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DEFINITION OF ASTHMA

A chronic lung disease that is marked by recurring episodes of severe obstruction of your bronchial tubes, resulting in labored breathing, wheezing, and coughing and by a sense of constriction in the chest. You may be triggered by "triggers" such as pollen, dust, or cold air.



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Cont...

Asthma affects all groups but often starts in childhood.

Characterized by recurrent attacks of bronchospasm and wheezing, which has different severity and frequency in each patient.


Attack may last from a few minutes to days.

WMS, 2018




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OBSTRUCTIVE or RESTRICTIVE ??



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ANATOMY





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DEFINITION OF ASTHMA



- A chronic lung disorder that is marked by recurring episodes of airway obstruction (as from bronchospasm) manifested by laboured breathing accompanied especially by wheezing and coughing and by a sense of constriction in the chest, and that is triggered by hyper reactivity to various stimuli.



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<http://www.merriam-webster.com/dictionary/asthma>

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36 arooj fatima (Guest)

B4

49, Bibi Javeria Rani

Abra

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Cont...



- Asthma attacks all groups but often starts in childhood.
- Characterized by recurrent attacks of **breathlessness and wheezing**, which has **different severity and frequency** in each person.
- Attack from hour to hour and day to day.

(WHO, 2013)

<http://www.who.int/respiratory/asthma/definition/en>

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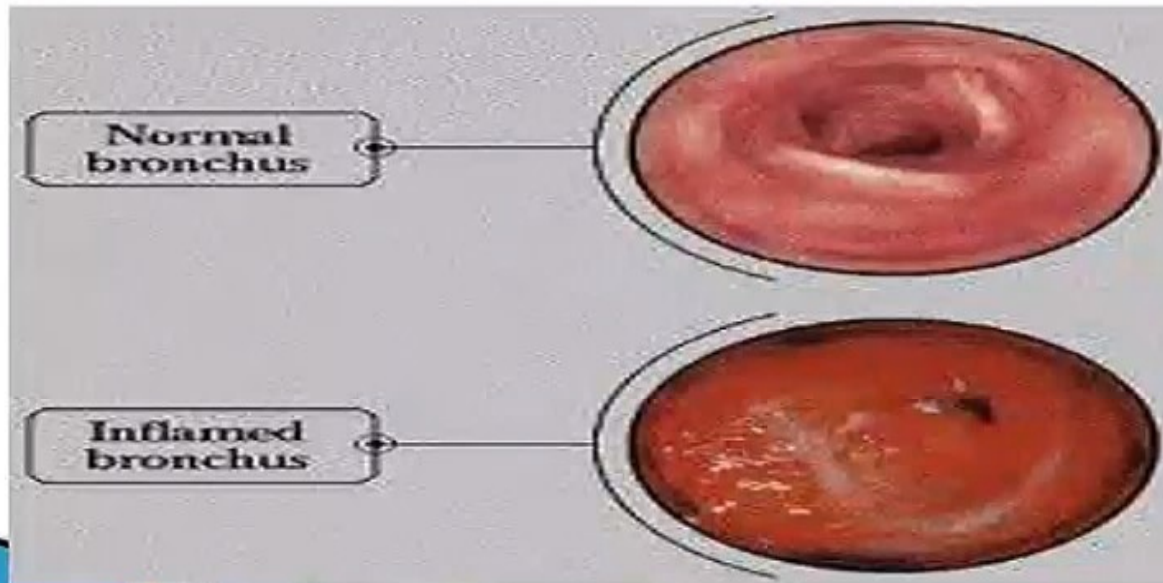
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OBSTRUCTIVE or RESTRICTIVE ??



