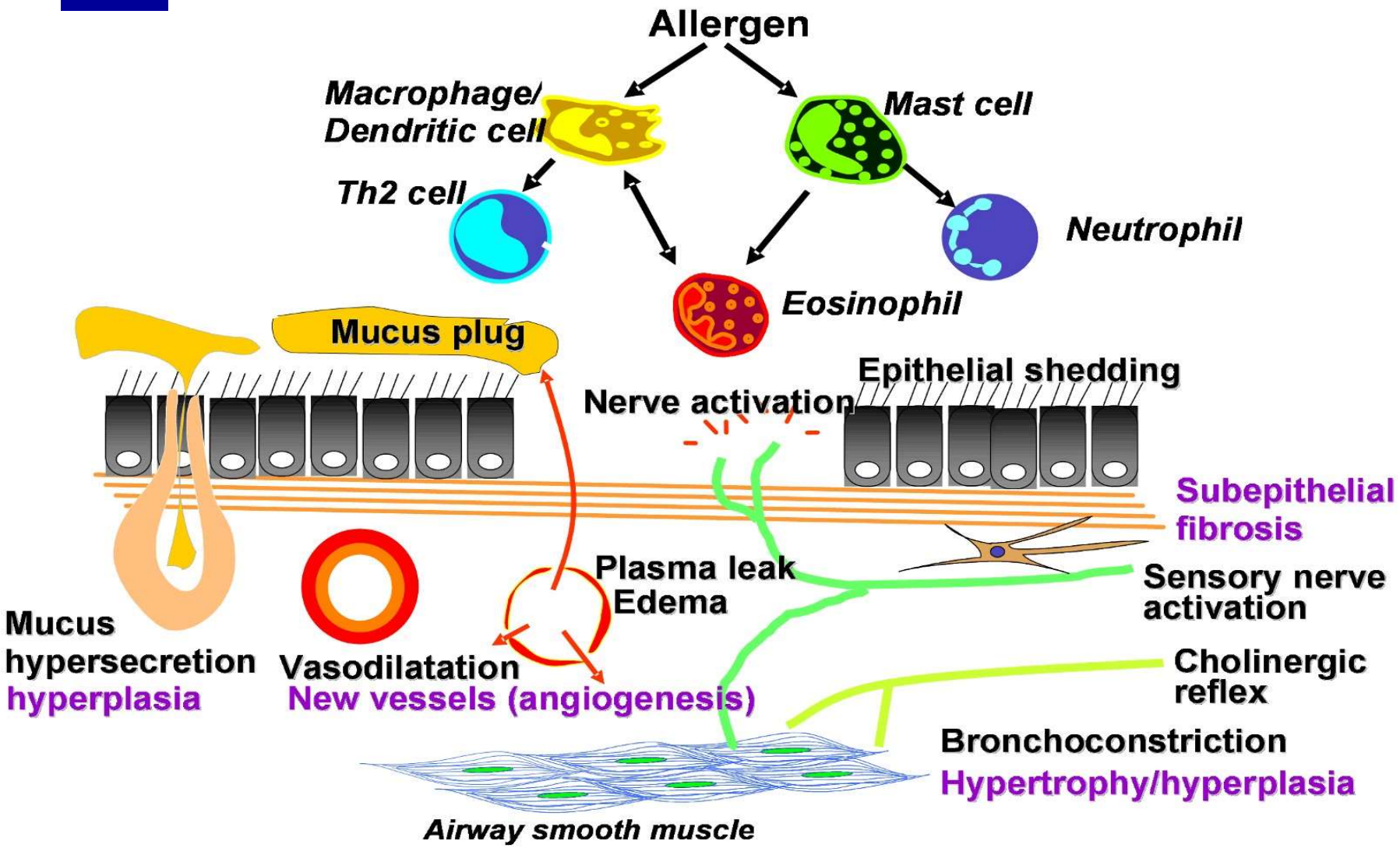
ASTHMA

Definition of asthma

