

LUNG FUNCTION IN HEALTH AND DISEASE: SPIROMETRY



SPIROMETRY



- ❑ Spirometry is a widely used, effort depended basic lung function test
- ❑ Assess the lung performance
- ❑ Assess physiological parameters; lung volumes, capacities & flow rate
- ❑ Differentiate between the obstructive and restrictive lung conditions
- ❑ Play a critical role in the diagnosis, differentiation and management of respiratory illness.

PHYSIOLOGICAL CONDITIONS AND SPIROMETRY



Physiology conditions:

- Age
- Gender
- Height
- Weight
- Ethnic group
- Pregnancy

INDICATIONS OF SPIROMETRY

Based on clinical features / abnormal lab tests

Symptoms: Dyspnea, cough, sputum production, chest pain

Signs: Cyanosis, clubbing, chest deformity, diminished chest expansion, hyperinflation, diminished breath sounds, Prolongation of expiratory phase & crackles

Arterial blood gas analysis: Hypoxemia, hypercapnia

Abnormal chest X Ray:

INDICATIONS OF SPIROMETRY



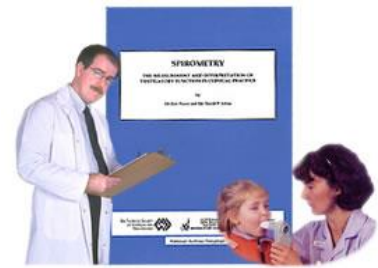
Describe the course of diseases affecting PFTs

Neuromuscular diseases: Guillain Barre Syndrome,
Myasthenia gravis

Pulmonary diseases: Obstructive airway diseases,
Interstitial lung diseases

Adverse reactions: Drugs with known pulmonary
toxicity [Pulmonary fibrosis]

INDICATIONS OF SPIROMETRY



Monitoring indications

To assess the therapeutic interventions:

Bronchodilator therapy

Steroid treatment for asthma

Chronic obstructive lung disease

Interstitial lung disease

INDICATIONS OF SPIROMETRY

PRE OPERATIVE INDICATIONS

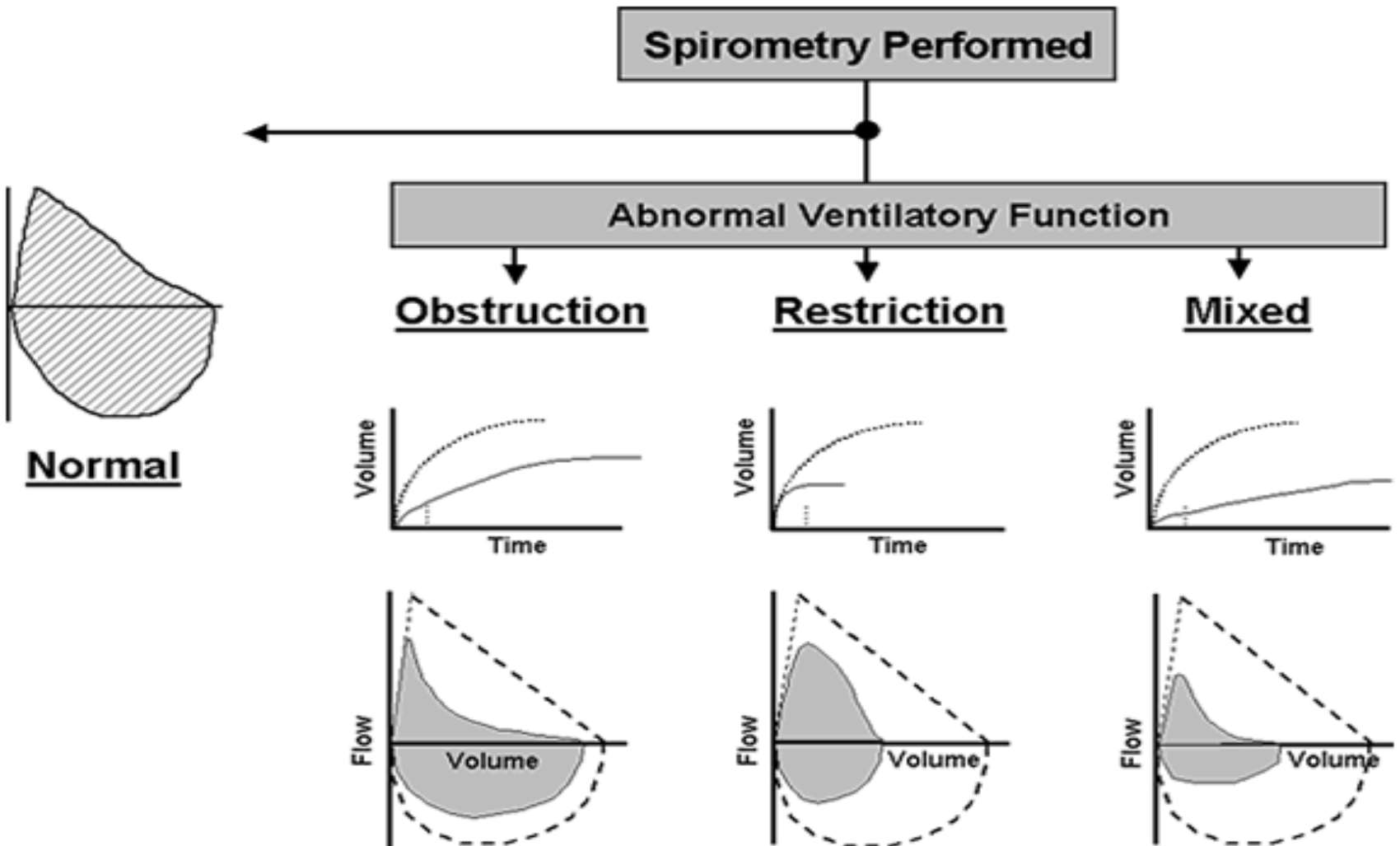
To determine the suitability for and management during and after anaesthesia

