

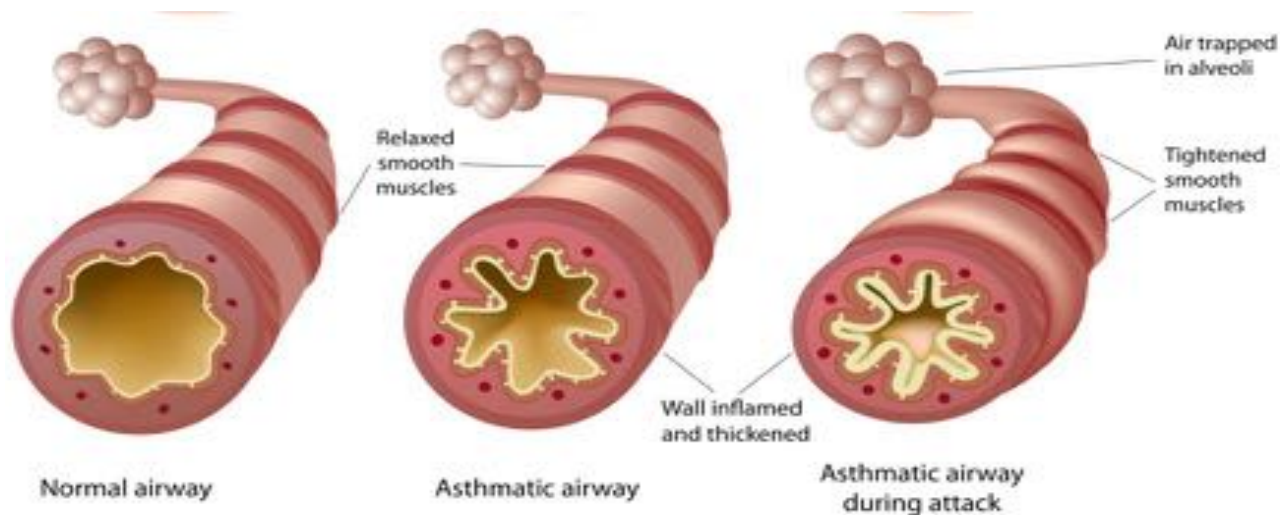


The Life of an Asthmatic Treating Asthmatics

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Physiology

- ▶ Airway Inflammation
- ▶ Increased airway Responsiveness to a variety of stimuli (Hyperresponsiveness)
- ▶ Airway Obstruction (bronchoconstriction)



Two Types of Asthma

- ▶ Extrinsic “allergic” asthma
- ▶ Asthma triggered by a sensitivity or allergy to certain substances
- ▶ Examples
 - ▶ Pollen
 - ▶ Food
 - ▶ Dust mites
 - ▶ Pets



Two Types of Asthma

- ▶ Intrinsic “nonallergic” asthma
- ▶ No single cause, predisposing factors than can induce an asthma attack
- ▶ Examples
 - ▶ Anxiety
 - ▶ Cold air
 - ▶ Infection
 - ▶ Exercise



Symptoms of Asthma

- ▶ Asthma symptoms include
 - ▶ Shortness of breath
 - ▶ Wheezing
 - ▶ Coughing
 - ▶ Chest tightness





How Common is Asthma

- ▶ According to the CDC 1 in 13 people have asthma
- ▶ More than 25 million Americans have asthma
- ▶ 7.7 percent of adults
- ▶ 8.4 percent of children



How Common is Asthma

- ▶ Asthma is more common in adult women than adult men
- ▶ More than 11.4 million people with asthma including more than 3 million children report having one or more asthma episodes or attacks in 2017
- ▶ Asthma is the leading chronic disease in children
- ▶ Asthma is more common in children than adults

Economics

- ▶ Asthma accounts for 9.8 million doctor office visits a year
- ▶ 1.8 million emergency department visits each year
- ▶ The annual per person medical cost of asthma was 3,666 dollars in 2015



Economics

- ▶ From 2008-2013 the annual economic cost of asthma was more than 81.9 billion including medical costs and loss of work and schools days
- ▶ 3 billion in losses to missed work and school days
- ▶ 29 billion due to asthma related mortality
- ▶ 50.3 billion in medical costs



Mortality

- ▶ Each day ten Americans die from asthma
- ▶ Adults are four times likely to die from asthma than children
- ▶ Women are more likely to die from asthma than men
- ▶ Children - Boys more than girls
- ▶ African-Americans are three times more likely to die from asthma compared to other races or ethnicities

Asthma Pathophysiology



Treatment Options

- ▶ Short acting bronchodilators
- ▶ Long acting bronchodilators
- ▶ Anticholinergics
- ▶ Corticosteroids
- ▶ Long acting Corticosteroids
- ▶ Systemic Steroids
- ▶ Biologics



Short Acting Bronchodilator

Indication- Immediate relief of acute bronchospasms

- ▶ Brands: Proventil, Ventolin, Proair (Albuterol)
- ▶ Receptor Preference: beta 2 & beta 1
- ▶ Administration: Nebulizer, MDI
- ▶ Onset 15 minutes Duration 5-8hrs
- ▶ Common side Affects
 - ▶ Tachycardia, Arrhythmias, palpitations, Tremors
 - Hypokalemia



Short Acting Bronchodilator

- ▶ Brand: Xopenex (Levalbuterol)
- ▶ Receptor Preference: Beta 2 & Beta 1 (S-isomer removed)
- ▶ Administration: Nebulizer, MDI
- ▶ Onset 15 minutes Duration 5-8hrs
- ▶ Less side effects as albuterol



