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 suffers 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-κB** (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 O2 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$\rightarrow$ normally in the form of oxygen therapy.

O2 must be administered safely and effectively. Nurse must monitor the effectiveness of the O2.

All hypoxic pts with acute asthma must be given supplementary O2 to maintain SpO2 of 94-98\% (ST S 2012).

**Rationale of symptom:**

Significant obstruction in the lungs during asthma$\rightarrow$ insufficient O2 will be absorbed and delivered to the tissues + there can be CO2 trapping in blocked alveoli.

Rising CO2 levels are the main stimulus for increased RR.

+ Pulse oximetry measures the % of haemoglobin to which O2 is bound.
- Does not measure the partial pressure of free O2 in the blood.
- Pulse oximetry gives no indication of the elimination of CO2.

**Partial Pressure of Oxygen in Arterial Blood (PaO2):**

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$_2$ in arterial blood is 95-100 mm Hg.

**PAIN: CHEST/ ABDOMEN**
Forced expiration normally results in FEV$_1$ / FVC ratios of more than 70%. Ratios below 70% suggest airway obstruction and the lower the ratio the more severe the obstruction.

**FEV$_1$ / 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.

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

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