



Eosinophilic Asthma: Medications & Management

April 29, 2021

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OUR SPEAKER

Disclosures: NONE

Disclaimer:

Focus on FDA-approved
treatments for Eosinophilic
Asthma



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A Look at Eosinophilic-driven DISEASES

Allergy & Asthma NETWORK

Type II Connection Eos-driven Diseases

- IMMUNE SYSTEM**
 - Hypereosinophilic syndrome
 - Eosinophilic granulomatosis with Polyanglitis (EGPA/Churg Strauss)
- LUNGS**
 - Eosinophilic asthma
 - Eosinophilic COPD
 - Nasal polyps
- GUT/STOMACH**
 - Eosinophilic esophagitis
- SKIN**
 - Atopic dermatitis
 - Chronic Spontaneous Urticaria
 - Bullous pemphigoid

AllergyAsthmaNetwork.org

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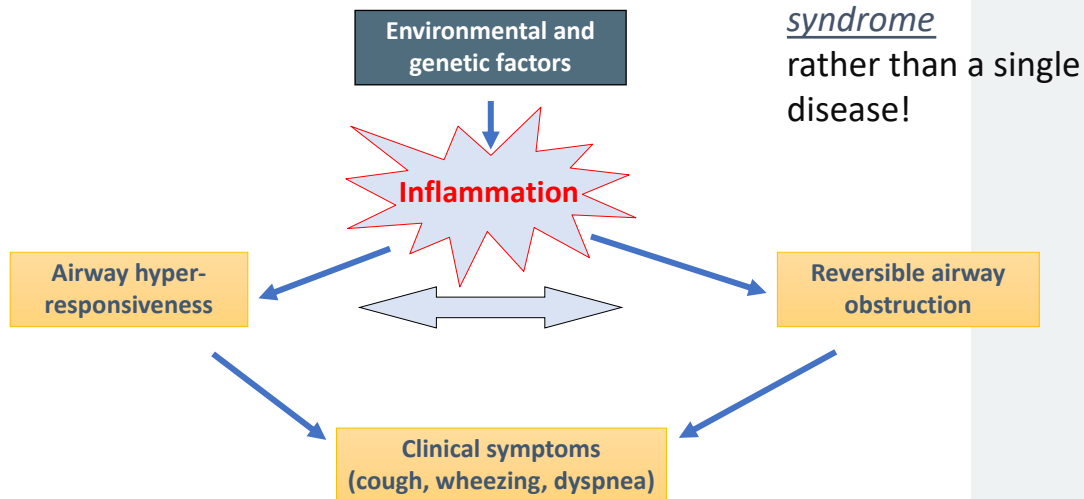
Asthma

<p>25 MILLION Americans diagnosed</p>	<p>1 in 10 CHILDREN</p>	<p>\$80 BILLION annual costs</p>
<p>3,168 DEATHS annually</p> <p>75% higher for black persons than white persons</p>	<p>13.8 MILLION missed school days per year</p> <p>#1 reason kids miss school</p>	<p>14.2 MILLION missed work days per year</p>
<p>3 in 5 limit physical activity</p>	<p>71% MISUSE inhalers</p>	<p>1 in 5 CANNOT AFFORD medications</p>

A few facts about asthma

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Understanding Asthma



NHLBI. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. No. 08-4051. 2007.

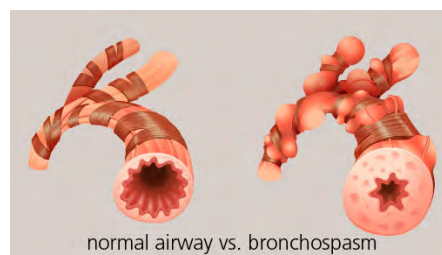
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What is Asthma?

Chronic obstructive inflammatory lung "syndrome"

Recurrent episodes of wheeze, cough, shortness of breath and chest tightness

Symptoms vary over time and in intensity



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What is Asthma?

