Advances in Asthma Management: 2019 Update

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Disclosures

• No financial disclosures
Objectives

• Define Asthma & Discuss its Impact

• Discuss Diagnostic Strategies

• Learn Ways in Which we Educate Patients

• Review Updated Management Guidelines

• Discuss When to Refer

• Tips & Tricks
  • Resources for Doctors
  • Resources for Patients
Impact of Asthma in the US

- 7th most costly illness
- ~ $80 billion annually
- 15.4 million treated in the US annually
- ~3200 annual deaths in the US
- 8.7 million missed days at work
- 5.2 million missed days at school
Impact of Asthma in Arizona

• More than 615,000 residents have asthma
• About 100 Arizona residents die of asthma each year
• $115 million spent (largest payor is AHCCCS)

The 2016 Arizona Asthma Burden Report, Arizona Department of Health Services
What is asthma?
Some Definitions for Doctors

• “A common chronic disorder of the airways that is complex and characterized by variable and recurring symptoms, airflow obstruction, bronchial hyper-responsiveness, and underlying inflammation. The interaction of these features of asthma determines the clinical manifestations and severity of asthma and the response to treatment”
  • Expert Panel 3 of the National Asthma Education and Prevention Program

• “A heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness, and cough that vary over time and in intensity, together with variable expiratory airflow limitation.”
  • The Global Initiative for Asthma
What is asthma?  
A Definition for Patients

- Asthma is a chronic disease of the lungs and airways that is characterized by:

  1. Sensitivity to certain triggers (viral, allergic, occupational, environmental)
  2. Airway inflammation
  3. Symptoms that vary in severity/come and go
  4. Can be controlled with avoidance of triggers and appropriate use of controller medications
  5. Should not be treated with rescue medications alone
Primary Care at the Frontlines

1. Diagnose asthma
2. Educate patients
3. Initiate treatment
4. Assess response to treatment
5. Adjust treatment as necessary
6. Management of exacerbations
7. Refer
Diagnosis of Asthma

Does patient have respiratory symptoms typical of asthma?

Does history/exam support an asthma diagnosis?

Clinical urgency to treat?

Empiric Treatment

Assess for symptom improvement

Spirometry or Peak Flow Supportive of Diagnosis?

Treat Alternative diagnosis/repeat testing/refer

Obtain further history/testing

YES

YES

YES

YES

NO

NO

NO

YES
Beware - Asthma Mimics

• Remember – “Not all that wheezes is asthma!”

• Asthma Differential:
  1. Stridor
  2. Vocal cord dysfunction
  3. Bronchogenic tumor
  4. Foreign body aspiration
  5. Post-viral tussive syndrome
  6. ACEi induced cough
  7. Infection with Bordetella pertussis
  8. Chronic bronchitis
  9. Heart failure
  10. Other lung diseases – sarcoidosis, bronchiectasis, emphysema, certain types of interstitial lung disease
  11. Hyper-eosinophilic syndromes
Educate your patients!

• Define asthma in a way they can understand

• Discuss ways in which to prevent exacerbations
  • Hand washing
  • Avoidance of triggers
  • And if triggers can’t be avoided . . .
  • Management of triggers
    • Allergist, antihistamines, leukotriene inhibitors
    • H2 blocker/PPI for GERD
    • Management of sinusitis/rhinitis
    • Smoking cessation
    • Occupational exposure management
    • Treatment of OSA
Educate your patients!

- Discuss differences between controller medications and rescue medications
  - Help them find ways to remember which medication is controller, which is rescue.
  - Help them find ways to remember to take their controller meds

- Assist with teaching patients how to use their medications
  - National Jewish Videos
  - Drug company websites
  - Apps available for smart phones
ASTHMA CONTROL TEST™

Know your score.
The Asthma Control Test™ provides a numerical score to help you and your healthcare provider determine if your asthma symptoms are well controlled.

Take this test if you are 12 years or older. Share the score with your healthcare provider.

**Step 1:** Write the number of each answer in the score box provided.

**Step 2:** Add up each score box for the total.

**Step 3:** Take the completed test to your healthcare provider to talk about your score.

**IF YOUR SCORE IS 19 OR LESS,** Your asthma symptoms may not be as well controlled as they could be. **No matter what the score, bring this test to your healthcare provider to talk about the results.**

**NOTE:** If your score is 15 or less, your asthma may be very poorly controlled. Please contact your healthcare provider right away. There may be more you and your healthcare provider could do to help control your asthma symptoms.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>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?</td>
<td>4 or more nights a week [1] 2 to 3 nights a week [2] Once a week [3] Once or twice [4] Not at all [5]</td>
<td></td>
</tr>
<tr>
<td>4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?</td>
<td>3 or more times per day [1] 1 to 2 times per day [2] 2 or 3 times per week [3] Once a week or less [4] Not at all [5]</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL:  

Copyright 2002, by QualityMetric Incorporated.
Asthma Control Test is a trademark of QualityMetric Incorporated.

