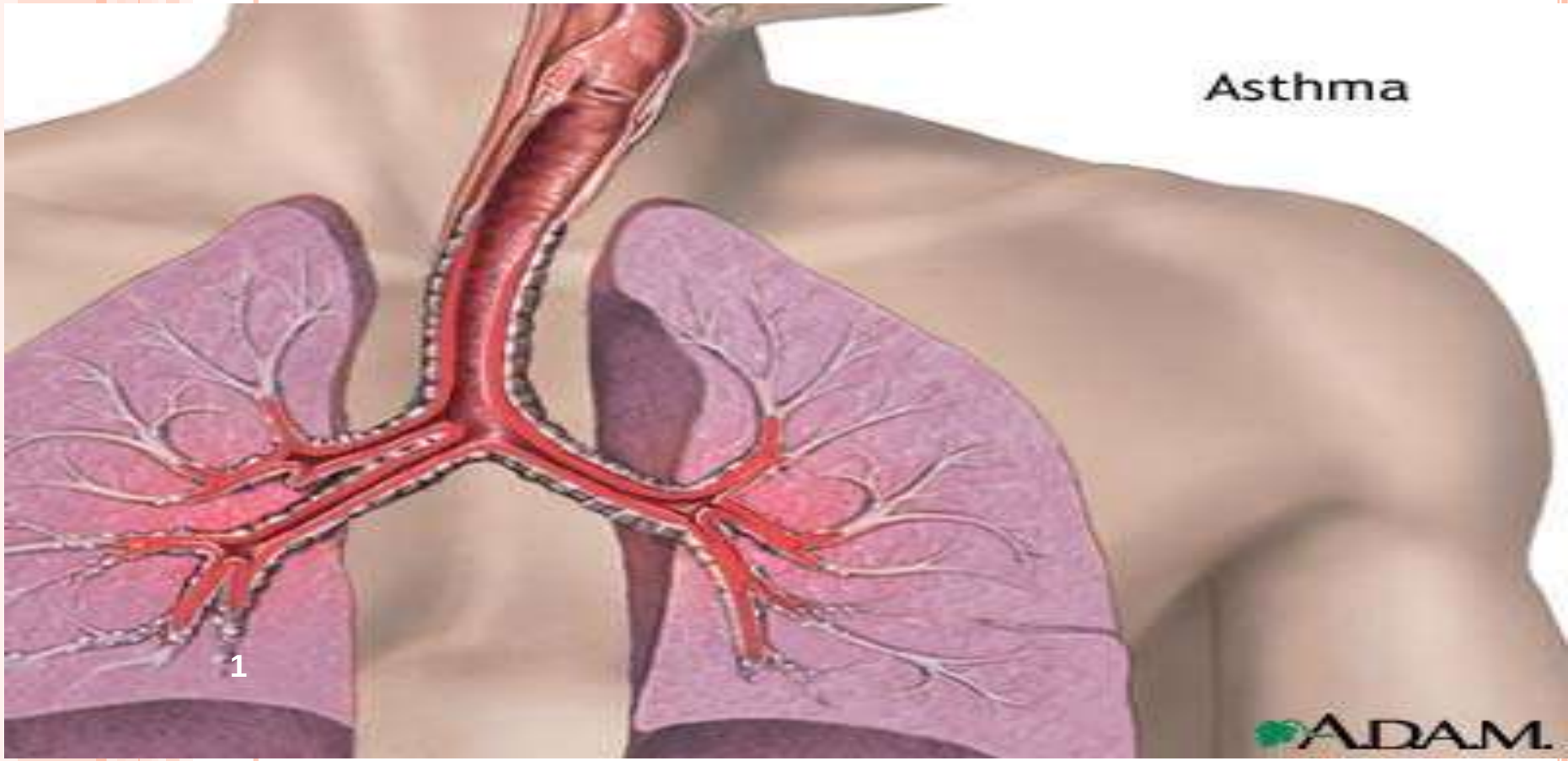
ASTHMA



INTRODUCTION

- **Asthma is a chronic inflammatory disease of the airways that causes airway hyper-responsiveness, mucosal edema, and mucus production**

Asthma is characterized by chronic airway inflammation and increased airway hyper-responsiveness leading to symptoms of wheeze, cough, chest tightness and dyspnoea.

