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**APPLICATION OF SPIROMETRY FOR EARLY DIAGNOSIS OF BRONCHOPULMONARY DISEASES.**

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Spirometry (meaning *the measuring of breath*) is the most common of the pulmonory function tests (PFTs), measuring lung function, specifically the amount (volume) and/or speed (flow) of air that can be inhaled and exhaled. Spirometry is used for generating pneumotachographs, which are helpful in assessing conditions such as pulmonory fibrosis, asma, cystic fibrosis and COPD.

 Procedure. The basic forced volume vital capacity (FVC) test varies slightly depending on the equipment used. Generally, the patient is asked to take the deepest breath they can, and then exhale into the sensor as hard as possible, for as long as possible, preferably at least 6 seconds. It is sometimes directly followed by a rapid inhalation (inspiration), in particular when assessing possible upper airway obstruction. Sometimes, the test will be preceded by a period of quiet breathing in and out from the sensor (tidal volume), or the rapid breath in (forced inspiratory part) will come before the forced exhalation. During the test, soft nose clips may be used to prevent air escaping through the nose. Filter mouthpieces may be used to prevent the spread of microorganisms.

The more common lung function values measured with spirometry are:

* Forced vital capacity (FVC). This measures the amount of air you can exhale with force after you inhale as deeply as possible.
* Forced expiratory volume (FEV). This measures the amount of air you can exhale with force in one breath. The amount of air you exhale may be measured at 1 second (FEV1), 2 seconds (FEV2), or 3 seconds (FEV3). FEV1 divided by FVC can also be determined.
* Forced expiratory flow 25% to 75%.This measures the air flow halfway through an exhale.
* Peak expiratory flow (PEF). This measures how much air you can exhale when you try your hardest. It is usually measured at the same time as your forced vital capacity (FVC).
* Maximum voluntary ventilation (MVV). This measures the greatest amount of air you can breathe in and out during 1 minute.
* Slow vital capacity (SVC). This measures the amount of air you can slowly exhale after you inhale as deeply as possible.
* Total lung capacity (TLC). This measures the amount of air in your lungs after you inhale as deeply as possible.
* Functional residual capacity (FRC). This measures the amount of air in your lungs at the end of a normal exhaled breath.
* Residual volume (RV). This measures the amount of air in your lungs after you have exhaled completely. It can be done by breathing in helium or nitrogen gas and seeing how much is exhaled.
* Expiratory reserve volume (ERV). This measures the difference between the amount of air in your lungs after a normal exhale (FRC) and the amount after you exhale with force (RV)

Thus, it is necessary to use spirometry for early diagnosis of bronchopulmonary tract obstruction and appointment of adequate therapy.