This material was developed by GSK.
At their appointments

- Assess inhaler usage, technique at follow up visits
  - Have them bring their inhalers and check the counters
  - Have them demonstrate how they give themselves their medication
  - Ask about frequency of refills of controller vs rescue inhalers
  - Have someone in the office pay attention to those notices that the insurance companies/pharmacies send you
  - Consider joining some of the asthma tracking services – but this will cost you some $
**ASTHMA ACTION PLAN**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor:</td>
<td>Medical Record #:</td>
</tr>
<tr>
<td>Doctor's Phone #:</td>
<td>Day:</td>
</tr>
<tr>
<td>Emergency Contact:</td>
<td></td>
</tr>
<tr>
<td>Doctor's Signature:</td>
<td></td>
</tr>
</tbody>
</table>

**Personal Best Peak Flow:**

<table>
<thead>
<tr>
<th>Peak Flow:</th>
<th>from</th>
<th>to</th>
</tr>
</thead>
</table>

**GO**

Use these daily controller medicines:

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>HOW MUCH</th>
<th>HOW OFTEN/WHEN</th>
</tr>
</thead>
</table>

For asthma with exercise, take:

**CAUTION**

Continue with green zone medicine and add:

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>HOW MUCH</th>
<th>HOW OFTEN/WHEN</th>
</tr>
</thead>
</table>

**DANGER**

Take these medicines and call your doctor now.

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>HOW MUCH</th>
<th>HOW OFTEN/WHEN</th>
</tr>
</thead>
</table>

**GET HELP FROM A DOCTOR NOW!** Your doctor will want to see you right away. It’s important! If you cannot contact your doctor, go directly to the emergency room. **DO NOT WAIT.**

Make an appointment with your asthma care provider within two days of an ER visit or hospitalization.
Goals of Treatment

1. Reduce symptoms/impairment
2. Prevent hospitalizations
3. Prevent loss of lung function
4. Minimize adverse events from medications
## Determine Asthma Severity

<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>Symptoms</td>
<td>2 or fewer days per week</td>
<td>&gt; 2 days per week, but not daily</td>
<td>Daily</td>
<td>All day, every day</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nighttime</td>
<td>2 or fewer nights per month</td>
<td>3-4 nights per month</td>
<td>&gt; 1 per week but not nightly</td>
<td>Nightly or nearly so</td>
</tr>
<tr>
<td>awakenings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SABA use</td>
<td>2 or fewer days per week</td>
<td>&gt; 2 days per week but not daily and not more than 1x on any day</td>
<td>Daily</td>
<td>Several times per day</td>
</tr>
<tr>
<td>Interference</td>
<td>None</td>
<td>Minor</td>
<td>Some</td>
<td>Extremely limited</td>
</tr>
<tr>
<td>with normal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Box 3-5A. Personalized management for adults and adolescents to control symptoms and minimize future risk

**Adults & adolescents 12+ years**

**Personalized asthma management:**
Assess, Adjust, Review, Response

- Symptoms
- Exacerbations
- Side-effects
- Lung function
- Patient satisfaction

**Asthma medication options:**
Adjust treatment up and down for individual patient needs

**PREFERRED CONTROLLER**
To prevent exacerbations and control symptoms

- Other controller options

**PREFERRED RELIEVER**
Other reliever option

**ASSESS**

**STEP 1**
Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol 

- Low dose ICS taken whenever SABA is taken†

**STEP 2**
Leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken†

**STEP 3**
Medium dose ICS-LABA

**STEP 4**
High dose ICS-LABA

**STEP 5**
High dose ICS-LABA

- Refer for phenotypic assessment
- Add on therapy e.g. long-acting beta2-agonist (LABA), anti-IgE, anti-IL5/5, anti-IL4

**TREATMENT of modifiable risk factors & comorbidities:**
- Non-pharmacological strategies
- Education & skills training
- Asthma medications

**Confirmation of diagnosis if necessary:**
- Symptom control & modifiable risk factors (including lung function)
- Comorbidities
- Inhaler technique & adherence
- Patient goals

