Spirometry ‘top tips’

Spirometry is a maximal effort test.

The quality of the results can be improved substantially by the clinician performing the test encouraging and motivating the patient to perform at their absolute best.

The first step is to enter the patient’s correct age, height and gender as this provides a benchmark of a similar healthy cohort of patients, i.e. the patient’s results are compared to those with similar characteristics.

The patient must take a maximal breath in (till they are completely full) and then ‘huff’ or ‘blast’ the air into the mouthpiece of the Spirometer as fast as they can and keep pushing that one breath out for as long as they can and until they feel their lungs are completely empty.

When looking to see if a quality Spirometry test has been performed, the shape of the Spirometry flow volume curve must have a sharp peak at the start, a smooth middle section with no lumps or bumps and the end must taper off smoothly.

Patients should perform at least three good tests.

Spirometry reports include lots of data. Three numbers are especially important:

1. The FEV1 (forced expiratory volume in 1 second or the amount of air the patient can exhale in the first second of the Spirometry manoeuvre)
2. The FVC (forced vital capacity which is the total amount of air the patient can forcefully exhale)
3. The FEV1/FVC ratio which is the FEV1 divided by FVC and multiplied by 100% to give a percentage out of 100%.

Before interpreting the results, examine the flow volume curve, as this provides visual clues about potential pathology.

A normal flow volume curve looks like a right-angled triangle and the % predicted values for FEV1 and FVC are close to the predicted numbers for the patient (based on their age, height and gender).

In a patient with airflow obstruction, such as asthma and COPD, the shape of the flow volume curve is concave and the FEV1/FVC ratio and FEV1 are reduced

In restrictive ventilatory defects, such as interstitial lung disease and pulmonary fibrosis, the flow volume curve shape appears normal but reduced in size.