

BRONCHIAL ASTHMA

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OBJECTIVES:

- *To give an introduction about asthma.*
- *Signs & symptoms.*
- *How to diagnose it?.*
- *Bases of treatment.*
- *Types of treatments.*
- *Ways of prevention.*



INTRODUCTION:

- Definition:
- **Asthma** is a chronic condition involving the respiratory system in which the airways occasionally constricts, becomes inflamed, and is lined with excessive amounts of mucus, often in response to one or more *triggers*.

Triggers:

- **Tobacco smoke.**
- **Infections** such as colds, flu, or pneumonia .
- **Allergens** such as food, pollen, mold, dust mites, and pet dander
- **Exercise .**
- **Air pollution and toxins .**
- **Weather, especially extreme changes** in temperature
- **Drugs** (such as aspirin, NSAID, and beta-blockers)
- **Food additives** (such as MSG)
- **Emotional stress and anxiety .**
- **Singing, laughing, or crying .**
- **Smoking, perfumes, or sprays .**
- **Acid reflux .**

Signs & Symptoms:

- *Shortness of breath .*
- *Tightness of chest .*
- *Excessive coughing or a cough that keeps you awake at night .*
- *Feeling very tired or weak when exercising .*
- *Wheezing or coughing after exercise .*
- *Decreases or changes in lung function as measured on a peak flow meter .*
- *Signs of a cold, or allergies (sneezing, runny nose, cough, nasal congestion, sore throat, and headache) .*
- *Trouble sleeping .*

Diagnosis:

- History of the patient & clinical examination.
- Devices to improve the finding of asthma like :
- **Spirometer (Pulmonary Function Test)**
- **Peak flow rate** (measured in rest & in exercise)
 - Patient may have only ([exercise-induced asthma](#))

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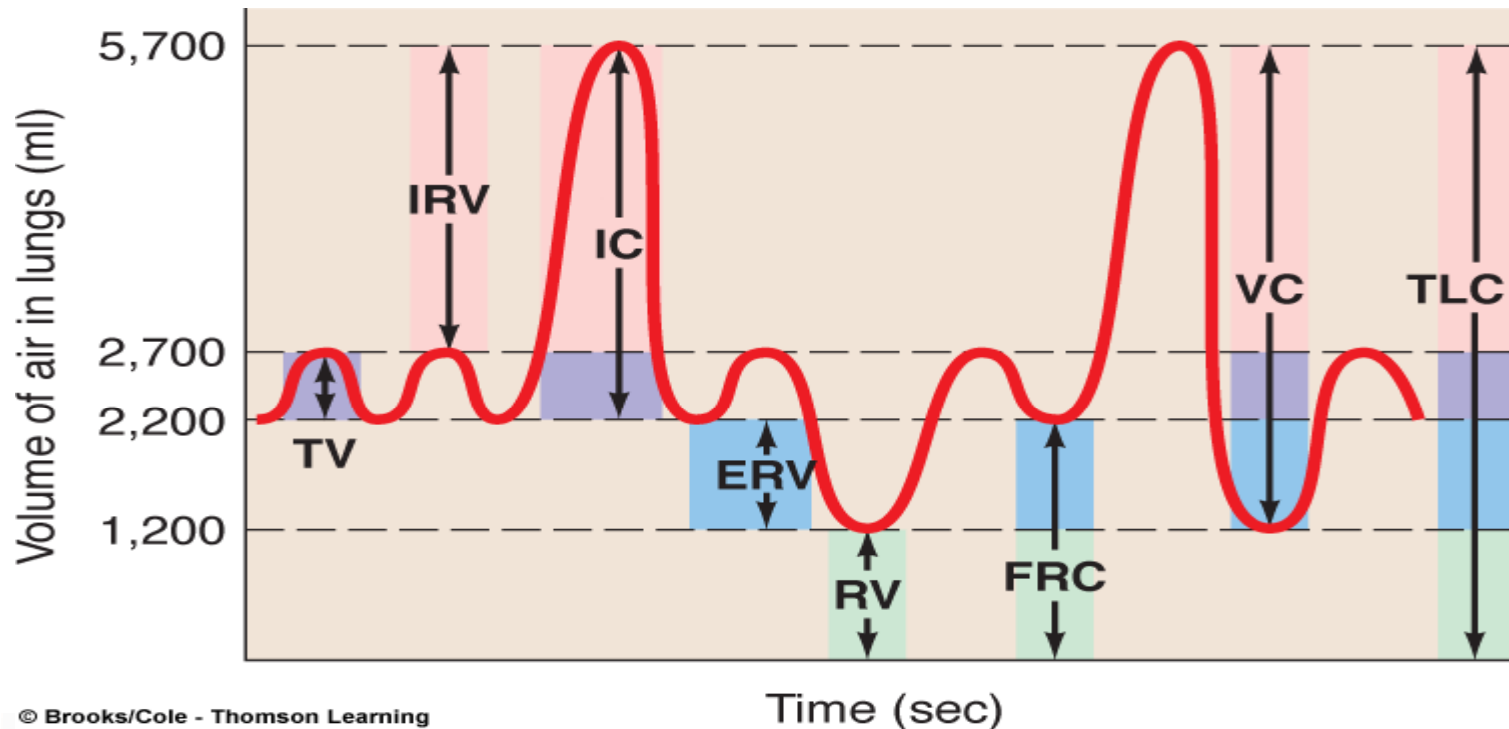
Investigation:

- Routine Blood Investigation
- Chest X-ray
- Sputum examination
- Arterial Blood Gas analysis
- **Capnography** (measures the amount of exhaled CO₂ .
- **Pulse oximetry** (shows the amounts of O₂ dissolved in blood.

Spirometry

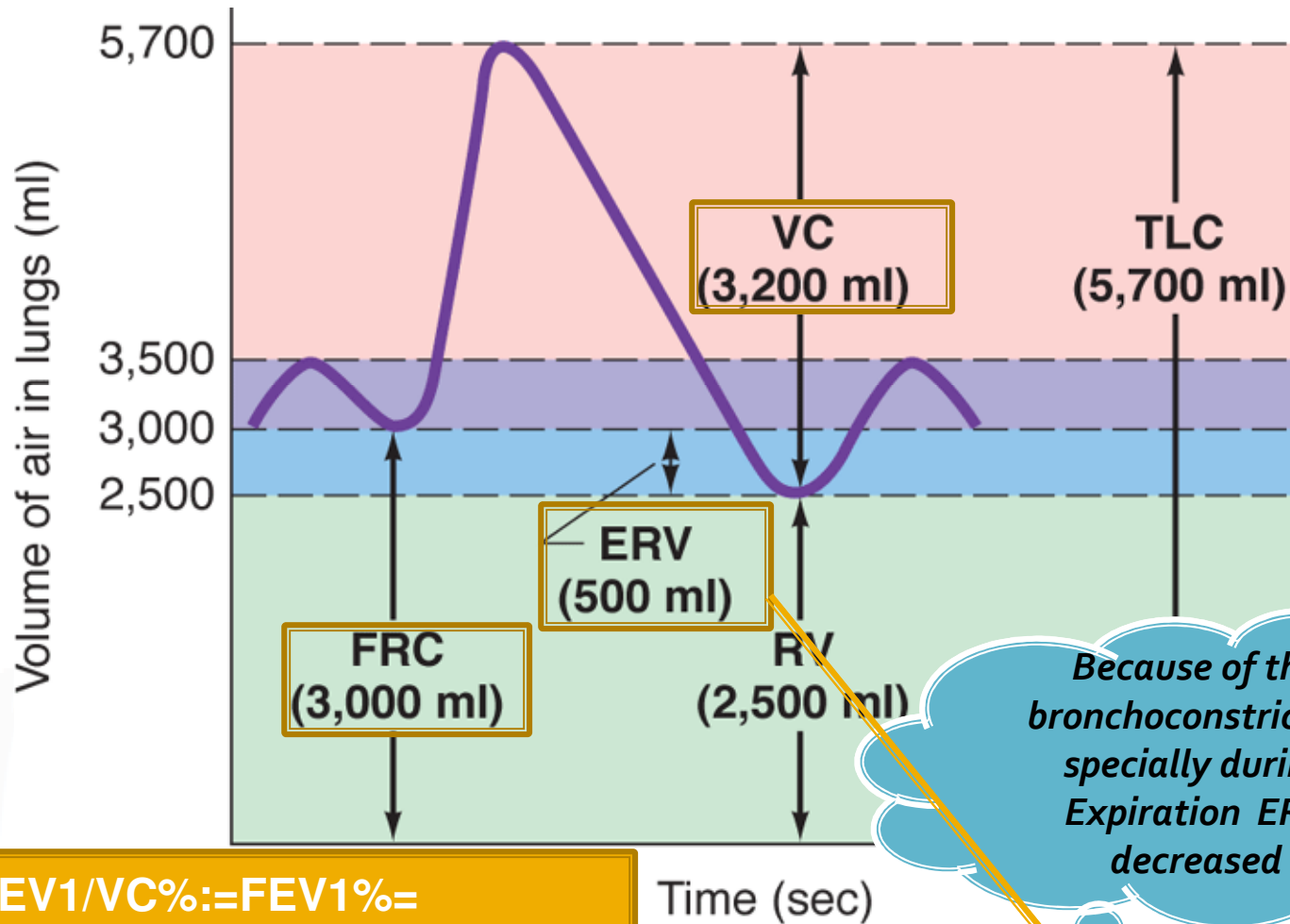
- Spirometry Pre & Post use of Broncho-dilator MDI
- To establish reversibility of airflow obstruction
 - $\geq 12\%$ reversibility or
 - Increase in FEV₁ of 200cc is considered significant
- Obstructive pattern:
 - Reduced FEV₁/FVC ratio
- Restrictive pattern:
 - Reduced Both FEV₁ & FVC ; Normal FEV₁/FVC ratio