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Treatment

Generics
Teva’s Levalbuterol Tartrate
Teva’s AirDuo RespiClick

Generics 2019
TEVA (Proair)
MSK Ventolin HFA
Wixela Fluticasone/Salmeterol
## Choosing the “right” inhaler

<table>
<thead>
<tr>
<th>Inhaled Corticosteroids</th>
<th>Type of Device</th>
<th>Average cash price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beclomethasone</td>
<td>Qvar MDI</td>
<td>$283</td>
</tr>
<tr>
<td>Budesonide</td>
<td>Generic – MDI or respules</td>
<td>$288</td>
</tr>
<tr>
<td></td>
<td>Pulmicort Flexhaler or respules</td>
<td>$297</td>
</tr>
<tr>
<td>Ciclesonide</td>
<td>Alvesco</td>
<td>$323</td>
</tr>
<tr>
<td>Flunisolide</td>
<td>Aeropan – approved but not marketed yet</td>
<td>?</td>
</tr>
<tr>
<td>Fluticasone</td>
<td>Flovent HFA</td>
<td>$292</td>
</tr>
<tr>
<td></td>
<td>Flovent Diskus</td>
<td></td>
</tr>
<tr>
<td>Mometasone</td>
<td>Asthmanex Twisthaler</td>
<td>$272</td>
</tr>
</tbody>
</table>

Mui, K. *How to Beat Expensive Asthma Inhalers: Budesonide Alternatives.* GoodRx. May, 2019
Choosing the “right” inhaler

<table>
<thead>
<tr>
<th>Combo inhalers</th>
<th>Average cash price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluticasone/Salmeterol</td>
<td>$121</td>
</tr>
<tr>
<td>Advair</td>
<td>$473</td>
</tr>
<tr>
<td>Symbicort</td>
<td>$397</td>
</tr>
<tr>
<td>Dulera</td>
<td>$393</td>
</tr>
<tr>
<td>Breo</td>
<td>$493</td>
</tr>
</tbody>
</table>
Choosing the “right” inhaler

<table>
<thead>
<tr>
<th>Medication</th>
<th>Benefits</th>
<th>Detractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDI</td>
<td>• Portable</td>
<td>• Needs coordination</td>
</tr>
<tr>
<td></td>
<td>• Multi-dose</td>
<td>• OP deposition</td>
</tr>
<tr>
<td></td>
<td>• Quick</td>
<td>• Needs shaking</td>
</tr>
<tr>
<td></td>
<td>• Available</td>
<td>• Requires propellant</td>
</tr>
<tr>
<td></td>
<td>• Less pricey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not humidity sensitive</td>
<td></td>
</tr>
<tr>
<td>MDI extra-fine</td>
<td>• Can use lower doses</td>
<td>• Needs coordination</td>
</tr>
<tr>
<td></td>
<td>• Fewer side effects</td>
<td>• Needs shaking</td>
</tr>
<tr>
<td></td>
<td>• Not humidity sensitive</td>
<td>• Requires propellant</td>
</tr>
<tr>
<td>DPI</td>
<td>• Small, portable</td>
<td>• Mod to high inspiratory flow</td>
</tr>
<tr>
<td></td>
<td>• Breath actuated</td>
<td>• Sensitive to humidity</td>
</tr>
<tr>
<td></td>
<td>• Less coordination</td>
<td>• Proper dose loading/prep needed</td>
</tr>
<tr>
<td>DPI – capsule</td>
<td>• Patients can confirm received medication</td>
<td>• Need to maintain position</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can’t blow into device</td>
</tr>
<tr>
<td>Slow mist inhaler</td>
<td>• Portable</td>
<td>• Have to load each dose</td>
</tr>
<tr>
<td></td>
<td>• Multi-dose</td>
<td>• Not breath actuated</td>
</tr>
<tr>
<td></td>
<td>• Low dependence on flow rate</td>
<td>• Needs to be primed</td>
</tr>
<tr>
<td></td>
<td>• Less coordination required</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No propellant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No spacer needed (adults)</td>
<td></td>
</tr>
<tr>
<td>Nebulizers</td>
<td>• Meds are cheap</td>
<td>• Not portable</td>
</tr>
<tr>
<td></td>
<td>• Good for those with coordination issues</td>
<td>• Require equipment &amp; maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Require time</td>
</tr>
</tbody>
</table>
Know your patients’ risks

- Poor adherence is a modifiable risk factor for exacerbations.

