

Children's Services

Lung function tests

What are lung function tests?

Lung function tests (LFT or pulmonary function tests) are used to measure various aspects of lung function.

Why have lung function tests?

Your child may need a measurement of lung function to help confirm or make a diagnosis; to assess the severity of the disease, and the response to any prescribed treatment.

What lung function tests may be used?

The main LFTs we undertake are peak expiratory flow rate (PEFR), forced expiratory volumes, and flow volumes.

All LFTs are related to height, and some to age and gender. LFTs may be undertaken in the clinic or lung function laboratory depending upon the type of test required. Your child may be asked to repeat the tests to ensure the results are reliable.

The peak flow (PEFR)

The peak flow (PEFR) is a simple test used in children from about the age of five years. PEFR measures how fast your child can breathe out over 10 milliseconds. In diseases such as asthma, children have difficulty breathing out which may be shown by a low PEFR. As the PEFR is so simple, it can be used at home, at your GP's surgery and in hospital. You may be asked to keep a diary of PEFR at home, to assess in more detail your child's asthma.

We measure PEFR using an AFS Wright's low range peak flow meter. Your child will be asked to take a deep breath in and then blow out as hard, as short and as fast as possible. Three measurements are undertaken to assess the reliability of the measurement and the highest measurement is used.

Spirometry

Spirometry measures how much air your child can breathe in and out (volume) and how fast they can breathe out (flow rate). The measurements are made using an electronic spirometer. Your child may be asked to breathe out quickly, forcefully or slowly – this will be explained when the test is undertaken.

Common measurements taken using spirometry are forced vital capacity (FVC), FEV₁, and FEV₁/FVC ratio. FVC is the volume of air exhaled from full inspiration to full expiration. This creates a flow volume loop. Other measurements such as FEV₁ and FEV₁/FVC ratio are taken from the measurement of FVC.

FEV₁ measures the volume blown out in the first second of the test. If this is low in children, it often indicates a disease such as asthma, where the asthmatic has difficulty breathing out.

Reversibility testing

We may measure LFT or PEFR before and 10 minutes after giving a reliever medication to open up the airways. This is called reversibility testing. The response to this medication may help to determine the type and severity of airway disease your child may have, and what, if any, medication might be required.

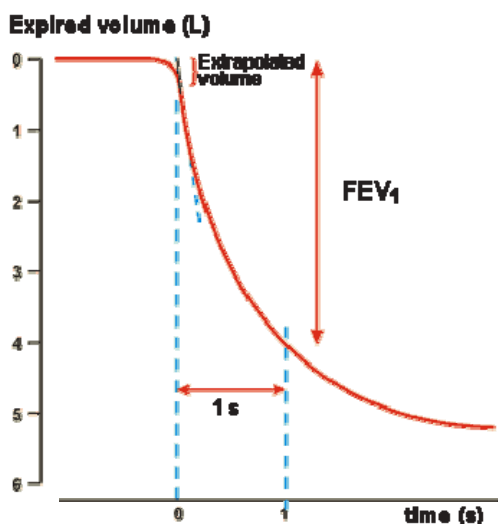


Diagram of FEV₁ measurement

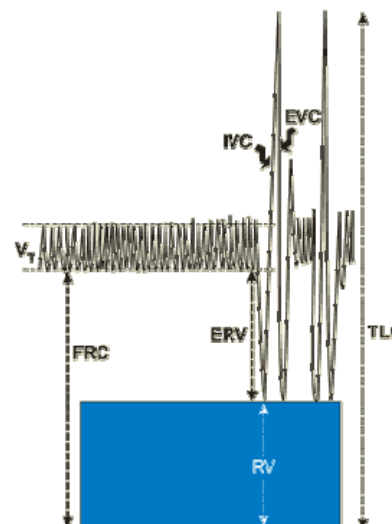


Diagram of total lung capacity

Other LFTs such as exercise tolerance, eNO (exhaled nitric oxide), lung volumes and diffusing capacity may be made using more specialist equipment in the lung function laboratory in Clinic 2a. These tests will be explained to you in more detail.



We are currently working towards a smoke-free site. Smoking is only permitted in the designated smoking areas.

For advice and support in quitting, contact your GP or the free NHS Stop Smoking Helpline on 0800 169 0 169

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