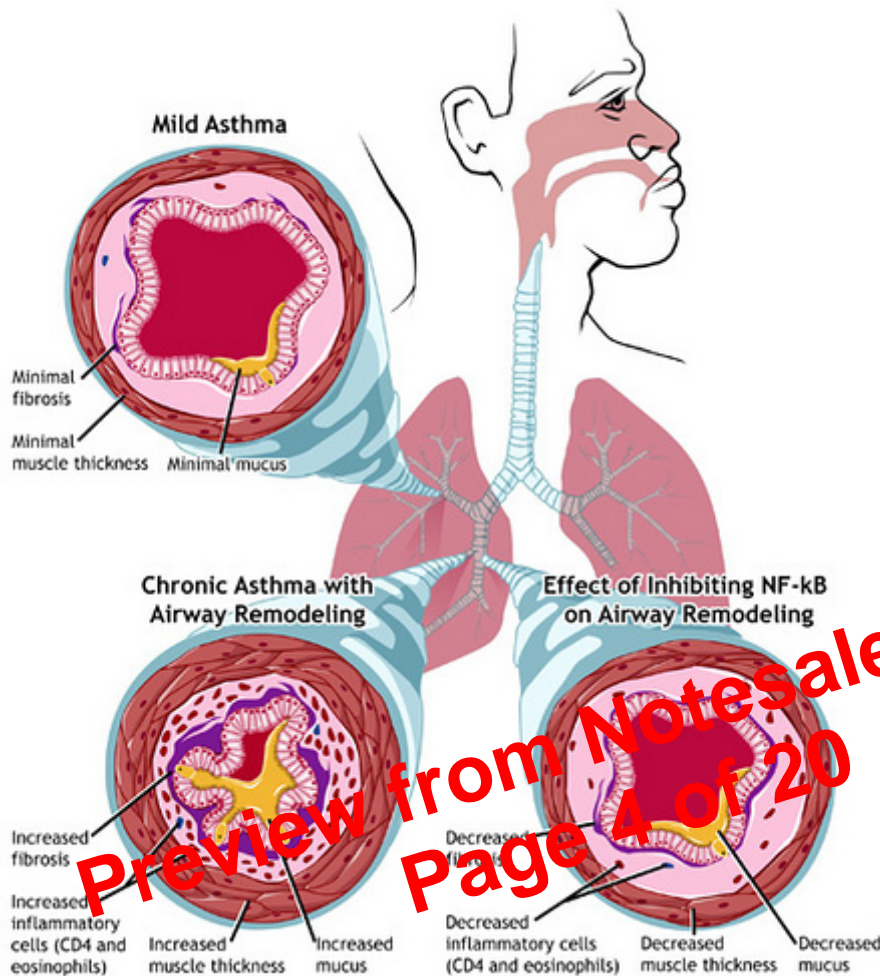


released. – response in this case is more **protective and does not lead to longer term inflammatory changes.**

Allergic individuals: determined by the presence of the immunoglobulin (antibody) **IgE** for those with the allergic disease.



Asthma sufferers have **difficulty breathing** due to **narrowing** of the **airways** in their lungs. (eg upper left).

In **chronic asthma** (lower left) **repeated cycles of inflammation, damage and repair** → lead to **airway remodelling, fibrosis and a build-up of collagen** (Protein in body,

for strength and structure) and other materials.

A **signalling molecule** known as **NF-kB** (anti inflammatory) can significantly **reduce chronic asthma** (lower right).

Work involved in breathing = often low. However when compliance is decreased with obstruction = more effort/ work required to breathe.

Evidence of severe recession can indicate life threatening respiratory distress.

## OXYGEN SATURATION MONITORING

Effective way to monitor for hypoxemia.

Use pulse oximeter

Prob attach to finger, toe or earlobe and can provide continuous, non-invasive monitoring.

Trend in O<sub>2</sub> sats = more important than the value as the monitor can be influenced by variable such as movement.

**Symptom:** Any deviation in normal values = require action → normally in the form of oxygen therapy.

O<sub>2</sub> must be administered safely and effectively. Nurse must monitor the effectiveness of the O<sub>2</sub>.

All hypoxic pts with acute asthma must be given supplementary O<sub>2</sub> to maintain SpO<sub>2</sub> of 94-98% (BTS 2012).

### Rationale of symptom

Significant obstruction in the lungs during asthma → insufficient O<sub>2</sub> will be absorbed and delivered to the tissues + there can be CO<sub>2</sub> trapping in blocked alveoli.

Rising CO<sub>2</sub> levels are the main stimulus for increased RR.

- + Pulse oximetry measures the % of haemoglobin to which O<sub>2</sub> is bound.
- Does not measure the partial pressure of free O<sub>2</sub> in the blood.
- Pulse oximetry gives no indication of the elimination of CO<sub>2</sub>.

### Partial Pressure of Oxygen in Arterial Blood (PaO<sub>2</sub>):

the portion of total blood gas pressure exerted by oxygen. It is lower than normal in patients with asthma, obstructive lung disease, or certain blood diseases and in healthy individuals during vigorous exercise. The normal PaO<sub>2</sub> in arterial blood is 95-100 mm Hg.

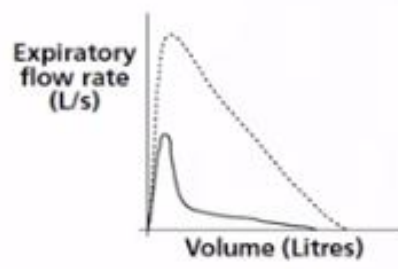
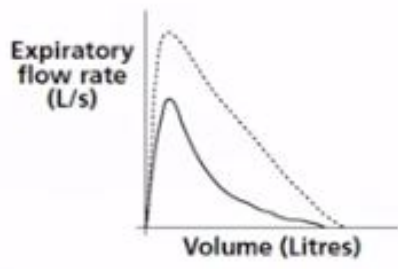
PAIN: CHEST/ ABDOMEN

Forced expiration normally results in FEV<sub>1</sub> / FVC ratios of more than 70%. Ratios below 70% suggest airway obstruction and the lower the ratio the more severe the obstruction.

**FEV<sub>1</sub> / FVC ratio:** also called Tiffeneau-Pinelli index. A calculated ratio used in the diagnosis of obstructive and restrictive lung disease. It represents the proportion of a person's vital capacity that they are able to expire in the first second of forced expiration. Predicted normal values can be calculated online and depend on age, sex, height, mass and ethnicity.

**Vital Capacity (VC):** The greatest volume of air that can be expelled from the lungs after taking the deepest possible breath. **Gentle measurement** NICE guidelines assessment of airflow obstruction for pts to are unable to perform a forced measurement to full exhalation.

- Preview from Notesale.co.uk  
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- | <b>Obstructive disorder</b>                            | <b>Restrictive disorder</b>                 |
|--|---|
| • FEV <sub>1</sub> reduced (<80% predicted)            | • FEV <sub>1</sub> reduced (<80% predicted) |
| • FVC reduced to a lesser extent than FEV <sub>1</sub> | • FVC reduced (<80% predicted)              |
| • FEV <sub>1</sub> /FVC reduced (<0.7)                 | • FEV <sub>1</sub> /FVC normal (>0.7)       |



## 2. Peak Expiratory Flow Measurement Test (PEF)(How to)

Common in the diagnosis of asthma and the ongoing assessment of treatment.