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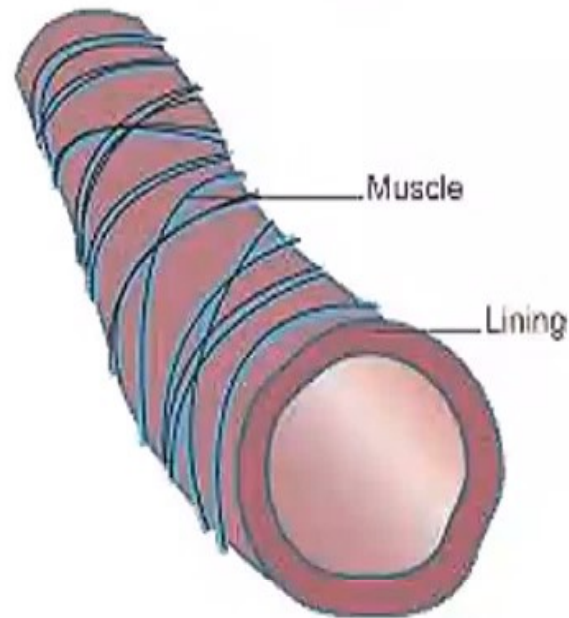
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Asthma



Normal Airway



Airway in Person with Asthma

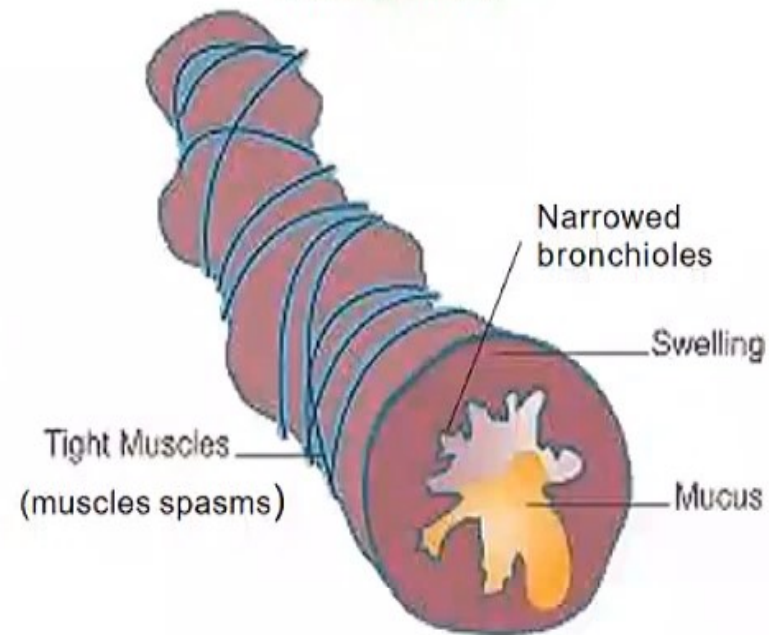


Figure 2: Difference between normal airway and airway in person with asthma

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PATHOLOGY

Inflammation of
inner lining of
airways

Muscle around
airways tighten

Airways produce
mucus due to
inflammation
(clogged the
shrunk tubes)

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ETIOLOGY OF ASTHMA

- **Genetic factors**
- **Environmental factors**
 - a) House dust mites
 - b) Exposure to tobacco smoke.
 - c) Predisposed to animals, pollens moulds and dust.
- **Dietary changes** –junk food and fast food contain MSG



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Cont...



- **Lack of exercise** - Less stretching of the airways
- **Occupational exposure**
 - Irritants in the workplace : chemicals, dusts, gases, moulds and pollens. These can be found in industries such as baking, spray painting of cars, woodworking, chemical production, and farming.



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DIAGNOSIS & TESTS



Initial exam (conducted by doctor):

- Medical history
- Asthma symptoms, how you feel, known asthma and allergy triggers, your activity level and diet, your home and work environment, and family history.
- Then, some tests will be conducted to diagnose asthma

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Peak Flow Testing



Peak expiratory flow rate (PEFR)



Take a Deep Breath



Blow out hard and fast



Record the reading on the meter



Peak Flow Meter

PEFR is used to assess the severity of wheezing in those who have asthma. PEFR measures how quickly a person can exhale a

22:49 [Microphone icon] [Speaker icon] [Screen share icon] [More options icon] [Hand icon] [User icon] [End call icon]

Allergy-skin Test

- A drop of liquid containing the allergen is placed on your skin (generally forearm is used).
- A small lance with a pinpoint is poked through the liquid into the top layer of skin (*prick test*).
- If you are allergic to the allergen, after about 2 minutes the skin begins to form a reaction (red, slightly swollen, and itchy: it makes a hive).
- The size of the hive is measured and recorded.
- The larger the hive, the more likely it is that you are allergic to the allergen tested.