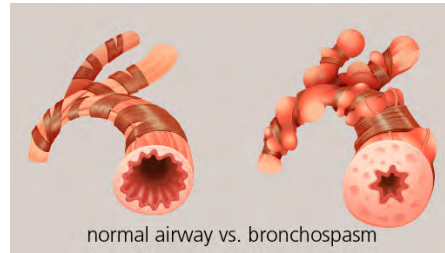
Confirmed airflow obstruction:

- Spirometry with positive response to bronchodilator “reversibility”
- Positive bronchial challenge test (Methacholine or Exercise test)

Inflammatory cells infiltrate airways: edema, thickened mucus, bronchospasm

Heterogeneous mix of subtypes “phenotypes”

- Allergic Asthma
- Aspirin Exacerbated Respiratory Disease
- Eosinophilic Asthma
- TH2-Low Asthma



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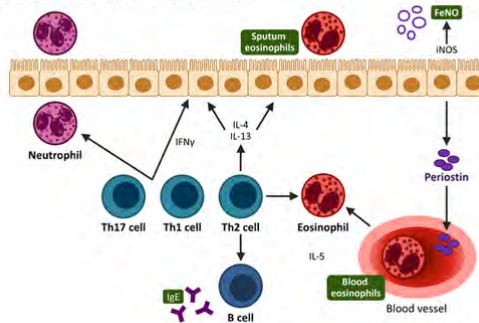
Asthma Phenotypes & Assessment

Phenotype: unique pathophysiology that drive symptoms, mucosal inflammation and airway smooth muscle contraction

Phenotype assessment:

- Co-Morbidity
- Induced sputum analysis
- Bronchoscopy
- Complete blood cell count (AEC)
- Serum IgE
- Environmental allergy assessment (spt, slgE)
- FeNO (fractional exhaled Nitric Oxide)

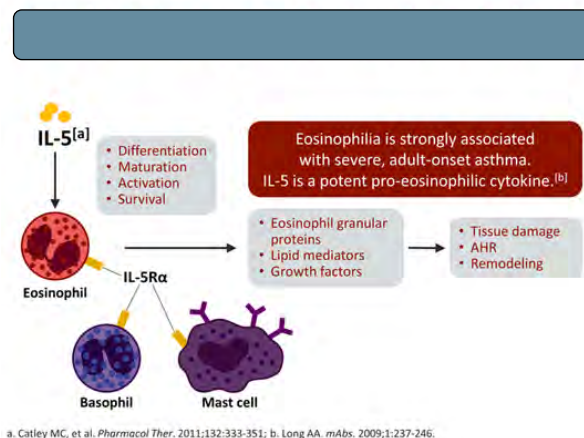
Asthma Biomarkers



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What is Eosinophilic Asthma?

- Develops in adulthood
- Severe & persistent form of asthma
- Frequent exacerbations
- Refractory symptoms despite steroids
- Fixed airway obstruction
- Eosinophil inflammation within the airways
 - ✓ Lung tissue or sputum (Bronchoscopy)
 - ✓ Peripheral blood is a surrogate marker
- Co-Morbidities:
 - ✓ Chronic Sinusitis & Nasal Polyposis
 - ✓ Aspirin / NSAID Hypersensitivity



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Asthma Management: Assessing Control



ASTHMA MANAGEMENT—YOUTHS ≥ 12 YEARS OF AGE & ADULTS (part 2 of 2)

Assessing Asthma Control and Adjusting Therapy in Youths ≥ 12 Years of Age and Adults