- Asthma is a disorder of the bronchial airways characterized by period of reversible bronchospam.

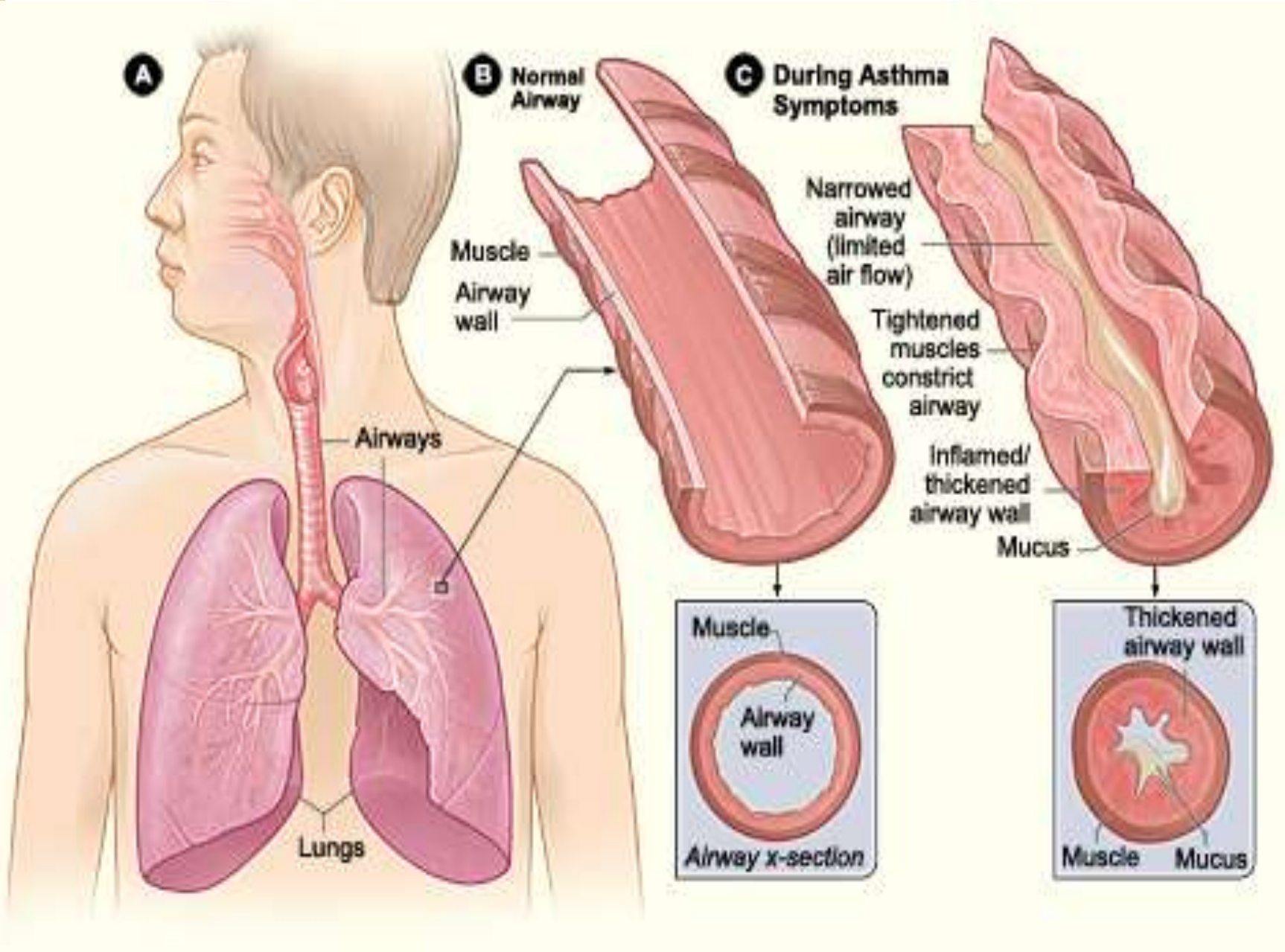
INTRODUCTION CONTD…..

