

Body Plethysmography

The body plethysmograph provides the clinician with complete pulmonary function testing capacity to improve diagnostic capability and make testing quick, accurate and economical. Advancements in technology and lower acquisition costs have made the purchase of a body plethysmograph the right choice for the hospital and for the physician office.

Advantages of a Plethysmograph

The body plethysmograph is a pulmonary function system consisting of a cabinet in which the patient sits during the test and a computer that controls testing and data output. The system measures spirometry, thoracic lung volumes and airways resistance. The system can also include tests for diffusing capacity and dilutional lung volume by nitrogen washout. As a result, the plethysmograph has many advantages over standard pulmonary function systems.

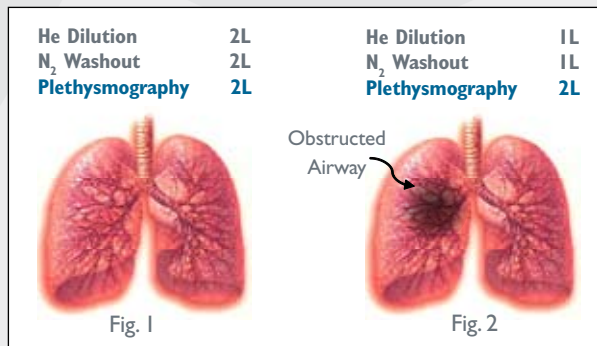


- **Speed of Testing**

The amount of time needed to perform a complete pulmonary function test is much less with a plethysmograph. The lung volume measurements on a standard pulmonary function system can take twenty minutes or more compared to three minutes with a body plethysmograph.

- **More Accurate Lung Volumes**

A body plethysmograph measures all compressible gas in the lungs, while a standard pulmonary function system utilizing a dilutional technique can only measure those portions of the lung in communication with the central airways. Dilution procedures underestimate lung volumes, especially in patients with obstructive lung disease. Figure 1 illustrates normal lungs with a volume of 2 liters as measured by dilution and plethysmography. Figure 2 illustrates the same lungs with an obstructed airway. Since the dilutional gas does not mix well in the occluded areas of the lung, there can be a significant discrepancy in values obtained by the two methods. Plethysmography will provide an accurate measure of the lung volumes while dilutional techniques can underestimate.



- **Enhanced Diagnosis of Airway Obstruction**

Airways resistance (R_{aw}) and airway conductance (G_{aw}), the reciprocal of R_{aw} , provide an effort-independent measure of airway status. They are a more sensitive measurement and will detect airways disease earlier than forced expiratory flow with spirometry. These measurements also assist the clinician in differentiating between restrictive and obstructive disease and the cause or site of the obstruction. R_{aw} and G_{aw} , combined with specific resistance (sR_{aw}) and specific conductance (sG_{aw}) improves measurement of bronchodilator response, differentiates the cause of hyperinflation and more sensitively assesses bronchoprovocation.