		Classification of Asthma Control (≥ 12 Years of Age)		
Components of Control		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤ 2 days/week	> 2 days/week	Throughout the day
	Nighttime awakenings	≤ 2 \times /month	1–3 \times /week	≥ 4 \times /week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting β_2 -agonist use for symptom control (not prevention of EIB)	≤ 2 days/week	> 2 days/week	Several times per day
	FEV ₁ or peak flow	$> 80\%$ predicted/ personal best	60%–80% predicted/ personal best	$< 60\%$ predicted/ personal best
Risk	Validated questionnaires*	ATAQ ACQ ACT	0 $\leq 0.75^{\dagger}$ ≥ 20	1–2 ≥ 1.5 16–19
	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥ 2 /year	
Recommended Action for Treatment	Progressive loss of lung function	Consider severity and interval since last exacerbation		
	Treatment-related adverse effects	Evaluation requires long-term follow-up care		

ACQ = Asthma Control Questionnaire[®]; ACT = Asthma Control Test[™]; ATAQ = Asthma Therapy Assessment Questionnaire[®]; EIB = exercise-induced bronchospasm; FEV₁ = forced expiratory volume in 1 second.
*Questionnaires do not assess lung function or the risk domain.
[†]ACT values of 0.75–1.4 are indeterminate regarding well-controlled asthma.
Adapted from National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. 2007. U.S. Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/asthma_gpd.pdf. Accessed on: September 21, 2007.

Box 2-2. GINA assessment of asthma control in adults, adolescents and children 6–11 years

A. Asthma symptom control		Level of asthma symptom control		
In the past 4 weeks, has the patient had:		Well controlled	Partly controlled	Uncontrolled
• Daytime asthma symptoms more than twice/week?	Yes <input type="checkbox"/> No <input type="checkbox"/>	None of these	1–2 of these	3–4 of these
• Any night waking due to asthma?	Yes <input type="checkbox"/> No <input type="checkbox"/>			
• SABA reliever for symptoms more than twice/week?	Yes <input type="checkbox"/> No <input type="checkbox"/>			
• Any activity limitation due to asthma?	Yes <input type="checkbox"/> No <input type="checkbox"/>			
B. Risk factors for poor asthma outcomes				
Assess risk factors at diagnosis and periodically, particularly for patients experiencing exacerbations.				
Measure FEV ₁ at start of treatment, after 3–6 months of controller treatment to record the patient's personal best lung function, then periodically for ongoing risk assessment.				

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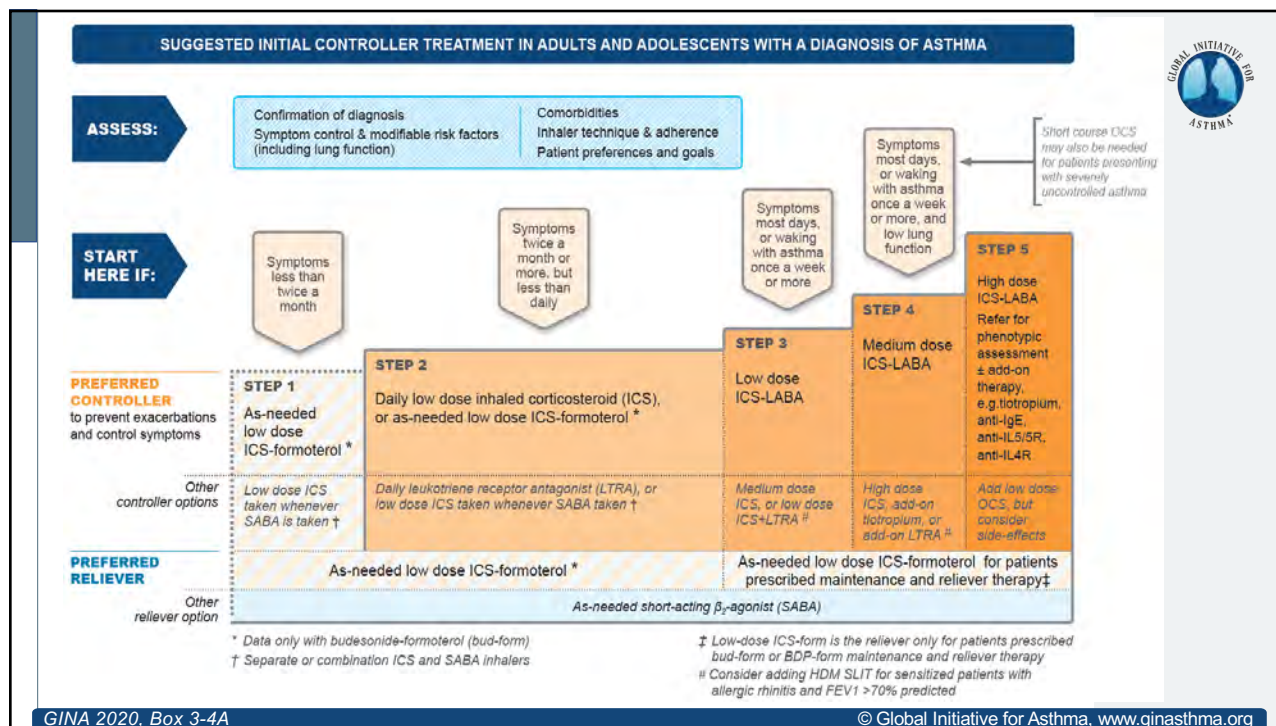
Asthma Management: Treatment