To assess the risk for surgical procedures known to affect lung function



Cotes 1995; ACCP Chest 2003;
Regli et al., Anaesthesia, 2006

SPIROMETRY IN RESPIRATORY DISEASES



DIAGNOSIS OF COPD

SYMPTOMS

cough
sputum
dyspnea

EXPOSURE TO RISK FACTORS

tobacco
occupation
indoor/outdoor pollution



SPIROMETRY

SMOKERS AND SPIROMETRY



Smoker & Non Smoker:

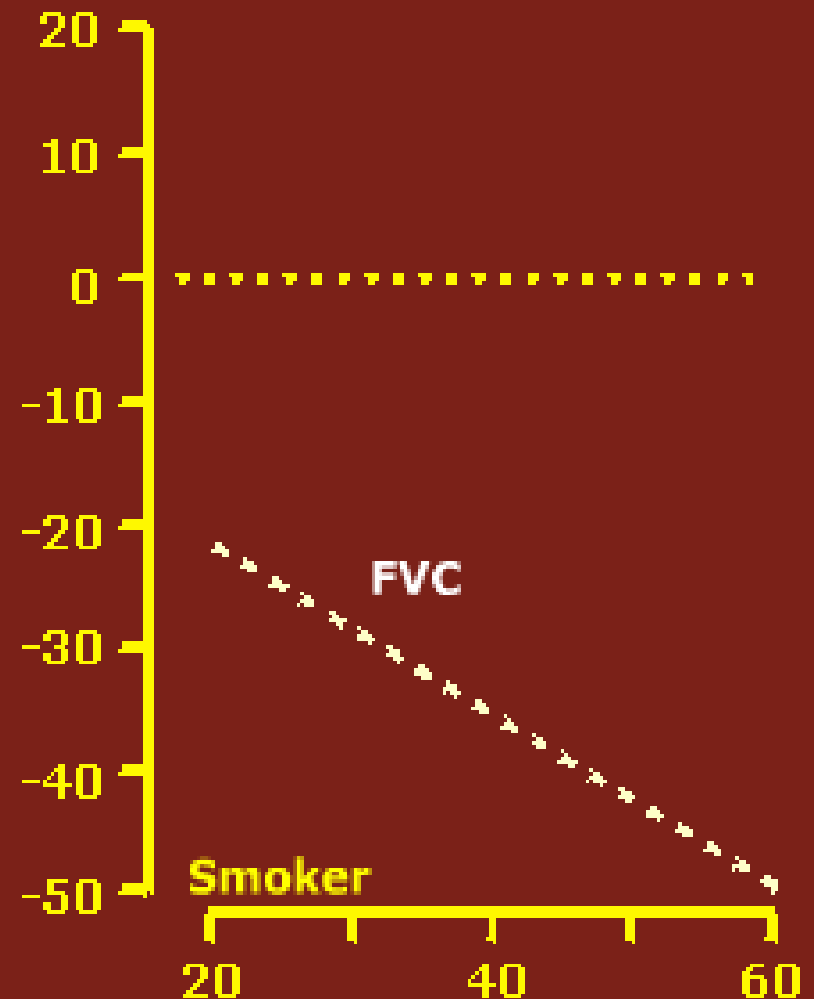