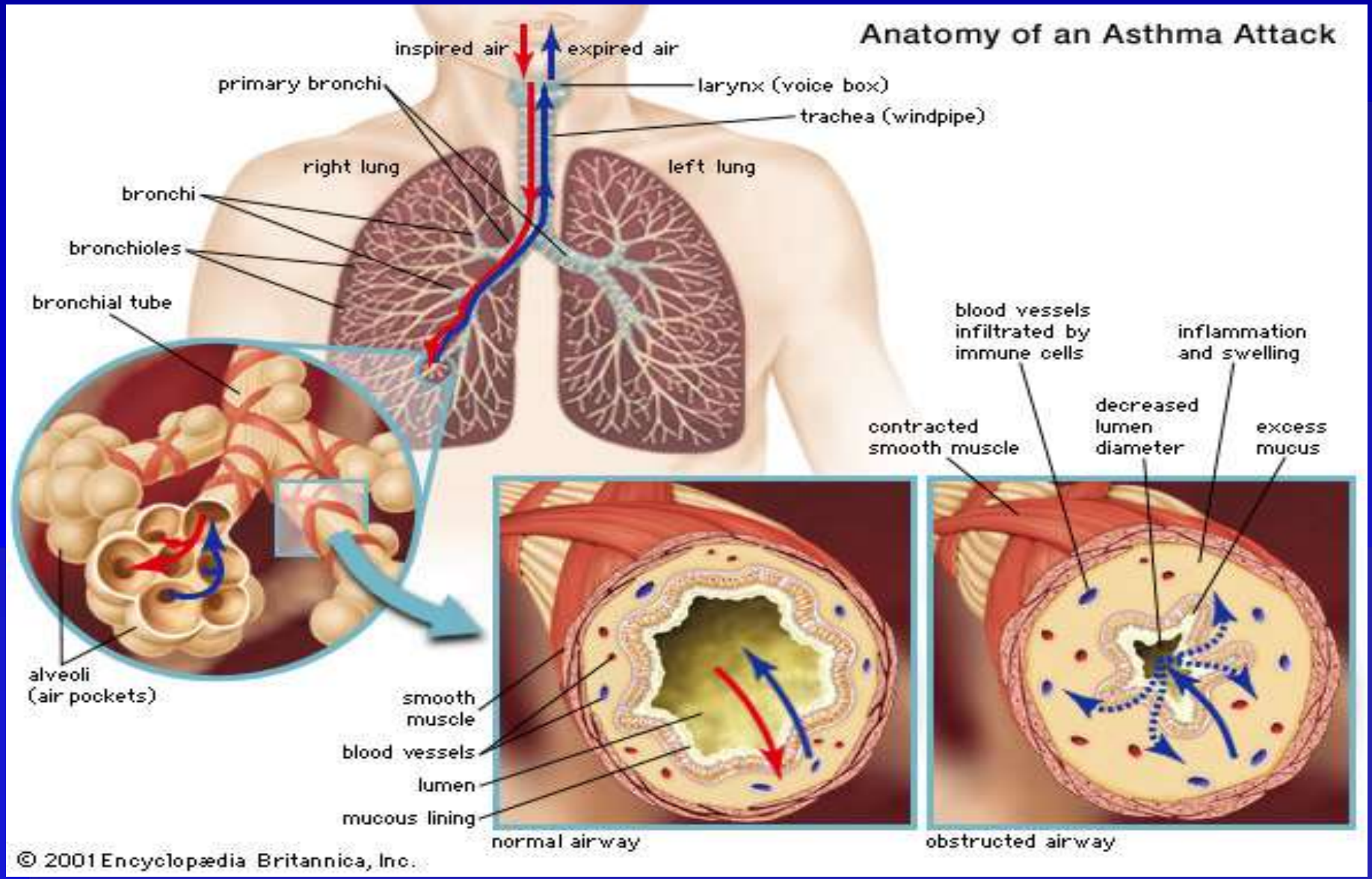
Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.