Long acting Bronchodilator

- ▶ Indication: Long term, twice daily, maintenance and prevention
- ▶ Brand: Servent (Salmeterol)
- ▶ Receptor Preference: Beta 2
- ▶ Administration: DPI
- ▶ Onset 20 minutes Durations 12hrs
- ▶ Common side affects
 - ▶ Sore throat, Rhinitis, Cough, Headache, Nausea



Anticholinergic

- ▶ Indication for treatment and prevention of bronchospasm
- ▶ Brand: Atrovent (Ipratropium bromide)
- ▶ Onset 15mins duration 3-6hrs
- ▶ Administration: Nebulizer, MDI
- ▶ Common side effects: dry mouth cough



Anticholinergic

- ▶ Brand: Spiriva (Tiotropium Bromide)
- ▶ Onset 30 minutes
- ▶ Duration 24hrs
- ▶ Administration : DPI



Anticholinergic

- ▶ Brand: Incruse Ellipta (Umeclidinium)
- ▶ Duration 24hrs
- ▶ Administration: DPI



Corticosteroids

- ▶ Inhibits the activity of inflammatory cells and mediators of inflammation (preventive)
- ▶ Onset 15 minutes full effect 5-10days
- ▶ Brand Flovent (Fluticasone)
- ▶ Administration: MDI
- ▶ Side effects Hoarse voice, oral thrush, coughing and throat irritation



Corticosteroids

- ▶ Brand: Pulmicort (budesonide)
- ▶ Administration: DPI, Nebulizer*
- ▶ Only approved nebulized corticosteroid



Long acting Combination

- ▶ Advair (Combination of fluticasone and salmeterol)
- ▶ Long acting bronchodilator and Corticosteroid
- ▶ Administration: DPI
- ▶ Duration: 12hrs



Long acting Combination

- ▶ Symbicort (Combination of Budesonide and Formoterol)
- ▶ Long acting bronchodilator and Corticosteroid
- ▶ Administration : MDI
- ▶ Duration: 12 hrs



Long Acting Combination

- ▶ Breo Ellipta (Combination of Fluticasone furoate and vilanterol)
- ▶ Long acting bronchodilator and Corticosteroid
- ▶ Administration: DPI
- ▶ Duration: 24hrs



Long Acting Combination

- ▶ Trelegy 1st triple combination inhaler (Fluticasone, Umeclidinium, Vilanterol)
- ▶ Combination of Inhaled corticosteroid, long acting beta antagonist, long acting muscarinic antagonist
- ▶ Duration : 24hrs
- ▶ Approved for COPD
- ▶ *Not approved for Asthma*



Systemic Steroids

Treats acute exacerbations

- ▶ Prednisone
- ▶ Solu-Medrol
- ▶ Administration: Oral tablets, or IV
- ▶ Side effects: obesity and fluid retention, growth suppression, hypertension, acne, hyperglycemia and diabetes, immunosuppression, easy bruising, insomnia, increased appetite, mood changes, adrenal insufficiency, and Cushing's syndrome



What is a Biologic?

- ▶ A biologic is a medication made from the cells of a living organism, such as bacteria or mice, that is then modified to target specific molecules in humans
- ▶ For asthma, the targets are antibodies, inflammatory molecules, or cell receptors
- ▶ By targeting these molecules, biologics work to disrupt the pathways that lead to inflammation that causes asthma symptoms



When are Biologics used?

- ▶ Patients who continue to have symptoms despite use of standard daily controller medications
- ▶ Symptoms of poorly controlled asthma include frequent coughing, wheezing, or shortness of breath; waking up at night with difficulty breathing



When are biologics used?

- ▶ requiring a fast-acting reliever medication, such as albuterol, several times a day or week
- ▶ Recurrent hospital admissions, emergency room visits, or need for oral steroids for exacerbation



Benefits of a Biologic

- ▶ The primary benefit of biologics has been a decrease in the frequency of asthma exacerbations, including emergency room visits, hospitalizations, and need for oral steroids



Benefits of a Biologic

- ▶ reduced asthma symptoms
- ▶ reduced dosage of other controller medication
- ▶ less missed school and work days
- ▶ improve quality of life for patients
- ▶ improve lung function in patients with severe asthma

The 5 Approved Biologics for Asthma

Omalizumab (Xolair)- targets allergy antibodies IGE

Mepolizumab (Nucala)- targets eosinophils

Reslizumab (CINQAIR) targets eosinophils

Benralizumab (Fasenra)- targets eosinophils

Dupilumab (Dupixent) – targets eosinophils

Administration of Biologics

- ▶ Currently administered in a doctor's office either as a subcutaneous injection or as an intravenous infusion
- ▶ Dupilumab(Dupixent) is a subcutaneous injection, but unlike the other biologics it can be administered at home
- ▶ The frequency of administration of each of these biologics are different, ranging from every two weeks to every eight weeks



Growing up with Asthma

- ▶ My first Asthma attack
- ▶ Hospitalizations



Everyday Challenges

- ▶ Missed school days
- ▶ Missed school trips
- ▶ Missed sports games
- ▶ Missed work
- ▶ Weather



Becoming a Respiratory Therapist

- ▶ Gwynedd Mercy
- ▶ Graduated May 2019



Working as Respiratory Therapist

- ▶ Hospital of the University of Pennsylvania



My Recent Experience as a Patient/Therapist

► My Most Recent Hospitalization



What I Want Every Therapist to Know

- ▶ Clinical assessments
- ▶ Ask your patients how they feel
- ▶ Listen to what your patients tell you



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Thank You

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