

Advances in Asthma Management: 2019 Update

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- 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)

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

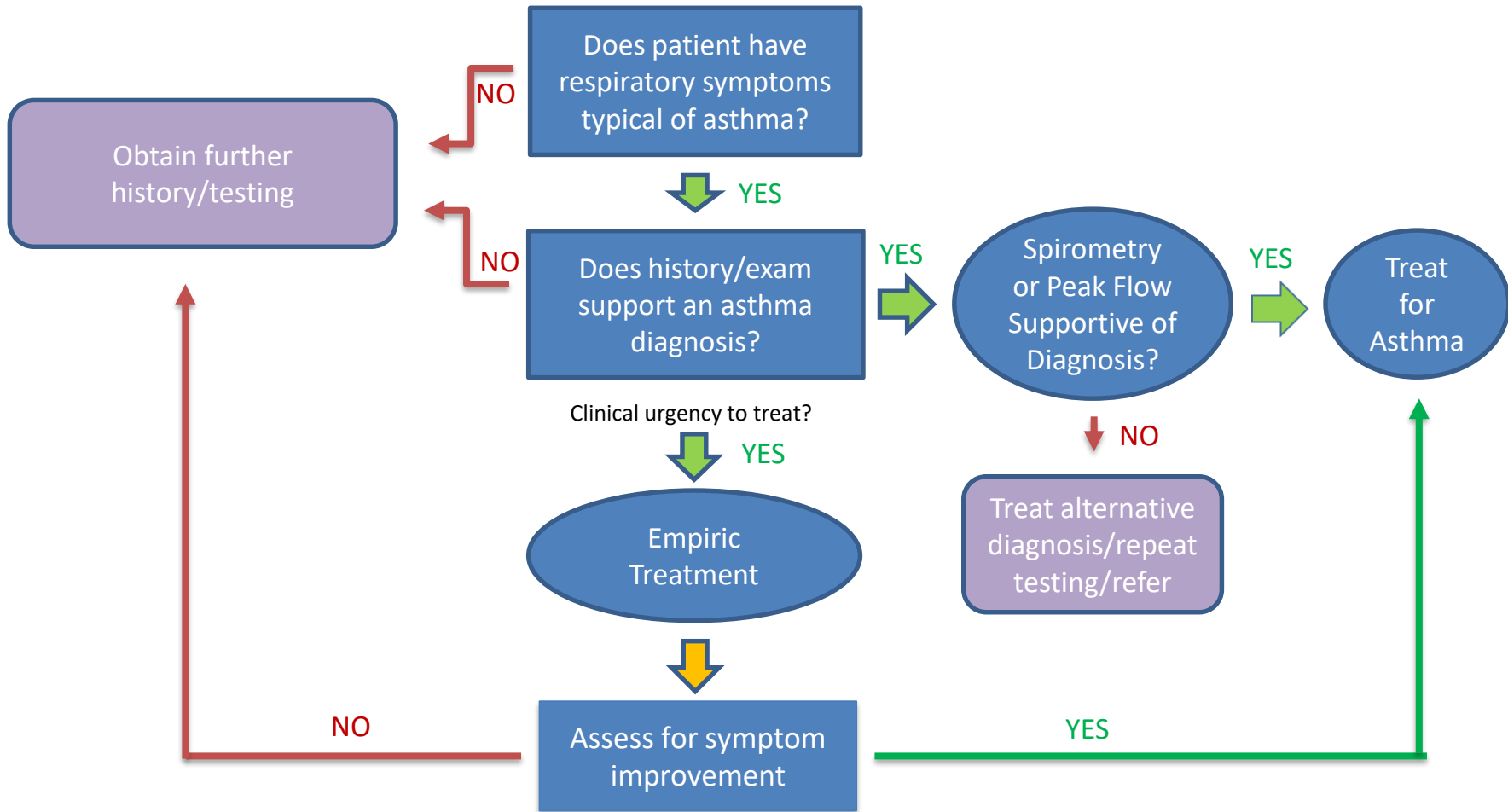
- Asthma is a chronic disease of the lungs and airways that is characterized by:
 1. Sensitivity to certain triggers (viral, allergic, occupational, environmental)
 2. Airway inflammation
 3. Symptoms that vary in severity/come and go
 4. Can be controlled with avoidance of triggers and appropriate use 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



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



Name: Today's Date:

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.