- Asthma differs from the other obstructive lung diseases in that it is **largely reversible**, either spontaneously or with treatment.

- Patients with asthma may experience **symptom-free periods** alternating with **acute exacerbations**, which last from minutes to hours or days.

INTRODUCTION CONTD…

- The most frequent form has its onset in **childhood between the ages of 3 and 5 years** and may either worsen or improve during adolescence.


A
B Normal Airway
C During Asthma Symptoms
Muscle
Airway wall
Airways
Lungs
Narrowed airway (limited air flow)
Tightened muscles constrict airway
Inflamed/ thickened airway wall
Mucus
Muscle
Airway wall
Airway x-section
Thickened airway wall
Muscle
Mucus

EPIDEMIOLOGY

- In many countries the **prevalence** of asthma is **increasing.**

- This increase, with its accompanying allergy, is particularly in **childre**n and **young adults** where this disease may affect up to **15% of the population**.

- Asthma being commoner in more developed countries.

EPIDEMIOLOGY CONTD….

- World-wide ,approximately **300 million** people have asthma and this is ,expected to rise to 400 million by 2025.

- In childhood, asthma is more common in boys, but following puberty females are more frequently affected.

ETIOLOGY AND RISK FACTOR

- Asthma occurs in families which suggest that it is **an inherited** disorder.
- **Allergy** is the strongest predisposing factor for asthma.
- **Chronic exposure to airway** irritants or allergens also increases the risk for developing asthma.
- Common allergens can be seasonal (eg, grass, tree, and weed pollens, mold, dust, or animal dander).

CONTD…

- **Excitatory state** (stress ,cry)
- Occupational environment
- factor such as cold air, air pollution, drug infection,
- Occupational environment
- Other factor such as cold air ,air pollution, infection, diet

CONTD…

Triggers

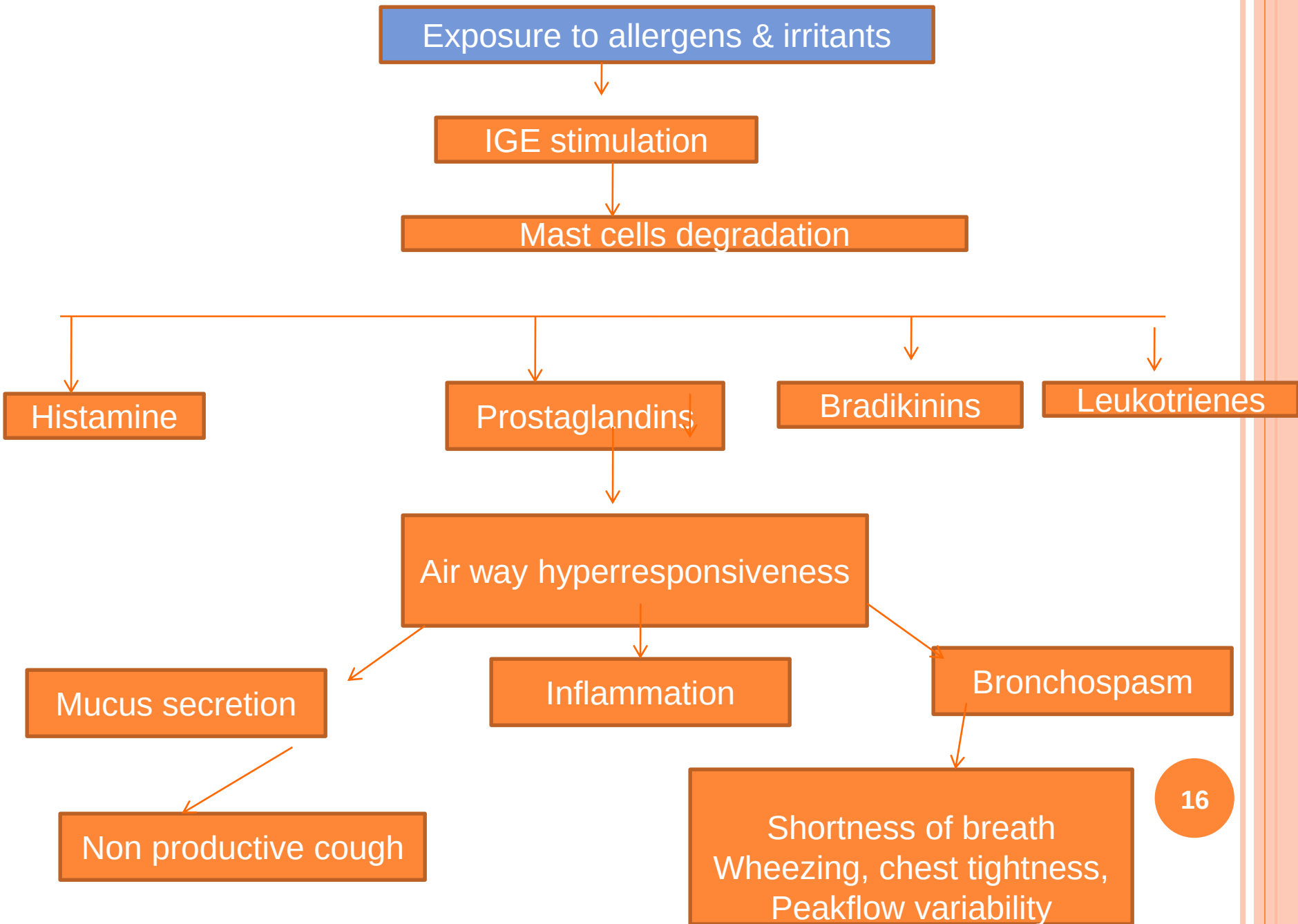
- Allergens
- Upper respiratory tract viral infections
- Exercise
- Cold air
- Sulfur dioxide Drugs (BETA blockers, aspirin)
- Stress
- Irritants (household sprays, paint fumes)