Goal of Treatment: Reduce symptoms and flares, Improve quality of life, Maintain control

- Short Acting-Bronchodilator:
 - As needed for symptoms
- Inhaled Steroids (+/- Long Acting-Bronchodilator):
 - Oral thrush, dysphonia
- Oral Corticosteroids:
 - Greater bioavailability of medication
 - Increased risk of side effect with higher doses and longer duration of use
 - Easy bruising, osteoporosis, cataracts, glaucoma, adrenal suppression, diabetes, hypertension
- Biologic Therapies:
 - Precision therapies that target the specific source of inflammation
 - Reduction in exacerbations & symptoms, Improvement in quality of life
 - Taper / Discontinue use of oral glucocorticoids
 - Indication: severe asthma, adherent to high-dose inhaled steroids, frequent flares

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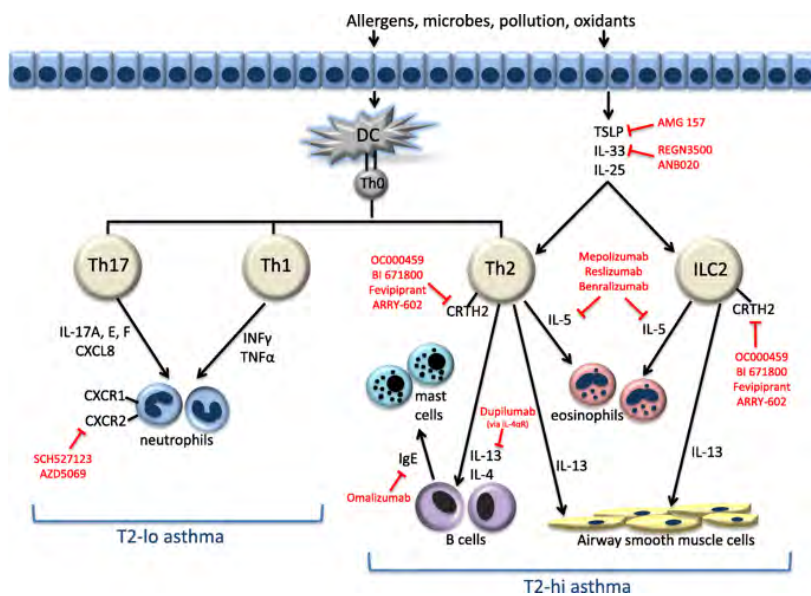
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Biologic Therapies for Eosinophilic Asthma