Asthma Inflammation: Cells and Mediators



Normal & Asthmatic Bronchiole



Risk Factors that Lead to Asthma Development

Predisposing Factors

- Atopy
- Gender

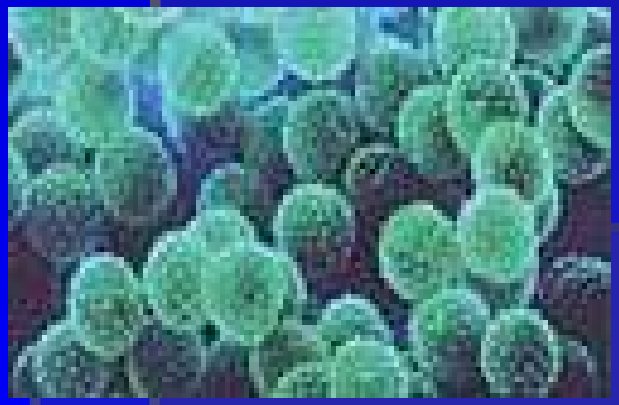
Causal Factors

- Indoor Allergens
  - Domestic Mites
  - Animal Allergens
  - Cockroach Allergens
  - Fungi
- Outdoor Allergens
  - Pollens
  - Fungi
- Occupational Sensitizers

Contributing Factors

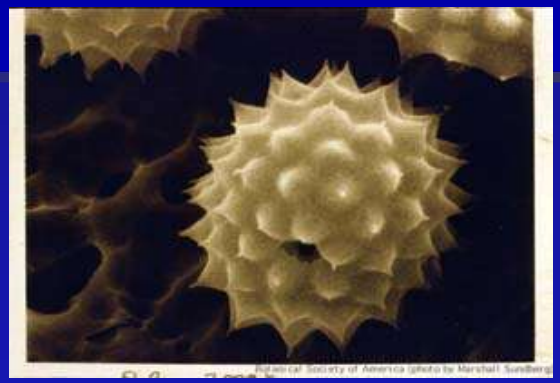
- Respiratory Infections
- Small Size at Birth
- Diet
- Air Pollution
  - Outdoor Pollutants
  - Indoor Pollutants
- Smoking
  - Passive Smoking
  - Active Smoking

Globally important allergens



- Grass, tree and weed pollen
- House dust mites
- Pets
- Cockroaches
- Molds
- Occupational

Pollen from Plants



Factors that Exacerbate Asthma

- Allergens
- Respiratory infections
- Exercise and hyperventilation
- Weather Changes
- Sulfur dioxide
- Food, additives, drugs

Asthma Diagnosis

- History and patterns of symptoms
- Physical examination
- Measurements of lung function
- Evaluation of allergic status

Is it Asthma?

- Recurrent episodes of wheezing
- Troublesome cough at night
- Cough or wheeze after exercise
- Cough, wheeze or chest tightness after exposure to airborne allergens or pollutants
- Colds “go to the chest” or take more than 10 days to clear

Diagnosis of asthma in children

- Initial clinical assessment
  - Clinical features that increase the probability of asthma:
  - >1 of these symptoms: wheeze, cough, difficulty breathing, chest tightness
  - Personal history of atopy
  - FH of atopy
  - Widespread wheeze on auscultation
  - History of improvement in symptoms or lung function in response to adequate therapy