CLASSIFICATION

Asthma is a complex disorder of the conducting airways that most simply can be classified as:

- extrinsic – implying a definite external cause
- intrinsic – when no causative agent can be identified.

Physiology/Pathophysiology


Exposure to allergens & irritants
IGE stimulation
Mast cells degradation
Histamine
Prostaglandins
Bradikinins
Leukotrienes
Air way hyperresponsiveness
Mucus secretion
Inflammation
Bronchospasm
Non productive cough
Shortness of breath
Wheezing, chest tightness,
Peakflow variability

Clinical Manifestations

- The principal symptoms of asthma are wheezing attacks and **episodic shortness of breath.**
- Typical symptoms include **recurrent episodes of wheezing, chest tightness**, b**reathlessness** and **cough**.
- In some instances, **cough may be the only symptom**
- cough, with or without mucus production
- **Expiration requires effort** and becomes **prolonged.**

Contd….

- **As the exacerbation progresses**, diaphoresis, **Tachycardia** and a **widened pulse pressure** may occur along with **hypoxemia** and **central cyanosis .**

DIAGNOSIS

History taking

- A complete family, environmental, and occupational history is essential.
- Family history : History of asthma in family
- Environmental history : seasonal changes, high pollen counts, mold, climate changes (particularly cold air), and air pollution,

CONTD…

- Occupational history : occupation-related chemicals and compounds, including metal salts, wood and vegetable dust

- Medications (eg, aspirin)

- Industrial chemicals and plastics, biologic enzymes (eg, laundry detergents), animal and insect dusts, sera, and secretions.

CONTD..

Physical examination

- wheezing all over the lung
- breathlessness and cough.
- Cyanosis

INVESTIGATIONS

- *Lung function tests/ pulmonary function test :* *Shows* variable airflow limitation

- *Blood tests :shows* increase in the number of eosinophils in peripheral blood (> 0.4 × 109/L).

- *Sputum tests* The presence of large numbers of eosinophils in the sputum is a more useful diagnostic tool.

CONTD…

- *Chest X-ray* : There are no diagnostic features of asthma on the chest X-ray

- A chest X-ray may be helpful in excluding a pneumothorax, which can occur as a complication of asthma

- *Skin tests* Skin-prick tests (SPT) should be performed in all cases of asthma to help identify allergic causes.