- | | | | | | SCORE |
|--|--------------------------|---------------------------|--------------------------|---------------------------|----------------------|
| 1. In the <u>past 4 weeks</u> , how much of the time did your <u>asthma</u> keep you from getting as much done at work, school or at home? | | | | | |
| All of the time [1] | Most of the time [2] | Some of the time [3] | A little of the time [4] | None of the time [5] | <input type="text"/> |
| | | | | | |
| 2. During the <u>past 4 weeks</u> , how often have you had shortness of breath? | | | | | |
| More than Once a day [1] | Once a day [2] | 3 to 6 times a week [3] | Once or twice a week [4] | Not at all [5] | <input type="text"/> |
| | | | | | |
| 3. During the <u>past 4 weeks</u> , 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? | | | | | |
| 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] | <input type="text"/> |
| | | | | | |
| 4. During the <u>past 4 weeks</u> , how often have you used your rescue inhaler or nebulizer medication (such as albuterol)? | | | | | |
| 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] | <input type="text"/> |
| | | | | | |
| 5. How would you rate your asthma control during the past 4 weeks? | | | | | |
| Not Controlled at All [1] | Poorly Controlled [2] | Somewhat Controlled [3] | Well Controlled [4] | Completely Controlled [5] | <input type="text"/> |
| | | | | | |

TOTAL:

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This material was developed by GSK.



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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



Asthma and Allergy
Foundation of America
aafa.org

Name:	Date:
Doctor:	Medical Record #:
Doctor's Phone #: Day	Night/Weekend
Emergency Contact:	
Doctor's Signature:	

The colors of a traffic light will help you use your asthma medicines.



GREEN means Go Zone!

Use preventive medicine.

YELLOW means Caution Zone!

Add quick-relief medicine.

RED means Danger Zone!

Get help from a doctor.

Personal Best Peak Flow: _____

PEF 80-100%

PEF 50-79%

PEF < 50%

GO

Use these daily controller medicines:

You have **all** of these:

- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can work & play

Peak flow:

from _____
to _____

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

For asthma with exercise, take:

--

CAUTION

Continue with green zone medicine and add:

You have **any** of these:

- First signs of a cold
- Exposure to known trigger
- Cough
- Mild wheeze
- Tight chest
- Coughing at night

Peak flow:

from _____
to _____

MEDICINE	HOW MUCH	HOW OFTEN/ WHEN

CALL YOUR ASTHMA CARE PROVIDER.

DANGER

Take these medicines and call your doctor now.

Your asthma is getting worse fast:

- Medicine is not helping
- Breathing is hard & fast
- Nose opens wide
- Trouble speaking
- Ribs show (in children)

Peak flow:

reading below _____

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

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

	Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
Symptoms	2 or fewer days per week	> 2 days per week, but not daily	Daily	All day, every day
Nighttime awakenings	2 or fewer nights per month	3-4 nights per month	> 1 per week but not nightly	Nightly or nearly so
SABA use	2 or fewer days per week	> 2 days per week but no daily and not more than 1x on any day	Daily	Several times per day
Interference with normal activities	None	Minor	Some	Extremely limited

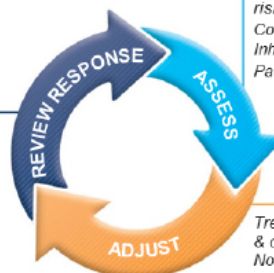


Box 3-5A. Personalized management for adults and adolescents to control symptoms and minimize future risk

Adults & adolescents 12+ years

Personalized asthma management:
Assess, Adjust, Review response

Symptoms
Exacerbations
Side-effects
Lung function
Patient satisfaction



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

Treatment of modifiable risk factors & comorbidities
Non-pharmacological strategies
Education & skills training
Asthma medications