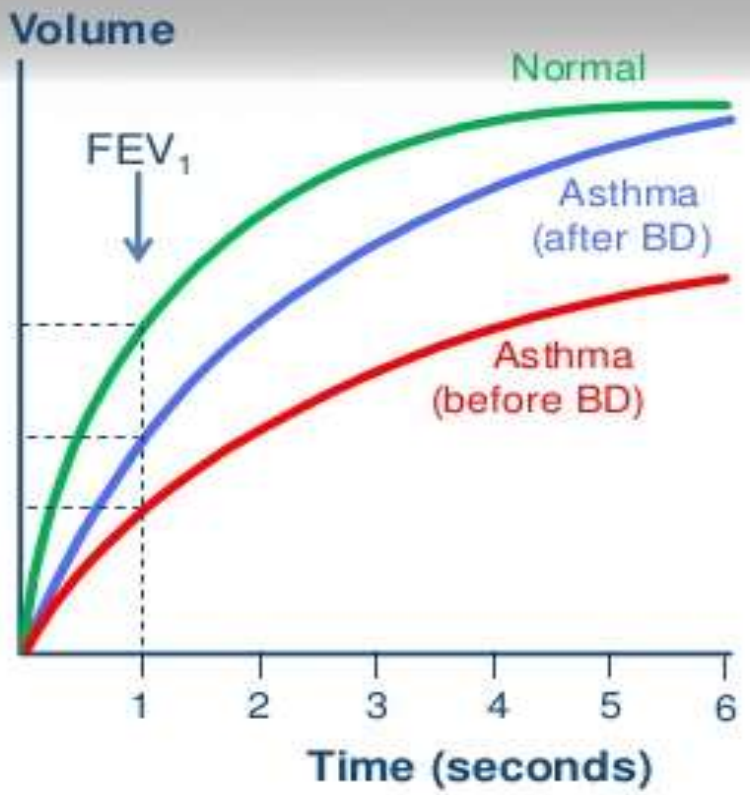
BTS guideline 2008

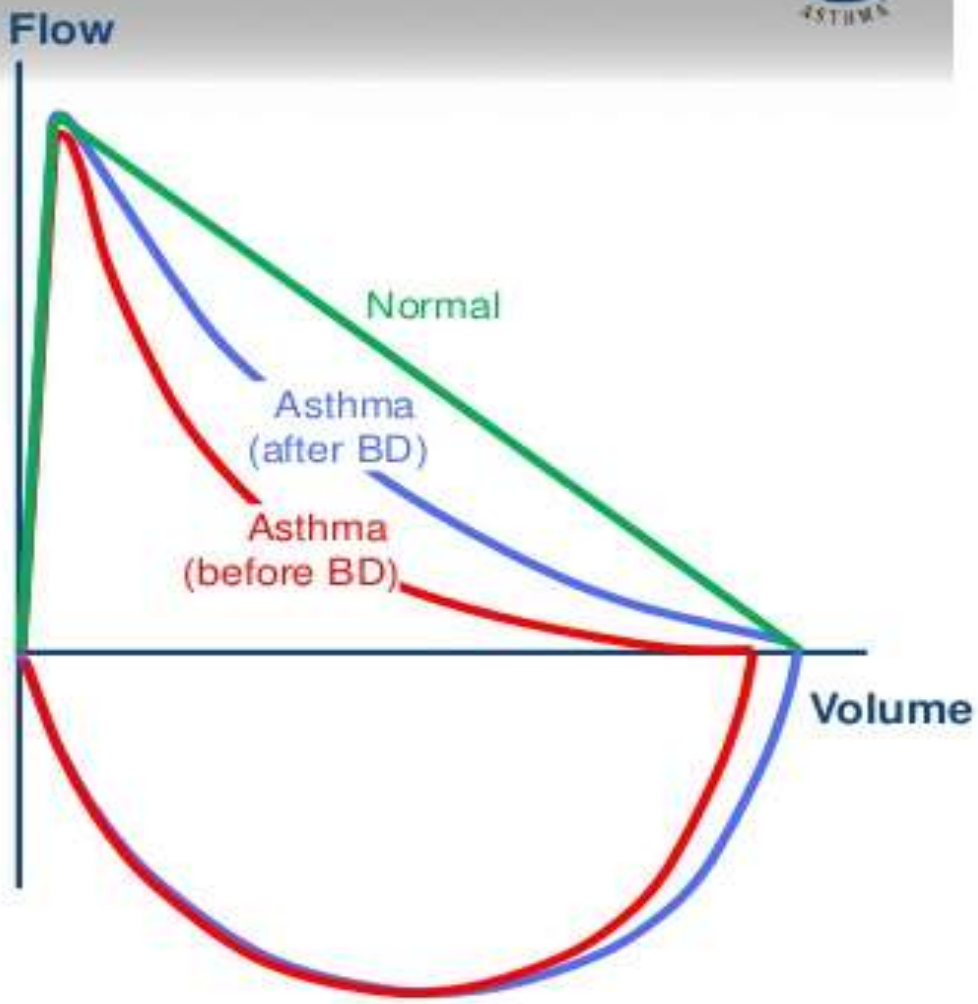
Diagnosis

- Spirometry
- preferred method of measuring airflow limitation and its reversibility to establish a diagnosis of asthma.
- An increase in FEV_1 of >12% (200 ml) after administration of a bronchodilator
