

Interpreting Pulmonary Function Tests



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- > Normal Pulmonary Function Test
- > Obstructive Ventilatory Defect - Intrathoracic / Extrathoracic
- > Restrictive Ventilatory Defect - Extrapulmonary disease / Intrapulmonary disease

Sequence of interpreting PFTs:

1. First look at spirometry. Normal or abnormal FEV1. If abnormal, look for other signs of an obstructive ventilatory defect such as low FEF 25-75 and low FEV1/FVC.
2. If FVC is low, this could be a sign of a restrictive ventilatory defect. Check PEF to evaluate the effort of the maneuver.
3. If the clinical history is suggestive for asthma, administer a bronchodilator and check to see if there is a bronchodilator response (12% improvement in FEV1 or 20% improvement in FEF25-75). You can also perform a methacholine challenge and see if the PD (provocative dose) causes a 15 – 20% decrease in FEV1.
4. If FEV1 is normal, but you're still concerned about a respiratory condition, check Lung Volumes next. If RV is elevated, this is suggestive of air trapping, which could be a sign of an obstructive ventilatory defect (i.e asthma).
5. If lung volumes demonstrate a decrease in TLC, this is indicative of a restrictive ventilatory defect.
6. If there is evidence of a restrictive ventilatory defect, proceed to evaluate whether the restriction is caused by an intra-parenchymal process (within the lungs) or extra-parenchymal process (outside the lungs). To evaluate this, check DLCO. If DLCO is normal, this is suggestive of extra-parenchymal processes (outside the lungs) such as a neuromuscular disorder. Conversely, if the DLCO is low, it could be suggestive of an intra-parenchymal process (within the lungs) – such as interstitial lung disease, idiopathic pulmonary fibrosis, sarcoidosis, emphysema, etc.
7. Here are several other caveats. For example, emphysema can present on PFTs with an airflow obstruction and low DLCO.
8. Normal spirometry and lung volumes associated with decreased DLCO may suggest anemia, pulmonary vascular disorders, early ILD or early emphysema.
9. A high DLCO may be associated with asthma, obesity, polycythemia, and intrapulmonary hemorrhage.

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PFT Outside The Box