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

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
As-needed low dose ICS-formoterol*	Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol*	Low dose ICS-LABA	Medium dose ICS-LABA	High dose ICS-LABA
Low dose ICS taken whenever SABA is taken†	Leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken †	Medium dose ICS, or low dose ICS+LTRA#	High dose ICS, add-on tiotropium, or add-on LTRA#	Refer for phenotypic assessment ± add-on therapy, e.g. tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R
As-needed low dose ICS-formoterol*	As-needed low dose ICS-formoterol*	As-needed low dose ICS-formoterol for patients prescribed maintenance and reliever therapy‡		Add low dose OCS, but consider side-effects
As-needed short-acting β_2 -agonist (SABA)				

* Off-label; data only with budesonide-formoterol (bud-form)

† Off-label; separate or combination ICS and SABA inhalers

‡ Low-dose ICS-form is the reliever for patients prescribed bud-form or BDP-form maintenance and reliever therapy

Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV1 >70% predicted

Treatment

Inhaled Medicine

Anti-Inflammatories



Asmanex® HFA
(mometasone) 100, 200
Device: MDI with counter



Asmanex®
(mometasone)
Device: Twisthaler®



Arnuity® (fluticasone)
100, 200
Device: Ellipta®



Alvesco® (ciclesonide)
80, 160
Device: MDI with counter



Flovent® HFA (fluticasone)
44, 110, 220
Device: MDI with counter



Pulmicort®
(budesonide)
Device: Flexhaler®



QVAR®
(beclomethasone)
40, 80
Device: RediHaler®

Combination LABA & Anti-Inflammatories



Breo®
(fluticasone and vilanterol)
Device: Ellipta® (24 hours)



Advair® HFA
(fluticasone and salmeterol)
45, 115, 230
Device: MDI with counter (12 hours)



Advair®
(fluticasone and salmeterol)
100, 250, 500
Device: Diskus® (12 hours)



Symbicort®
(budesonide and formoterol)
80, 160
Device: MDI with counter (12 hours)



Dulera®
(mometasone and formoterol)
100, 200
Device: MDI with counter (12 hours)

Combination Long-Acting Bronchodilators (LABA & LAMA)



Anoro®
(umeclidinium and vilanterol)
Device: Ellipta® (24 hours)



Bevespi® (glycopyrrolate and formoterol)
Device: MDI Aerosphere® (12 hours)



Stiolto® (olodaterol and tiotropium)
Device: RespiMat® (24 hours)



Utibron® (indacaterol and glycopyrrolate)
Device: Neohaler® (12 hours)



Trelegy® (fluticasone, umeclidinium and vilanterol)
Device: Ellipta® (24 hours)

MDI = Metered Dose Inhaler
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Generics 2019
TEVA (Proair)
MSK Ventolin HFA
Wixela Fluticasone/Salmeterol



Generics

Teva's Levalbuterol Tartrate

Teva's AirDuo RespiClick



Short-Acting Bronchodilators



ProAir® HFA (albuterol)
Device: MDI with counter



ProAir® (albuterol)
Device: RespiClick®



Proventil® HFA (albuterol)
Device: MDI



Ventalin® HFA (albuterol)
Device: MDI with counter



Xopenex® HFA (levalbuterol)
Device: MDI



Combivent®
(ipratropium & albuterol)
Device: RespiMat®

Long-Acting Bronchodilators (LAMA)



Incruse® (umeclidinium)
Device: Ellipta® (24 hours)



Seehri® (glycopyrrolate)
Device: Neohaler® (12 hours)



Spiriva® (tiotropium)
Device: HandiHaler® (24 hours)



Spiriva® (tiotropium)
Device: RespiMat® (24 hours)



Tudorza® (aclidinium)
Device: Pressair® (12 hours)

Long-Acting Bronchodilators (LABA)



Arcapta® (indacaterol)
Device: Neohaler® (24 hours)



Serevent® (salmeterol)
Device: Diskus® (12 hours)



Striverdi® (olodaterol)
Device: RespiMat® (24 hours)

National Jewish Health®


njhealth.org

MDI = Metered Dose Inhaler
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Choosing the “right” inhaler