	Route	Frequency	Target	Biomarker	Side effects	Other indications
Mepolizumab (Nucala)	SC	q4weeks	Binds IL-5; reduction in eosinophil production and survival	EAC	Herpes Zoster Anaphylaxis / Hypersensitivity Parasite infection	EGPA HES
Reslizumab (Cinquir)	IV	q4weeks (weight based dosing)	Binds IL-5; reduction in eosinophil production and survival	EAC	Anaphylaxis / Hypersensitivity Parasite infection	-
Benralizumab (Fasenra)	SC	q4weeks x 3; q8 weeks	Binds IL-5 receptor, reduction in eosinophil production and survival, activates NK to induce apoptosis of eosinophils & basophils	EAC	Anaphylaxis / Hypersensitivity Parasite infection	-
Dupilumab (Dupixent)	SC	q2 weeks	Binds IL-4 receptor a subunit, inhibit IL-4 & IL-13 cytokines	EAC, FeNO, Oral steroid dependence	Anaphylaxis / Hypersensitivity Keratitis	Atopic Dermatitis, Chronic Sinusitis w/ Nasal Polyposis

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Mechanism of Biologic Therapies



WAO Journal 2018

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Questions posed by Biologic Therapies

?

- Which is the most effective?

?

- Best biomarkers to predict effective response?

?

- Therapeutic non-responders: when to switch / stop medications?

?

- Combination of biologic agents or combination of targets?

?

- Length of treatment?

?

- New agents in development

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Risk Factors for Exacerbations

Poor asthma control

Lack of medication adherence

Incorrect inhaler technique

Smoking

Exposure to triggers

Uncontrolled co-morbid disease

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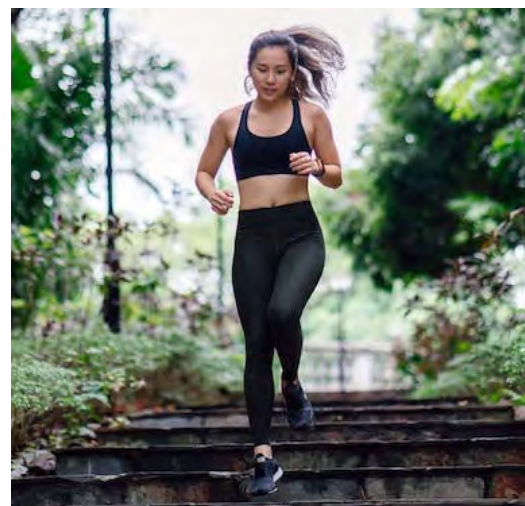
Inhaler technique is crucial

- Metered Dose Inhalers
- Dry Powder Inhalers
- Breath-actuated devices
- Respimat devices
- VHC / Spacers
- Nebulizer

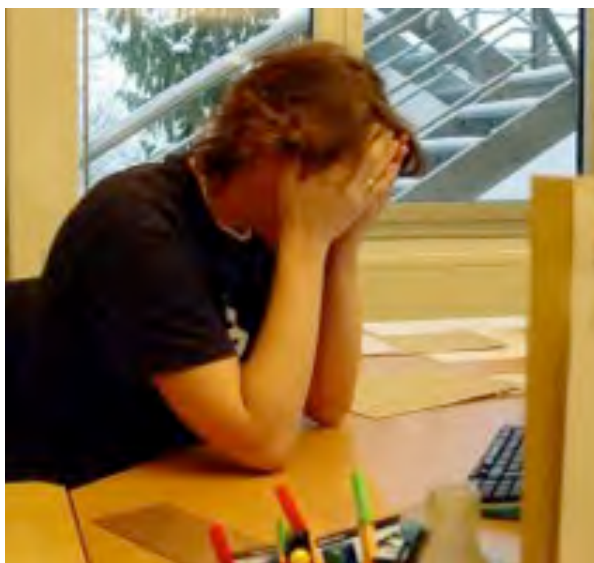
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Non-Pharmacologic Treatment: Avoidance of Asthma Triggers