Pulmonary function test (Spirometer):



TV = Tidal volume (500ml)
IRV = Inspiratory reserve volume (3,000 ml)
IC = Inspiratory capacity (3,500 ml)
ERV = Expiratory reserve volume (1,000 ml)
RV = Residual volume (1,200 ml)
FRC = Functional residual capacity (2,200 ml)
VC = Vital capacity (4,500 ml)
TLC = Total lung capacity (5,700 ml)

OBSTRUCTIVE LUNG DISEASE



**NOTE : FEV1/VC%:=FEV1%=
% of total VC expired in 1st second =
Less than 80% in asthma.**

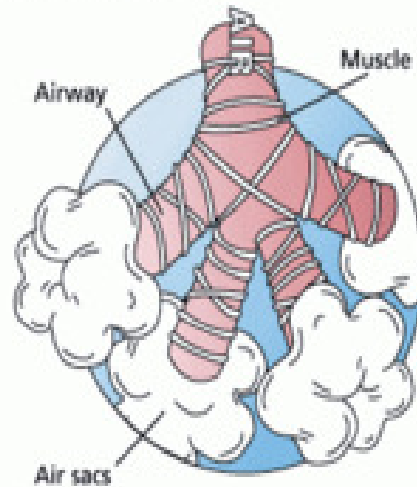
Differential Diagnosis

- Pulmonary edema
- Chronic Obstructive Lung Disease (COPD)
- Congestive Cardiac Failure (CCF)
- Pneumothorax
- Bronchopneumonia

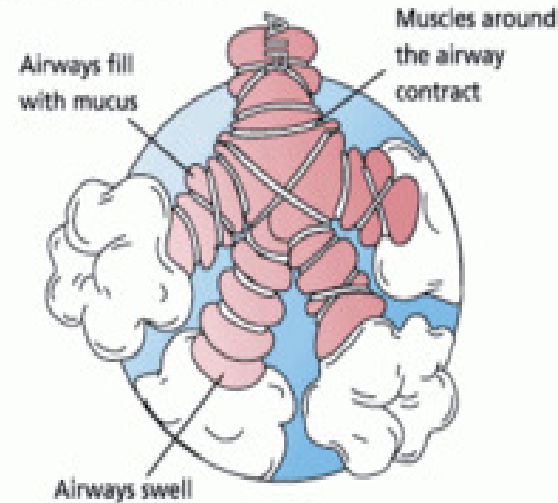
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Treatment:

Before an Asthma Episode



After an Asthma Episode



- ***Bases of treatments:***

- ***one way is to relaxes the muscles during expiration.***

Drugs used in treatment:

- *Oxygen inhalation*
- *Anti-inflammatories*
 - Specially leukotriene inhibitors = Sodium Cromoglycate
- *Bronchodilators*
 - *Corticosteroids.*
 - Hydrocortisone, Beclomethasone, Prednisolone
 - *Beta agonist*
 - Salbutamol, Terbutaline, Adrenaline
 - *Anti-cholinergic*
 - Ipratropium bromide
 - *Phosphodiesterase inhibitor*
 - Aminophylline, Deriphylline

Treatment

- Mast cell stabilizers
- Leukotriene receptor antagonists
- Antibiotic
- Respiratory Support – BIPAP
- ABG analysis and correction

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Metered Dose Inhaler (MDI)

- Device that delivers a specific amount of medication to the lungs
- in the form of a short burst of aerosolized
- inhaled by the patient

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Metered Dose Inhaler (MDI)