Essentials of Diagnosis

- Episodic or chronic symptoms of airflow obstruction: breathlessness, cough, wheezing, and chest tightness.
- Symptoms frequently worse at night or in the early morning.
- Prolonged expiration and diffuse wheezes on physical examination.
- Limitation of airflow on pulmonary function testing.
- Complete or partial reversibility of airflow obstruction, either spontaneously or following bronchodilator therapy.

MEDICAL MANAGEMENT

THE GOALS OF ASTHMA MANAGEMENT

- Achieve and maintain control of symptoms
- Prevent asthma exacerbations
- Maintain pulmonary function as close to normal as possible
- Avoid adverse effects from asthma medications
- Prevent development of irreversible airflow limitation
- Prevent asthma mortality

Medical Management

- Reassure the patient , as anxiety worsen respiratory distress
- Keep the patient in upright position
- Start oxygen 50-60 % initially, continue till the patient is better and not dyspnoeic
- **Nebulized with salbutamol or Terbutalin for immediate relief.**
- Salbutamol 5 mg (1 ml with 1 ml normal saline) stat.
- Repeat dose at 15 mins if required during the first hour.
- Hourly for next few hours till bronchospasm is controlled.

MEDICAL MANAGEMENT CONTD….

- Secure I/V line
- Inj. Hydrocotisone 200mg I/V stat routinely given to all severe cases than 6 hourly
- Antibiotic if there is evidence of infection
- Adequate hydration and mucolytics.

Nursing Management

NURSING PROCESS:

Assessment

- Assessment involves obtaining information about current symptoms as well as previous disease manifestations
- A complete family, environmental, and occupational history is essential.
- family history : History of asthma in family

Contd…

- Environmental history : seasonal changes, high pollen counts, mold, climate changes (particularly cold air), and air pollution
- occupational history : occupation-related chemicals and compounds, including metal salts, wood and vegetable dust,
- Medications taken (eg, aspirin)

CONTD…

Industrial chemicals and plastics, biologic enzymes (eg, laundry detergents), animal and insect dusts, sera, and secretions

Physical examination

- wheezing all over the lung
- breathlessness and cough.
- Cyanosis

NURSING DIAGNOSIS

- Ineffective airway clearance related to increased production of secretions and bronchospasm.

- Ineffective breathing pattern related to shortness of breath, mucus, bronchoconstriction, and airway irritants

Contd…

- Activity intolerance due to fatigue, ineffective breathing patterns, and hypoxemia
- Deficient knowledge of self-care strategies to be performed at home.
- Ineffective coping related to reduced socialization, anxiety, depression, lower activity level, and the inability to work

Planning and Goals

The major goals for the patient may include

- smoking cessation,
- Improved gas exchange, & Airway clearance,
- improved breathing pattern,
- Improved activity tolerance ,
- Maximal self-management,
- Improved coping ability,
- Adherence to the therapeutic program ,Home care & Absence of complications.

Diagnosis: Ineffective Breathing Pattern

Nursing diagnosis: Ineffective breathing pattern related to shortness of breath, mucus, bronchoconstriction, and airway irritants

Outcomes

- A decreasing respiratory rate to within normal limits.
- Decreased dyspnoea, less nasal flaring, and reduced use of accessory muscles.
- Decreased manifestations of anxiety.
- Oxygen saturation greater than 95%.

Interventions

- Assess the client frequently, observing respiratory rate and depth.
- Assess the breathing pattern for shortness of breath, pursed-lip breathing, nasal flaring,
- Assess of Sternal and intercostals retractions, or a prolonged expiratory, phase.

INTERVENTIONS CONTD…

- Place the client in the fowler position
- Give oxygen by face mask as ordered.
- Give Nebulization using asthalin and impravent solution.
- Monitor ABGs and oxygen saturation level to determine the effectiveness of treatments.
- Reassure the patient .

Diagnosis: Ineffective Airway Clearance:

- **The nursing diagnosis**: Ineffective Airway Clearance related to increased production of secretions and bronchospasm.

Outcomes

- Decreased inspiratory and expiratory wheezing.
- Decreased rhonchi.
- Decreasing dry, nonproductive cough.