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SIGNS AND SYMPTOMS



Common symptoms of asthma

1. Coughing, especially at night
2. Wheezing
3. Shortness of breath
4. Chest tightness, pain, or pressure



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Symptoms of asthma attack

Mild asthma attack

1. Cough
2. Wheezing
3. Mild difficulty breathing during normal activities
4. Difficulty sleeping
5. Hiccups
6. Peak expiratory flow rate (PEFR) is 70 to 90% of personal best





Moderate asthma attack

1. Severe cough
2. Moderate wheezing
3. Shortness of breath
4. Chest tightness
 - ✓ Usually worsens with exercise
5. Inability to sleep
6. Nasal congestion
7. PEFRI is 50 to 70% of personal best



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Moderate asthma attack

1. Severe cough
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3. Shortness of breath
4. Chest tightness
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6. Nasal congestion
7. PEFRI is 50 to 70% of personal best



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Severe asthma attack



1. Severe wheezing
2. Severe difficulty breathing
3. Inability to speak in complete sentences
 - ✓ Sentences are interrupted by breathing
4. Inability to lie down
5. Signs of severe difficulty breathing
 - ✓ Rib retractions: ribs are visible during each breath
 - ✓ Nasal flaring: nostrils open wide during each breath
 - ✓ Use of accessory muscles: neck muscles are prominent during each breath
6. Chest pain
 - ✓ Sharp, chest pain when taking a breath, coughing
7. PEFR is $<50\%$ of personal best
8. Confusion
9. Rapid pulse
10. Fatigue
11. Rapid breathing rate



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Severe asthma attack



1. Severe wheezing
2. Severe difficulty breathing
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 - ✓ Sentences are interrupted by breathing
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TYPES OF ASTHMA

1. Allergic asthma (extrinsic)
2. Non-allergic asthma (intrinsic)
3. Cough variant asthma
4. Occupational asthma
5. Exercise induced asthma
6. Medication induced asthma
7. Nocturnal asthma



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Allergic asthma (extrinsic)



➤ It is triggered when you inhale one of the following allergens:

- a) Tobacco smoke
- b) Animal dander
- c) Dust mites
- d) Cockroaches
- e) Molds
- f) Pollens



➤ Age onset over 40 y/o

➤ **Specific symptoms:** runny nose, watery eyes, you are wheezing more, SOB, swollen nasal passages, excess mucus, and a scratchy throat. A cough may result from the constant postnasal drip

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Non-allergic asthma (intrinsic)

- Not triggered by allergens
- Age onset under 40 y/o
- **Triggers:**
 - ✓ Irritants- Tobacco smoke, wood smoke, room deodorizers, fresh paint, household cleaning products, cooking odours, workplace chemicals, perfumes, and outdoor air pollution, heartburn, changes in temperature.
- **Specific symptoms:** Respiratory infections, such as the common cold, Influenza or a sinus infection.

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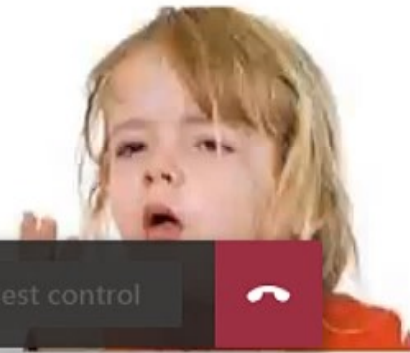
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Cough variant asthma



- When cough is the only asthma symptom, this is known as cough variant asthma (CVA)
- **Specific symptoms:**
 - a) Chronic, non- productive cough
 - b) High sensitive cough reflex



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Occupational asthma

- A common respiratory condition that results from exposures in the workplace
- **Examples of the occupations and the potential irritants include:**
 - a) Dental hygienists: latex
 - b) Bakers: flour
 - c) Roofers, insulators and painters: isocyanates (toluene)
 - d) Welders and metal workers: metals: metals (nickel, platinum and chromic acid)
 - e) Plastic manufacturers: glues and resins
 - f) Farmers and veterinarians: animal proteins
 - g) Carpenters: wood dust



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Cont...