Spacer



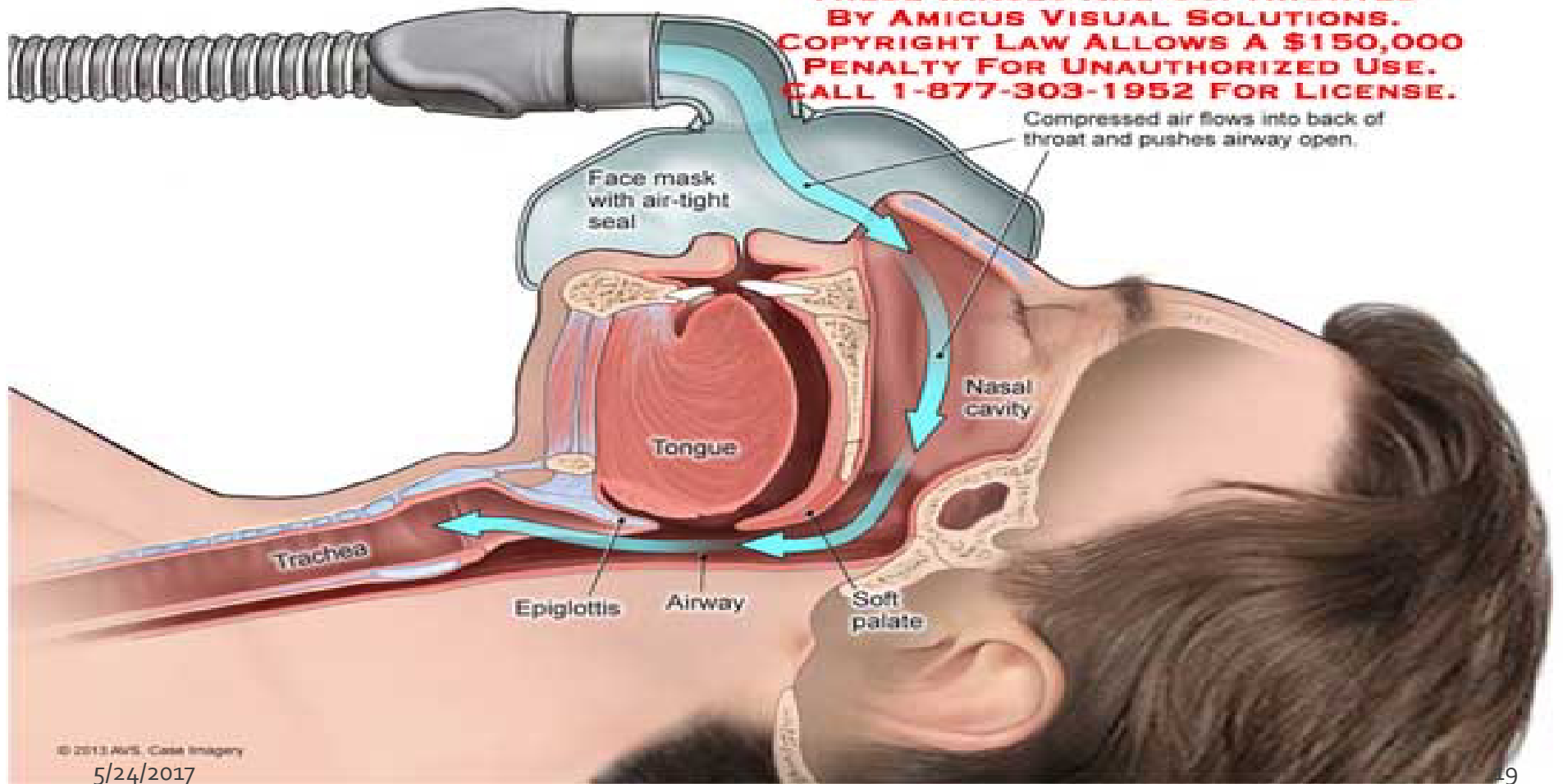
Nebulization



BIPAP or CPAP

CPAP Therapy (Continuous Positive Airway Pressure)

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Prevention:

- One method of prevention is to form at least yearly medical exam specially for the major systems.
- Today, some drugs are used to prevent it:
- ***Corticosteroids.***
- ***Glucocorticoids (Cortisone) because we said that cortisol has a permissive action to catecholeamine which induces VC & BD.***
- ***Anti- inflammatory drugs*** (specially ***anti-histamine***).

THANK YOU FOR
LISTENNING