Interventions

- Monitor the color and consistency of the sputum.
- Assist the client to cough effectively.
- Encourage oral fluids to thin the secretions and replace fluids lost through rapid respiration.
- perform Postural drainage, lung percussion and vibration.
- Give Expectorants as prescribe
- Do frequent position changes.

Diagnosis: Impaired Gas Exchange.

- **Nursing diagnosis**: Impaired Gas Exchange related to air trapping.

Outcomes

- Decreased inspiratory and expiratory wheezing.
- Oxygen saturation >90%.
- pH of 7.35 to 7.45.
- Usual skin color (no cyanosis).
- Decreasing dry, nonproductive cough.

Interventions

- Asses lung sounds every hour during acute episodes to determine the adequacy of gas exchange.
- Asses skin and mucous membrane color of cyanosis.(Cyanosis is a late manifestation of hypoxia and an indication of serious gas-exchange problems.)
- Monitor pulse oximetry for oxygen saturation levels.
- Administer oxygen as ordered to maintain optimal oxygen saturation.

Interventions contd…

- Assist the client to cough effectively.
- Encourage oral fluids to thin the secretions and replace fluids lost through rapid respiration.
- perform Postural drainage, lung percussion and vibration.
- Give Expectorants as prescribe
- Do frequent position changes.

Knowledge Deficit.

- **Nursing Diagnosis**: Knowledge Deficit related to use of inhaler and /nebulizer mechine.

Outcomes

- The client will have increased knowledge about how to use nebulizer /inhaler evidenced by explaining or demonstrating the correct technique

INTERVENTIONS

- Show the each part of device and explain the function of inhaler device.
- Demonstrate/ explain the patient about correct use of device and how to care of the device .
- Certain the client knows prober use of device (post test)
- Observe the client's use of the inhaled to ascertain whether the medication is entering the airway.

Risk for decisional Conflict

Outcomes

- The client will express an understanding of the conflict involved with maintain the present life style and its effect asthma.

INTERVENTIONS

- Encourage clients to stop smoking.
- Elimination of irritants as much as possible .
- Encourage for use of mask to protect from dust .
- Advice patient not to directly expose in cold .
- Advice to keep the emergency medicine at any time with him/her
- Take special precaution while caring the pets.

ACTIVITY INTOLERANCE

- **Nursing Diagnosis:** Activity intolerance due to fatigue, ineffective breathing patterns, and hypoxemia

Out comes

- Maintained respiratory depth and rate while activity
- Decreased dyspnoea
- Decreased manifestations of anxiety
- Increased participation in activity of daily living

INTERVENTION

- Assess level of activity tolerance and degree of fatigue, lethargy, and malaise when performing routine ADLs.
- Assist with activities and hygiene when fatigued.
- Encourage for rest when fatigued
- finish the procedure with in a short period of time to avoid extra exertion
- Give rest between the procedure
- monitor the oxygen saturation frequently & Provide oxygen when necessary during the activity .

Preventive measures for asthma

Asthma is not a totally preventable disease however the person should take precaution from allergen related to occupational exposure and household exposure .

- **Use of face mask**
- **Avoid upper respiratory tract infection as much as possible.**
- **Avoid smoking and smoky environment**
- **Avoid passive smoking**

Prevention contd…

You can reduce asthma symptoms by avoiding known triggers and substances that irritate the airways.

- Cover bedding with "allergy-proof" casings to reduce exposure to dust mites.
- Remove carpets from bedrooms and vacuum regularly.
- Use only odorless detergents and cleaning materials in the home.
- Keep humidity levels low and fix leaks to reduce the growth of organisms such as mold.

Prevention contd…

- Keep humidity levels low and fix leaks to reduce the growth of organisms such as mold.
- Keep the house clean and keep food in containers and out of bedrooms -- this helps reduce the possibility of cockroaches, which can trigger asthma attacks in some people.
- If a person is allergic to an animal that cannot be removed from the home, the animal should be kept out of the bedroom..

Prevention contd…

- Eliminate tobacco smoke from the home. This is the single most important thing a family can do to help a child with asthma. Family members and visitors who smoke outside carry smoke residue inside on their clothes and hair -- this can trigger asthma symptoms.

- Persons with asthma should also avoid air pollution, industrial dusts, and other irritating fumes as much as possible.

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THANK YOU