➤ **Specific symptoms:**

- ✓ Airway irritation, obstruction, and inflammation.
- ✓ Worsening after arriving at work and improvement on weekends or during extended periods away from work.

➤ **Treatment :**

- a) Engineering controls (such as improved ventilation) to reduce or eliminate the substance
- b) Use respiratory protective equipment

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Exercise induced asthma

- A type of asthma triggered by exercise or physical exertion
- **Specific symptoms:**
 - ✓ SOB, chest tightness, and cough.
 - ✓ Symptoms may occur shortly after a brief episode of exercise or 10 to 15 minutes into a longer period of exercise.



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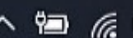
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Medication induced asthma

- The asthma getting worse because of medication you take for another health condition.
- Causes:
 - a) Anti- inflammatories for aches and pain: Motrin, Advil
 - b) Heart disease drugs :inderal, coreg (beta-blockers)
 - c) Glaucoma drugs: beta-blockers eyes drop
 - d) Hypertension and congestive heart failure drugs: angotensive converting enzyme inhibitors (ACE)

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Nocturnal(night time) asthma

- The chances of having asthma symptoms are much higher during sleep because asthma is powerfully influenced by the sleep-wake cycle (circadian rhythms)
- **Causes :** Exposure to allergens, cooling of the airways, reclining position, hormone secretions that follow a circadian pattern, heartburn at night
- **Specific symptoms:** wheezing, cough, and trouble breathing are common and dangerous, particularly at night time.



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MEDICAL MANAGEMENT

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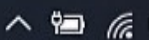


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Long-term asthma control medication

Drugs	Function	Side effects
Inhaled corticosteroids (flovent, pulmicort, aerobid)	Reduce swelling and mucus production in airways	Poor growth, decreased bone density, varicella Infection (chickenpox that spreads to organs),cataracts & glaucoma
Long-acting beta agonists (LABA): serevant, fulmoterol	Open the airways and reduce inflammation (need to be used with other combination inhalers)	Increases severity of asthma exacerbations and risk of fatal asthma episodes.
Leukotrine modifiers- oral medication (singulair,accolate)	Relieve asthma symptoms	Psychological reactions - agitation, aggression, hallucinations, depression & suicidal thinking/ headache, skin rashes

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Bronchodilators



LABA

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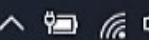


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Quick-relief (rescue) medication

Drugs	Function	Side effects
Short-acting beta agonists (SABA) – albuterol, levalbuterol	-Can be taken using inhalers/nebulizers - Relax airway muscles	Appetite changes, dizziness, nausea, nervousness, sinus pain, sore throat, tremor
Oral and intravenous corticosteroids (prednisone)	Relieve airway inflammation	Same as inhaled corticosteroids



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Allergy medications

Drugs	Function	Side effects
Allergy shots (immunotherapy).	Reduce symptoms in people allergic to pollens, animal dander, dust mites, mold, and cockroaches	Redness, warmth at the shot site, low blood pressure
Omalizumab (Xolair).	<ul style="list-style-type: none">-Given as an injection every two to four weeks (for people who have allergies, severe asthma)- Altering the immune system.	Sinusitis, headache, sore throat



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Asthma control



1. Diet : eat diets higher in vitamins C and E, magnesium, and omega-3 fatty acids. Avoid seafood that may become allergens.
2. Exercise: short, intermittent periods of exertion
3. Stop smoking

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MDT INVOLVED



1. Nurses, doctor, technicians, social workers, therapists, and pharmacists
2. Specialists
 - a) **Pulmonologist**: Do surgery for patient with asthma that is difficult to control, exercise-induced asthma
 - b) **Allergist or immunologist**: Allergen-triggered asthma
 - c) **Otolaryngologist**: Nasal obstruction (e.g., from polyps or sinusitis)
 - d) **Mental health professional**: Overcome social, psychological, or psychiatric problems that interfere with asthma treatment.

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