- Exercise challenge: Worsening in FEV1 ≥15%*

GINA 2008

Typical spirometric tracings





Note: Each FEV_1 represents the highest of three reproducible measurements

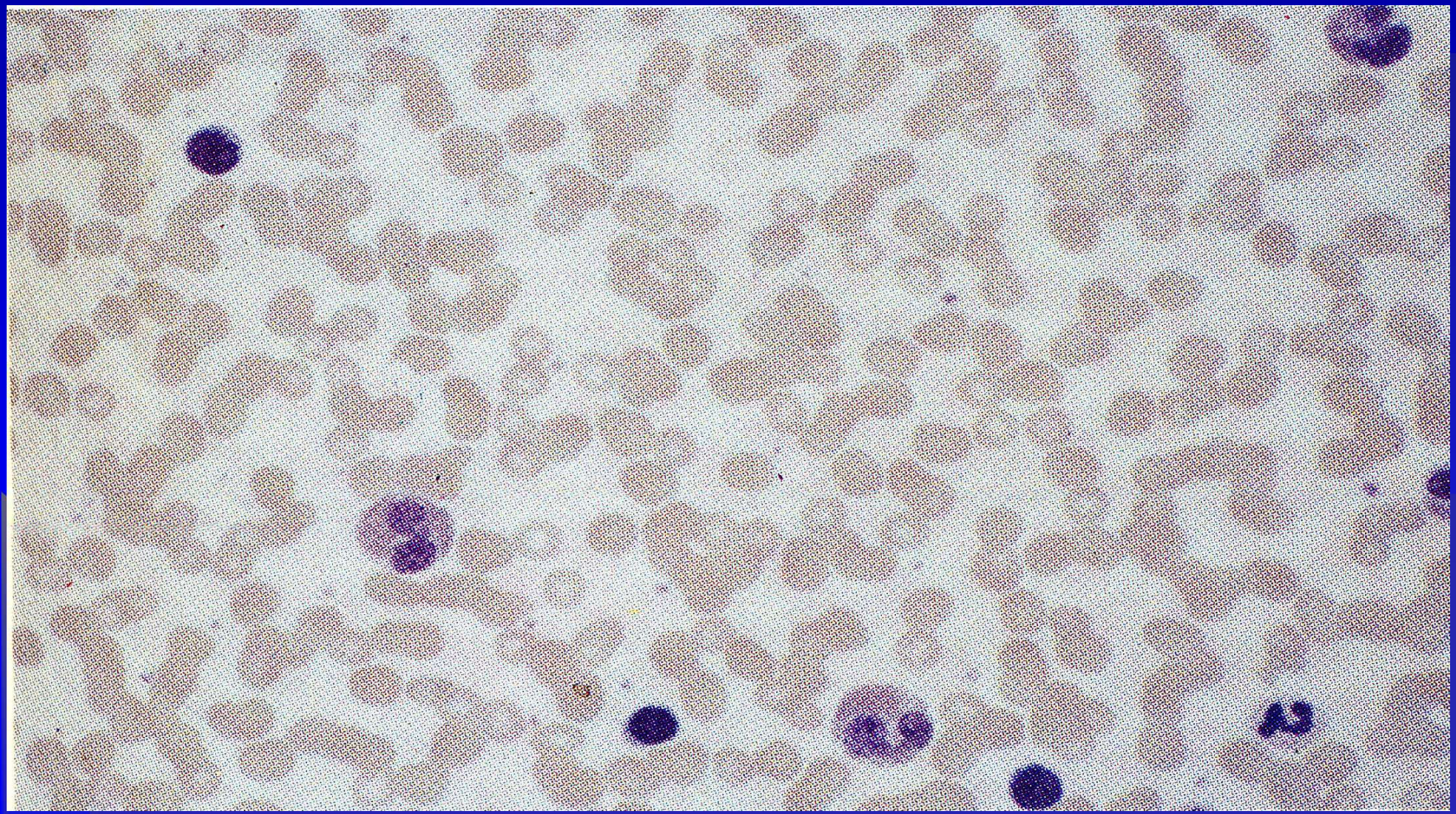
- Daily peak expiratory flow (PEF) or FEV1 monitoring:

day-to-day and/or AM-to-PM variation ≥20%*

- Exhaled nitric oxide (FeNO):

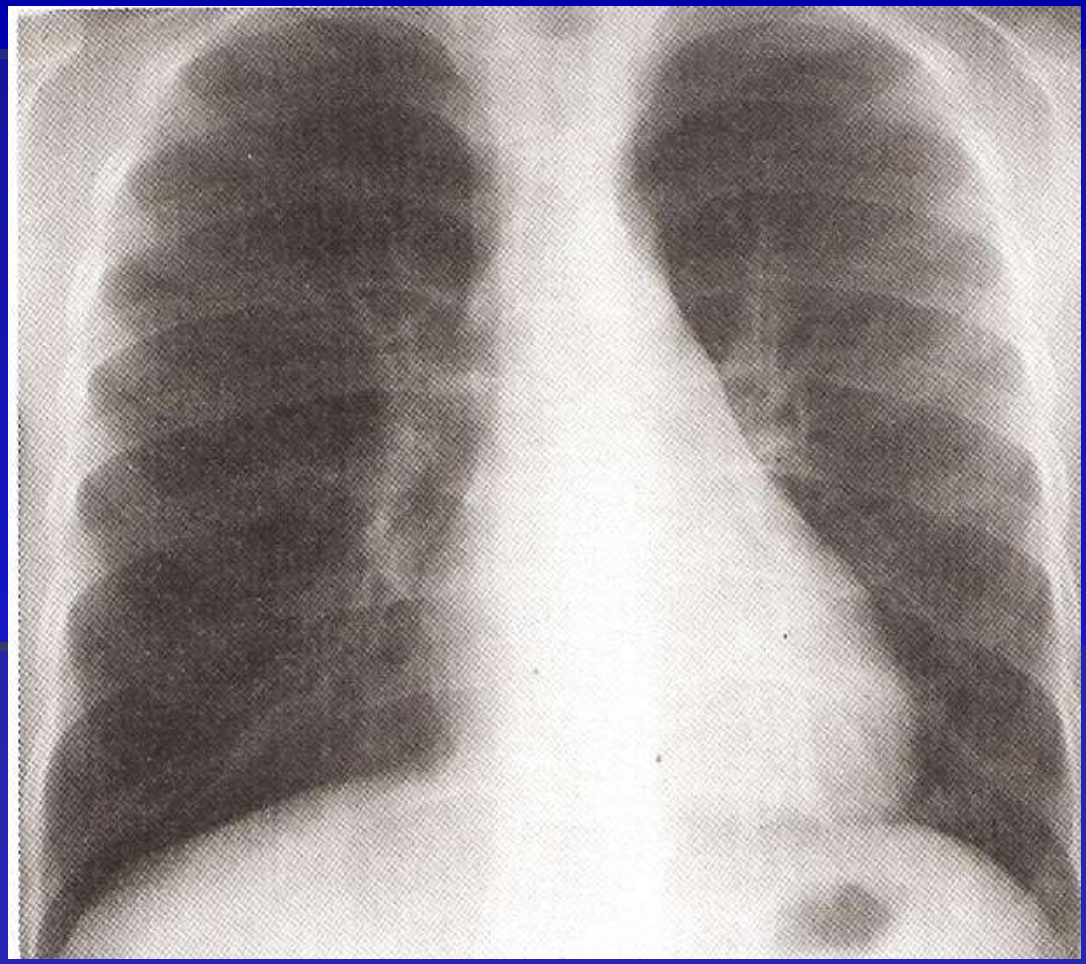
A value of >20 ppb supports the clinical diagnosis of asthma in children

