Patient presents with respiratory signs & symptoms suggesting asthma – cough, wheezing, SOB, chest tightness

**Diagnosis: History and Physical**
- Consider symptom pattern, precipitating factors, patient/family hx of atopy, “colds” lasting > 10 days (a)
- Perform spirometry – if normal (FEV₁ > 80% & normal FEV₁/FVC) consider bronchial challenge test; if abnormal, do pre/post bronchodilator (nebulized albuterol or 4 puffs albuterol MDI). If FEV₁ improves ≥12% or 200 ml, treat for asthma. If asthma diagnosis is indicated, proceed.

Assess **SEVERITY** if newly diagnosed or **LEVEL** of **CONTROL** in established asthmatics and Educate
- Administer Asthma Control Test (for patients on established medication for asthma) (b)
- Categorize level/severity (for patients not on controller medication for asthma) (Table 1 or c)

Assign to one of six treatment steps based on severity or level of control (f); also treat co-morbidities (i.e. allergic rhinitis, GERD, etc.)

### Step 1 (Intermittent Asthma)
- Preferred: SABA PRN (inhaled short-acting β₂-agonist)

Use treatment step necessary to gain and maintain control. Reassess at each asthma visit. Exacerbations may require stepping up and a short course of oral corticosteroids. If using reliever for symptoms > 2 days for weeks, step up therapy. *Do not use LABA alone without daily anti-inflammatory medicine.*

### Step 2 (Persistent Asthma)
- Preferred: SABA PRN + Low-dose ICS
- Alternative: see Table g

### Step 3 (Persistent Asthma)
- Preferred: SABA PRN + Low-dose ICS (inhaled corticosteroid) + LABA* (inhaled long-acting β₂-agonist)
- Or
- Medium-dose ICS
- Alternative: see Table g

### Step 4 (Persistent Asthma)
- Preferred: SABA PRN + Medium-dose ICS + LABA* Or Medium-dose ICS
- Alternative: see Table g

### Step 5 (Persistent Asthma)
- Preferred: SABA PRN + High-dose ICS + LABA* AND
- Consider Omalizumab for patients with allergies

### Step 6 (Persistent Asthma)
- Preferred: SABA PRN + High-dose ICS + LABA* + oral corticosteroid AND
- Consider Omalizumab for patients with allergies

**Education**
- Educate: Medication use: Controller vs. Reliever, Indications, Adverse Reactions
- Educate: Inhaler technique; peak flow (PF) meter use (consider in moderate to severe persistent asthma or difficult to manage)
- Educate: Identification & avoidance of triggers (d), smoking cessation if needed (e) as needed
- Educate: Annual influenza vaccination and update pneumococcal vaccine for ages ≥19, consider booster over age 65
- Outline Asthma Action Plan (d): monitor symptom and reliever medicine use, guidelines for seeking medical help

**Reassess**
- Follow up well controlled every 1-6 months, every 2-6 weeks for partly controlled, and at 2 weeks for uncontrolled patients. Consider stepping down therapy after 3 months of control. Do ACT (Asthma Control Test) at every visit. Review Action Plan every visit. Consider screening for depression/anxiety.

**Consider These Before Stepping Up**
- Reassess medication adherence (especially daily use of controller)
- Evaluate inhaler technique
- Adherence to environmental control
- Investigate other possible precipitating factors (i.e. allergens, GERD, Sinus infection, Beta-blocker use, vocal cord dysfunction, etc) or asthma mimickers (Cystic Fibrosis, Alpha-1 antitrypsin deficiency)
- Consider consultation with asthma specialist (pulmonologist or allergist) if needing step 3 therapy; consult if needing step 4 or higher

**Goals of therapy met (h); ACT > 20 with optimal spirometry and asymptomatic**
- Yes
- No

Follow up at 6 month intervals:
- ACT and action plan
- Tobacco use
- Flu shot
- Medication review
- Spirometry at least every 1-2 years

SC Adult Asthma Practice Guidelines (age 12 and older)
Wheezing

In the past 4 weeks, how much of the time did your asthma symptoms respond to anti-inflammatory therapy?

Arrange medications to ensure maintenance of normal activity levels

Symptoms occur or worsen at night, awakening earlier than usual in the morning?

Symptoms occur or worsen in a seasonal pattern

History of any of the following:&Family history of asthma or atopic diseases

Patient has eczema, hay fever or family history of asthma or atopic diseases

Symptoms occur or worsen in presence of animal fur, aerosol chemicals, change in temperature, domestic dust mites, drugs (aspirin, beta blockers), pollen, respiratory viral infections, smoke, strong emotional expression

Symptoms exacerbated by aerobic activity

Symptoms respond to anti-asthma therapy

Patient's colds "go to chest" & last > 10 days

Table a: Asthma Signs, Symptoms and Triggers

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home? 1= all of the time, 2= most of the time, 3= some of the time, 4= a little of the time, 5= None of the time

2. During the past 4 weeks, how often have you had shortness of breath? 1=More than once a day, 2=once a day, 3=3-6 times a week, 4=once or twice a week, 5=not at all

3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning? 1=4 or more nights a week, 2=2 or 3 nights a week, 3=once a week, 4=once or twice a week, 5=not at all

4. During the past 4 weeks, how often have you used our rescue inhaler or nebulizer medication (such as albuterol)? 1=3 or more times per day, 2=1 or 2 times per day, 3=2-3 times per week, 4=once a week or less, 5=not at all

5. How would you rate your asthma control during the past 4 weeks? 1=not controlled at all, 2=poorly controlled, 3=somewhat controlled, 4=well controlled, 5=Completely controlled

Add all scores together. A score of 19 or less, indicates asthma that is not under control.