- Irritants: smoke, diesel exhaust
- Air pollution: Indoor & Outdoor
- Strong odors / fragrance
- Respiratory infection:
 - ✓ Annual influenza vaccination
 - ✓ Pneumococcal vaccination
- Exercise
- Stress or strong emotions (laughing, crying)
- Sudden change in air temperature or humidity (cold air)
- Hormonal changes



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Non-Pharmacologic Treatment : Assessment & Treatment of Co- Morbidity

- Chronic Sinusitis with or without Nasal Polyposis
- Aspirin / NSAID Hypersensitivity
- Obesity
- Tobacco abuse
- Obstructive Sleep Apnea
- GERD
- Depression & Anxiety
- Allergic conditions: Allergic Rhinitis, Atopic Dermatitis, Food Allergy

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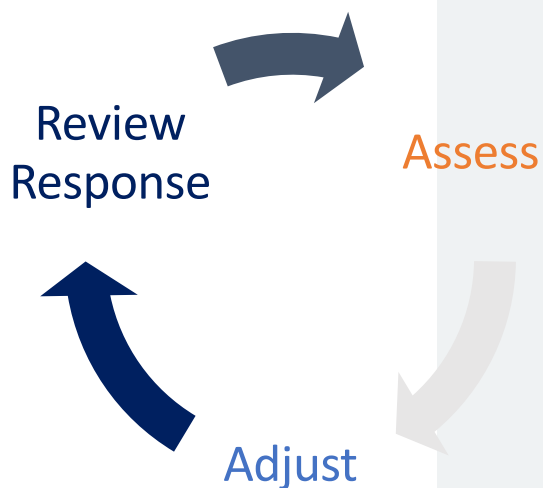
Asthma Management: Follow-Up

Initial Visit

- Confirmation of diagnosis if necessary
- Symptom control
- Modifiable risk factors & comorbidity
- Lung function
- Inhaler technique and adherence
- Non-pharmacological strategy
- Patient (and parent) preferences and goals

Follow-Up

- Symptom control, Exacerbation frequency
- Medication side effect
- Lung function
- Asthma medications (adjust up or down)
- Patient satisfaction



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Monitoring Symptoms

Expiratory Peak Flow Meter: device measuring peak expiratory flow rate

Frequency of symptoms:

- Nocturnal awakenings
- Activity limitation
- Use of rescue inhaler

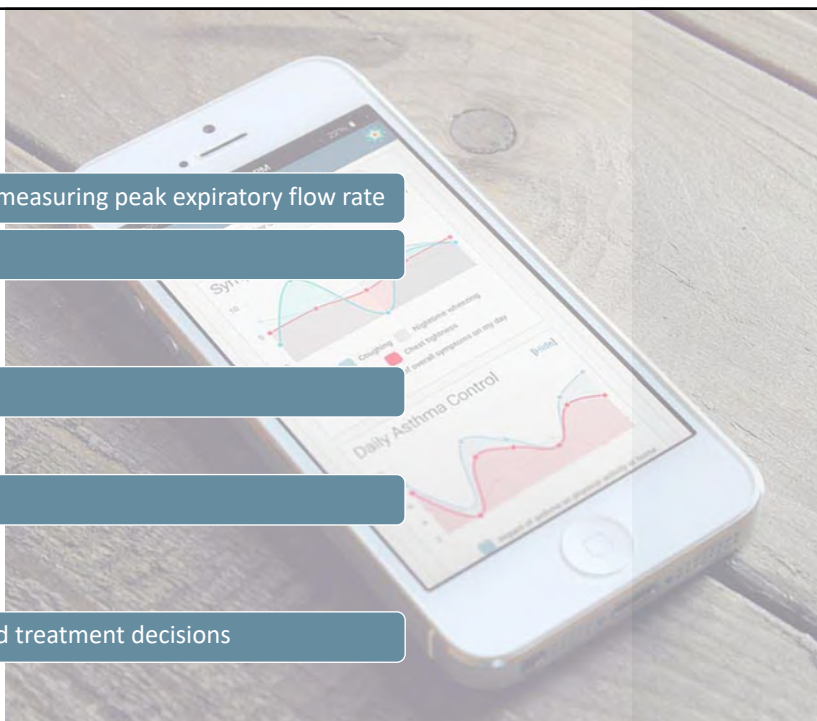
Symptom tracker app

- AsthmaTracker
- Asthma Storylines

Frequency of exacerbations:

- Need for systemic steroids
- ED / UC / Hospital visits
- History of intubation need

Determination of asthma control and treatment decisions



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Management of Asthma Exacerbation

When to call your physician

- Asthma symptoms are worsening
- Asthma symptoms are not responding to asthma action plan

When to call 911

- Unable to take a good deep breath
- You can only talk in short phrases
- Persistent cough
- Feel too exhausted to breathe
- Increased work to breathe
- Easier to breathe when sitting & leaning forward
- Lips and/or fingernails bluish-gray
- Sweating even though skin feels cold and clammy

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Preparation for Physician Visit

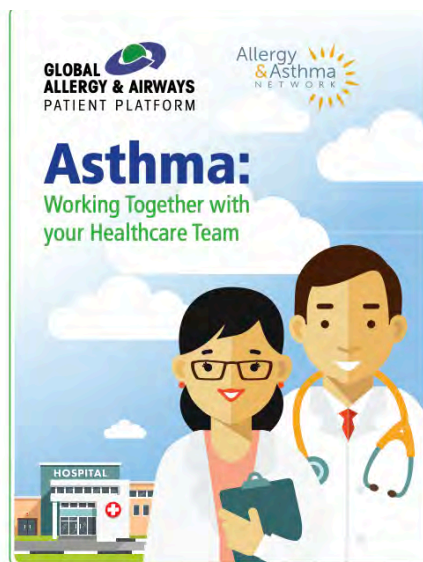
Seek care of allergist/immunologist or pulmonologist

Symptom logs (apps, journals, pfm values)

Health records:

- Prior hospitalization & ED records
- Prior medications including use of oral steroids

Bring all medications to your visit



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Discussion points with physician


- Confirmation of asthma diagnosis
- Phenotype assessment indicated
- Treatment plan
 - ✓ Types of medications & indications
 - ✓ Frequency and duration of medication
 - ✓ Inhaler technique
 - ✓ Medication side effects
 - ✓ Patient preference
- Asthma action plan & emergency asthma management
- Determination if treatment is effective
- Frequency of follow-up visits
- Assessment of comorbidity



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Eosasthma.org

**EosAsthma
Digital Tool
Kit**



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Here's what you'll find in this toolkit:

<p>About Eosinophilic Asthma</p> <p>Learn about this severe subtype of asthma, a chronic lung disease.</p>	<p>Diagnosis & treatment</p> <p>Read about how eos asthma is diagnosed and treatment options.</p>	<p>Tips</p> <p>Explore practical strategies to help improve quality of life with eos asthma.</p>	<p>FAQs</p> <p>Read answers to questions commonly asked by patients and caregivers.</p>
<p>Specialists</p> <p>Review information about the specialists that help treat and manage eos asthma.</p>	<p>Glossary</p> <p>Learn terms commonly used when discussing eos asthma</p>	<p>Research</p> <p>Learn about eos asthma research and clinical trials.</p>	<p>Resources</p> <p>Connect with others and tap into a supportive community.</p>

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EosAsthma



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**TIME FOR
QUESTIONS**



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Resources for more information

- Eos Asthma ToolKit
 - Eosasthma.org
- Asthma & Allergy Network
 - Allergyasthmanetwork.org
- American Partnership for Eosinophilic Disorders
 - <https://apfed.org/>



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Join us for our next webinar -

Topics in COVID-19 Care: Seasonal Allergies, Eczema, Vaccines & More

- May 12, 2021
- 4:00 PM ET

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For More Information



<https://allergyasthmanetwork.org/>