Inhaled Corticosteroids	Type of Device	Average cash price
Beclomethasone	Qvar MDI	\$283
Budesonide	Generic – MDI or respules	\$288
	Pulmicort Flexhaler or respules	\$297
Ciclesonide	Alvesco	\$323
Flunisolide	Aerospan – approved but not marketed yet	?
Fluticasone	Flovent HFA	\$292
	Flovent Diskus	
Mometasone	Asthmanex Twisthaler	\$272

Mui, K. How to Beat Expensive Asthma Inhalers: Budesonide Alternatives. GoodRx. May, 2019



Choosing the “right” inhaler

Combo inhalers	Average cash price
Fluticasone/Salmeterol	\$121
Advair	\$473
Symbicort	\$397
Dulera	\$393
Breo	\$493

Choosing the “right” inhaler

Medication	Benefits	Detractors
MDI	<ul style="list-style-type: none">• Portable• Multi-dose• Quick• Available• Less pricey• Not humidity sensitive	<ul style="list-style-type: none">• Needs coordination• OP deposition• Needs shaking• Requires propellant
MDI extra-fine	<ul style="list-style-type: none">• Can use lower doses• Fewer side effects• Not humidity sensitive	<ul style="list-style-type: none">• Needs coordination• Needs shaking• Requires propellant
DPI	<ul style="list-style-type: none">• Small, portable• Breath actuated• Less coordination	<ul style="list-style-type: none">• Mod to high inspiratory flow• Sensitive to humidity• Proper dose loading/prep needed• Need to maintain position• Can't blow into device
DPI – capsule	<ul style="list-style-type: none">• Patients can confirm received medication	<ul style="list-style-type: none">• Need dexterity to insert dose• Need high inspiratory flow
Slow mist inhaler	<ul style="list-style-type: none">• Portable• Multi-dose• Low dependence on flow rate• Less coordination required• No propellant• No spacer needed (adults)	<ul style="list-style-type: none">• Have to load each dose• Not breath actuated• Needs to be primed
Nebulizers	<ul style="list-style-type: none">• Meds are cheap• Good for those with coordination issues	<ul style="list-style-type: none">• Not portable• Require equipment & maintenance• Require time

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

Hancox RJ, Cowan JO, Flannery EM, Herbison GP, McLachlan CR, Taylor DR. Bronchodilator tolerance and rebound bronchoconstriction during regular inhaled beta-agonist treatment. *Respir Med* 2000;94:767-71.

Melani AS, Bonavia M, Cilenti V, Cinti C, Lodi M, Martucci P, Serra M, Scichilone N, Sestini P, Aliani M, Neri M, Gruppo Educazionale Associazione Italiana Pneumologi Ospedalieri. *Respir Med*. 2011 Jun; 105(6):930-8.

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

Hancox RJ, Cowan JO, Flannery EM, Herbison GP, McLachlan CR, Taylor DR. Bronchodilator tolerance and rebound bronchoconstriction during regular inhaled beta-agonist treatment. *Respir Med* 2000;94:767-71.

Aldridge RE, Hancox RJ, Robin Taylor D, Cowan JO, Winn MC, Frampton CM, Town GI. Effects of terbutaline and budesonide on sputum cells and bronchial hyperresponsiveness in asthma. *Am J Respir Crit Care Med* 2000;161:1459-64.

Stanford RH, Shah MB, D'Souza AO, Dhamane AD, Schatz M. Short-acting β -agonist use and its ability to predict future asthma-related outcomes. *Annals of Allergy, Asthma & Immunology* 2012;109:403-7.

Suissa S, Ernst P, Boivin JF, Horwitz RI, Habbick B, Cockcroft D, Blais L, et al. A cohort analysis of excess mortality in asthma and the use of inhaled beta-agonists. *Am J Respir Crit Care Med* 1994;149:604-10.



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
 - Dupilumab – 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>
- Asthma Action Plans
 - <https://www.aafa.org/asthma-treatment-action-plan/>
- Asthma medication poster
 - <https://members.allergyasthmanetwork.org/store/ListProducts.aspx?catid=410345>
- 2019 GINA Pocket Guide
 - ginasthma.org/pocket-guide-for-asthma-management-and-prevention/

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

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