Table b: Asthma Control Test TM (ACT)

All questions are answered and scored with the following key:

Therapy Goals

Meet patient/family care expectations

Maintain normal activity levels

Prevent recurrent exacerbations and urgent care needs

No to minimal medication adverse effects

Table h: Asthma Therapy Goals

Prevent chronic and troublesome symptoms

Require infrequent symptoms-related SABA use (< 2x/week)

Maintain near normal pulmonary function/ prevent loss of lung function

Maintain normal activity levels

Meet patient/family care expectations

Prevent recurrent exacerbations and urgent care needs

No to minimal medication adverse effects

Table g: Alternative Medicine for step 2, 3 and 4

Step 2: Cromolyn, LTRA, Nedocromil, or Theophylline

Step 3: Low-dose ICS + either LTRA, Theophylline or zileuton

Step 4: Low-dose ICS + either LTRA, Theophylline or zileuton

Table f: Medication Abbreviations

Relievers:

SABA – inhaled short-acting beta2-agonist

Controllers

ICS – inhaled corticosteroid

LABA – inhaled long-acting beta2-agonist

LTRA – Leukotriene receptor antagonist

Table e: Guideline for Treating Tobacco Dependence

1. Ask – document tobacco use at every visit

2. Advise – strongly urge all tobacco users to quit

3. Assess – determine willingness to make a quit attempt

4. Assist – aid the patient in quitting; set quit date

5. Arrange – refer to resources such as quit lines, give prescription for medications as needed.

6. www.smokefree.gov

Table d: See Attached action plan and trigger sheet

Action Plan (self-management plan): written instructions include what to do daily when well, when symptoms start, when urgent care is needed, medication doses and purposes.

Source Control – Individualized: avoidance or decreasing exposure leads to greater control and often need for less medications. (See Table a for triggers.)

Table c: Classification of Asthma Severity

Use for initial classification if patient not on controller medicine for asthma

1. Intermittent – Symptoms ≤ 2 days/week; nighttime awakenings ≤2x/month; reliever use for symptoms ≤ 2 days/week; activity interference none; lung function normal between flare-ups. (Initial therapy started on Step 1)

2. Mild Persistent - Symptoms > 2 days/week but not daily; nighttime awakenings 3-4x/month; reliever use for symptoms ≥2 days/week but not daily; activity interference minor limitation; lung function FEV1 > 80%, FEV1/FVC normal. (Initial therapy started on Step 2).

3. Moderate Persistent - Symptoms daily; nighttime awakenings > 1x/week but not nightly; reliever use for symptoms daily; activity interference some limitation; lung function normal FEV1 > 60% but < 80%, FEV1/FVC reduced 5%. (Initial therapy started on Step 3).

4. Severe Persistent - Symptoms throughout the day; nighttime awakenings often 7x/week; reliever use for symptoms several time/day; activity interference extremely limited; lung function normal FEV1 < 60%, FEV1/FVC reduced > 5%. (Initial therapy started on Step 4 or 5).

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### Table 1: Assessing Asthma Control & Adjusting Therapy

<table>
<thead>
<tr>
<th>Components of Control</th>
<th>Well Controlled (all of the following)</th>
<th>Not Well Controlled (Any measure present in any week)</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daytime symptoms</td>
<td>≤ 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Throughout day</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>&lt; 2x/month</td>
<td>1-3 x/week</td>
<td>&gt; 4x/week</td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>Need for reliever/rescue treatment (not EIB* prevention)</td>
<td>&lt; 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Several times/day</td>
</tr>
<tr>
<td>Lung function (PEF or FEV1)</td>
<td>&gt;80% personal best</td>
<td>60-80% predicted/personal best</td>
<td>&lt; 60% predicted/personal best</td>
</tr>
<tr>
<td>Exacerbations</td>
<td>None</td>
<td>One or more/year*</td>
<td>One in any week</td>
</tr>
<tr>
<td>ACT</td>
<td>&gt; 20</td>
<td>16-19</td>
<td>&lt;15</td>
</tr>
<tr>
<td>Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exacerbations requiring oral steroids</td>
<td>0-1 year</td>
<td>&gt; 2/year</td>
<td></td>
</tr>
<tr>
<td>Progressive loss of lung function</td>
<td>Evaluation</td>
<td>requires long-term</td>
<td>Follow up care</td>
</tr>
<tr>
<td>Treatment-related adverse effects</td>
<td>Monitor &amp; adjust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended</td>
<td>Action (see steps)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain current step. Follow-up 1-6 months. Consider step down if well controlled for at least 3 months.</td>
<td>Step up 1 step. Reevaluate in 2-6 weeks. For side effects, consider alternate options.</td>
<td>Consider short course oral steroid. Step up 1-2 steps. Reevaluate in 2 weeks. For side effects, consider alternative treatment options</td>
<td></td>
</tr>
</tbody>
</table>

* EIB = Exercise induced bronchospasm. Preferred treatment is 2 puffs short-acting beta₂-agonist 15-30 minutes prior to activity. If not controlled, treat as persistent asthma at lowest possible step to achieve control.

### Table i: PHQ-4

A 4-item screening for anxiety and depression. Scores ranges from a score of 0 to 12, (i.e., the higher the score, the more likely there is an underlying depressive or anxiety disorder). A higher score means further evaluation is needed.
References:

Pocket Guide for Asthma Management and Prevention: A pocket guide for physicians and Nurses Updated 2008 form the Global Initiative for Asthma


ACT: American Lung Association

Treating Tobacco Use and Dependence, U.S. Department of Health and Human Services, 2000