- Incorrect inhaler technique is associated with a 50% increased risk of hospitalization, increased emergency department visits, and increased use of oral corticosteroids


Know your patients’ risks

- Regular/frequent use of short-acting beta-agonists (SABA) is associated with adverse effects
  - Dispensing of more than 3 canisters per year is associated with higher risk of emergency department visits
  - Dispensing of 12 or more canisters per year is associated with a higher risk of death


Managing an Exacerbation

1. Assess patient to determine severity
2. Start SABA and oxygen
3. Consider other causes
4. Arrange immediate transfer if signs of severe exacerbation
5. Repeat doses of SABA, early oral corticosteroids with pre and post PEF if possible
6. Disposition home vs hospital
7. Follow up
When to Refer

• If you are uncertain of the diagnosis

• If you are stepping up and not gaining control of symptoms

• If you think that GERD, allergies, chronic sinusitis may be contributing to symptoms

• If they need meds that you aren’t comfortable prescribing
  • Omalizumab – Anti-IgE indicated for patients with severe allergic asthma uncontrolled on high dose ICS-LABA
  • Mepolizumab, reslizumab – anti-IL5 indicated for patients with severe eosinophilic asthma uncontrolled on high dose ICS-LABA
  • Benralizumab – anti-IL5 receptor indicated for patients with severe eosinophilic asthma uncontrolled on high dose ICS-LABA
  • Depulimab – anti-IL4 receptor indicated for severe eosinophilic or type 2 asthma uncontrolled on high dose ICS-LABA or requiring maintenance oral corticosteroids.
What Will We Do Differently?

• Not all asthma is the same. If the general guidelines don’t work to gain control, we may do a number of things:

1. Consider alternative diagnoses
2. Fraction of Exhaled Nitric Oxide (FeNO)
3. Check Labs
   • CBC with differential – Eosinophilia?
   • IgE level
   • Allergy panels
4. Consider advanced testing for bronchial hyperreactivity
   • Methacholine challenge test
   • Exercise test
   • Other challenge test
5. Consider advanced imaging
   • High Resolution CT Chest
6. Bronchoscopy/Laryngoscopy
Resources for Docs

- **Asthma Control Test**
  - [https://www.asthma.com/additional-resources/asthma-control-test.html](https://www.asthma.com/additional-resources/asthma-control-test.html)

- **Asthma Action Plans**
  - [https://www.aafa.org/asthma-treatment-action-plan/](https://www.aafa.org/asthma-treatment-action-plan/)

- **Asthma medication poster**
  - [https://members.allergyasthmanetwork.org/store/ListProducts.asp?catid=410345](https://members.allergyasthmanetwork.org/store/ListProducts.asp?catid=410345)

- **2019 GINA Pocket Guide**
Resources for Docs & Patients

• Partnership for Prescription Assistance
  • 1-888-477-2669
  • www.pparx.org
  • Direction to more than 475 public and private assistance programs

• Rx Outreach
  • www.rxoutreach.com
  • 1-800-769-3880
  • Similar program for generics
Resources for Patients

• Link to videos on how to use all the inhalers
  •  https://www.nationaljewish.org/treatment-programs/medications/inhaled-medication-asthma-inhaler-copd-inhaler/instructional-videos

• Propeller: (Free but...)
  •  FDA-approved app
  •  Focused on understanding/control of asthma
  •  Small sensor clipped to inhaler sends info to app
  •  App records where/when inhaler used
  •  Provides reminders, daily weather forecast, air quality info
  •  Sends info to family/doctor when asthma worsens
  •  Provider@propellerhealth.com

• AsthmaMD: (Free)
  •  Patient log asthma activity, medications, triggers in a diary
  •  Info can be shared with clinician
  •  Can securely send encrypted data to database management by Google to help researchers study trends in asthma attacks
  •  Can communicate with a special AsthmaMD peak flow meter
Resources for Patients

- **Asthma Buddy: (Free)**
  - Reminds you to take your asthma medications each day
  - Allows you to record an asthma action plan
  - First aid instructions
  - Has videos on how to use an inhaler appropriately

- **Assist Me With Inhalers ($1)**
  - Photos of asthma meds
  - Directions in English and Spanish on how/when to take them

- **AsthmaCheck (Free)**
  - Notifications re medicine
  - Alerts when running low
  - Five point check on symptoms
  - Tracks behaviors that can affect asthma such as exercise, smoking

- **How to Use Inhaler (Free x 5 uses)**
  - Detailed instructions for proper inhaler use including videos and text
Questions?
Selected References

- The 2016 Arizona Asthma Burden Report, Arizona Department of Health Services
- [https://www.cdc.gov/asthma/healthcare.html](https://www.cdc.gov/asthma/healthcare.html)
- Global Initiative for Asthma Pocket Guide for Asthma Management and Prevention, 2019