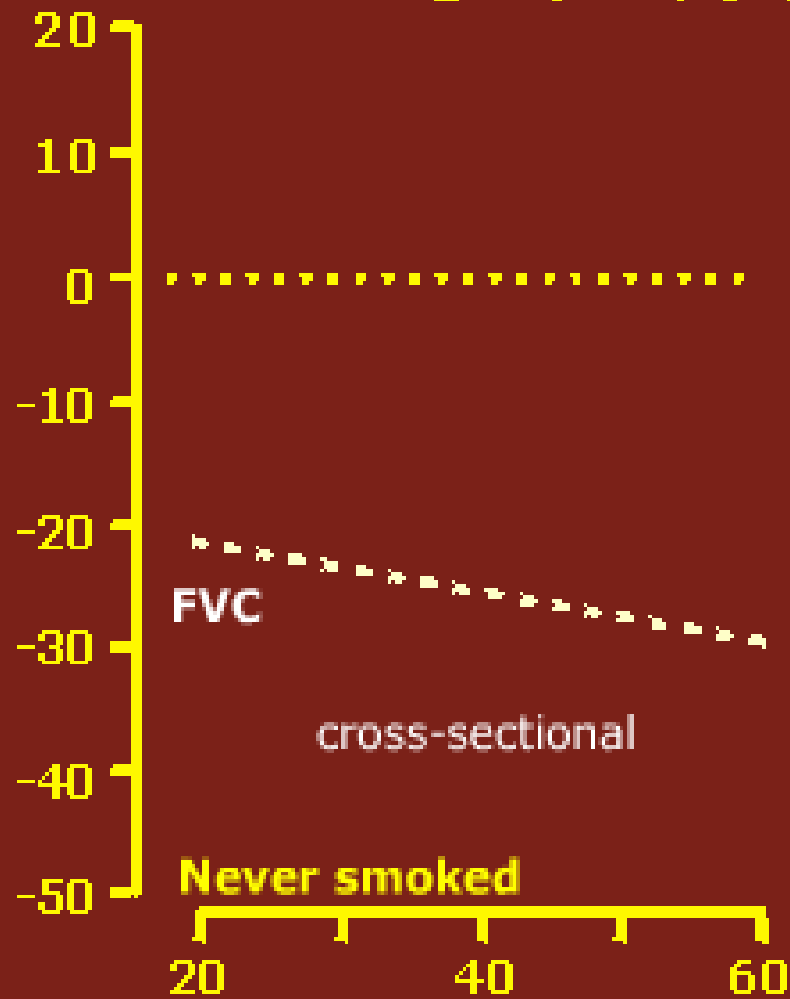
Non Smoker: In normal healthy non smoker subject after the age of 30 the expected decline in Lung function parameter [FEV1] is 25–30 ml/ year

Smoker: The average rate of decline of lung function in smokers as measured by Forced Expiratory Volume in 1 sec [FEV1] is 60-70 ml / year

SMOKERS AND SPIROMETRY

Annual change (mL/yr)

Males (177 cm)



SMOKERS AND SPIROMETRY