Eosinophilia

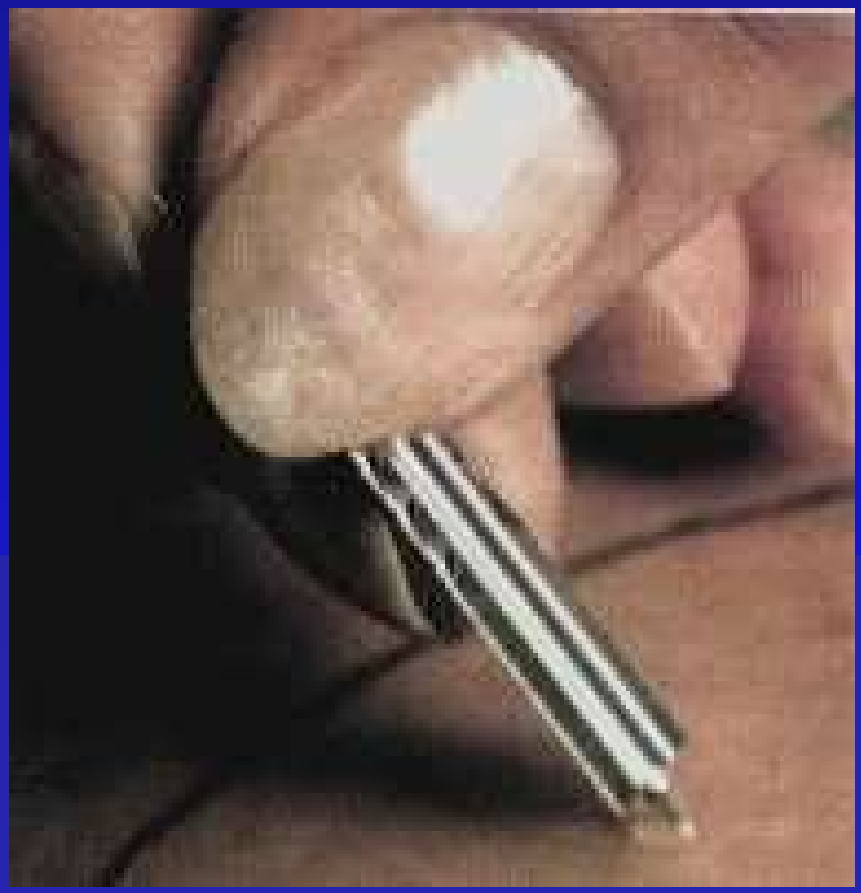


Chest X ray

- X ray finding vary depending on disease severity and duration



Skin prick test



EARLY CHILDHOOD RISK FACTORS FOR PERSISTENT ASTHMA

- Parental asthma*
- Allergy:- Atopic dermatitis* (eczema)
  - Allergic rhinitis
- Food allergy
- Inhalant allergen sensitization*
- Severe lower respiratory tract infection:
- Wheezing apart from colds
- Male gender
- Low birth weight
- Environmental tobacco smoke exposure

Causes of wheezing

- Foreign body aspiration
- Laryngotracheomalasia
- TEF fistula
- Vascular ring
- Bronchiolitis
- Pneumonia
- GEF reflux
- TB
- CHD
- Bronchiectasia (PCD,CF,Immune defficiency)
- Hypersensitivity pneumonitis
- Visceral larva migrant
- Vocal cord dysfunction

Mnemonic causes of asthma in first months

- C: Cystic fibrosis
- R: Respiratory tract infections
- A: Aspiration (GER, foreign body, fistula)
- D: Dyskinetic cilia
- L: Lung & airway malformations (web, malacia, stenosis, rings or slings)
- E: Edema (CHD)