddenly have trouble breathing, use your rescue inhaler, albuterol.
- SYMBCORT® may take a few weeks before it starts to work. - Use this medicine until your doctor tells you to stop.
- Never put metal canister in water.
- Clean plastic holder each week: - SYMBCORT® has a built-in counter; do not remove the metal canister. Use a cotton swab to clean the opening where the medicine sprays out of the canister.
- Clean spacer and mask each week: - Soak in warm soapy water for 15 min. - Run water through it, shake off water and set out to dry.
- SYMBCORT® has a dose counter to tell you when the inhaler is empty.
- Refill your inhaler when the dose counter shows “020.”
- Throw the inhaler away 3 months after taking it out of the foil pouch, even if you have not used it all.

How to store:
- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
**Dulera®**
*Mometasone and Formoterol with spacer and mask*
**Metered dose inhaler**

**Reason for taking this medicine:**
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- **This is a medicine that must be used every day.**

**How and when to take this medicine:**
- Use a spacer and mask with this inhaler.
- Use 2 times each day – 2 puffs in the morning and 2 puffs in the evening.

1. **The first time you use this inhaler:**
   - Shake and then push down on the inhaler 4 times to prime or waste the inhaler.
   - Spray the medicine into the air.
   - The dose counter should show “120.”

2. Place the *inhaler* in the end of the spacer.

3. Shake well for 10 seconds.

4. Place mask tightly over the nose and mouth.
   - Push down on the inhaler.
   - Take slow, deep breaths.

5. Breathe in and out 6 times.

6. Wait 1 minute.

7. **Repeat steps 3-5 for second puff.**
Possible side effects:

- Dry mouth
- Sore throat
- Hoarse voice
- Headache
- Fast heartbeat
- Tremor or nervousness

Call the doctor or clinic if:

- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:

- **Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.**
- If you are suddenly having trouble breathing, **use your rescue inhaler, albuterol.**
- Dulera® may take a few weeks before it starts to work.  
  - *Use this medicine until your doctor tells you to stop.*
- Never put metal canister in water.
- Clean plastic holder each week:
  - Dulera® has a built-in counter; do not remove the metal canister.
  - Use a cotton swab to clean the opening where the medicine sprays out of the canister.
- Clean spacer and mask each week:
  - Soak in warm soapy water for 15 minutes.
  - Run water through it, shake off water, and set out to dry.
- Dulera® has a dose counter to tell you when the inhaler is empty.
  - **Refill your inhaler when the dose counter shows “020.”**

How to store:

- Store in a cool dry cabinet.
- Do not store in bathroom.
- **Keep out of reach of children.**
Advair® HFA
(Fluticasone and Salmeterol with spacer and mask)

Metered dose inhaler
☐ 45/21 mcg  ☐ 115/21 mcg  ☐ 230/21 mcg

Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- This is a medicine that must be used every day.

How and when to take this medicine:
- Use a spacer and mask with this inhaler.
- Use 2 times each day - 2 puffs in the morning and 2 puffs in the evening.

1. The first time you use this inhaler:
   - Shake and then push down on the inhaler 4 times to prime or waste the inhaler.
   - Spray the medicine into the air.
   - The dose counter should show “120.”

   Place inhaler in the end of spacer.

2. Shake well for 10 seconds.

3. Place mask tightly over the nose and mouth.
   - Push down on the inhaler.
   - Take slow deep breaths.

4. Breathe in and out 6 times.

5. Wait 1 minute

6. Repeat steps 3-5 for second puff.
Possible side effects:

- Dry mouth
- Sore throat
- Hoarse voice
- Headache
- Fast heartbeat
- Can make you hyper or cause your body to shake.

Call the doctor or clinic if:

- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in the mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:

- Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid getting thrush.
- If you suddenly have trouble breathing, use your rescue inhaler, albuterol.
- ADVAIR® may take a few weeks before it starts to work. Use this medicine until your doctor tells you to stop.
- Never put metal canister in water.
- Clean plastic holder each week:
  - Advair® has a built-in counter; do not remove the metal canister. Use a cotton swab to clean the opening where the medicine sprays out of the canister.
  - Clean spacer and mask each week:
    - Soak in warm soapy water for 15 min.
    - Run water through it, shake off water and set out to dry.
  - Advair® has a dose counter to tell you when the inhaler is empty.
  - Refill your inhaler when the dose counter shows “020.”
  - Throw the inhaler away 1 month after taking it out of the foil pouch, even if you have not used it all.

How to store:

- Store in a cool dry cabinet.
- Do not store in bathroom.
- Keep out of reach of children.
**Advair Diskus**
(Fluticasone/ Salmeterol)

 Reason for taking this medicine:
- To help reduce and prevent swelling in the lungs.
- This is a controller medicine and will not help if you are coughing, wheezing or have shortness of breath.
- **This is a medicine that must be used every day.**

How and when to take this medicine:

- **Use 2 times each day - 1 puff in the morning and 1 puff in the evening.**

1. Hold the Advair Diskus’ in one hand, and put the thumb of your other hand on the thumb grip to slide Diskus’ open.

2. Place thumb on lever and push your thumb away from you as far as it will go until you hear a click.

3. Turn your head to the side and **breathe out** - do not breathe into the inhaler.

4. Hold the Diskus’ flat.
   - Close mouth tightly around the mouthpiece.
   - **Breathe in fast and deep through the mouthpiece.**
   - **HOLD LIKE A HAMBURGER – SUCK LIKE A MILKSHAKE!**
   - **You may not feel or taste the medicine**

5. Hold your breath for 10 seconds.

6. Close the Diskus’ when you are finished so it will be ready for your next dose.
Possible side effects:
- Dry mouth
- Sore throat
- Hoarse voice
- Headache
- Fast heartbeat
- Can make you hyper or cause your body to shake

Call the doctor or clinic if:
- You are exposed to chickenpox or measles.
- You can see blood when you spit.
- You have white spots in your mouth, called thrush.
- You have questions about this medicine or how to use it.

Important things to remember:
- Fill mouth with water
- Swish around water
- Spit out water

- **Rinse your mouth out with water, brush teeth, or get a drink after every use. This can help avoid thrush.**
- **If you suddenly have trouble breathing, use your rescue inhaler, albuterol.**
- **Advair® may take a few weeks before it starts to work. Use this medicine until your doctor tells you to stop.**
- Wipe the mouthpiece with a dry cloth after each use.
- Advair® has a dose counter to tell you when the inhaler is empty.
- **Refill your inhaler when the dose counter shows “10.”**
- **Throw the Diskus® away 1 month after taking it out of the foil pouch, even if you have not used it all.**

How to store:
- Store in a cool dry cabinet.
- Do not store in bathroom.
- **Keep out of reach of children.**