

# ST. VINCENT PEDIATRIC PULMONOLOGY CENTER

**Spirometry (FVC):** A test which provides a Forced Vital Capacity, Peak Expiratory Force and Flow rates of large and small airways. This test aids in the diagnosis of obstructive airway disease i.e. asthma. It is indicated for assessing the risk for surgical procedures monitoring the change in lung functions, and for assessing the presence of other abnormal diagnostic tests. Also aids in diagnosis of cough and wheezing, (e.g. upper airway vs. lower airway obstruction). This test is done before and after bronchodilator if indicated or ordered. The post test aids in determining the hyper responsiveness and airway reactivity which an important feature of asthma.

**Lung Diffusion Study (DLCO):** (requires a Slow Vital Capacity) This test measures how well the lungs exchange oxygen and carbon dioxide in the alveoli and is helpful in the diagnosis of parenchyma lung diseases, (e.g. pulmonary fibrosis), cystic fibrosis, certain cardiovascular diseases and is useful for patients receiving chemotherapy and pre-op surgery patients.

**Lung Volumes:** Nitrogen Wash-out or Plethysmography. This test measures the Total Lung Capacity, Functional Residual Capacity and Residual Capacity and other lung volumes of the patient. This test is beneficial in diagnosis of restrictive lung diseases, evaluating certain obstructive diseases and evaluating the effects of abnormalities of the muscles or skeleton of the chest wall.

**Airway Resistance:** This test evaluates the resistance and conductance of in the airways. Airway resistance provides an effort independent measure of airway status and helps differentiate between restrictive and obstructive disease. It may be beneficial in determining the response to bronchodilator therapy.

**Maximal Voluntary Ventilation (MVV):** This test reflects the severity of the airway obstruction as well as the patient's respiratory reserve, muscle strength and motivation.

**Pulmonary Exercise Test:** This test is used to confirm the diagnosis of exercise-induced asthma by trying to reproduce symptoms that the patient might have while exercising. Exercise protocol is used and the patient is exercised to 85% of maximum heart rate or until they can no longer continue at which time spirometry is performed at specific time increments looking for a fall in test values. Oxygen saturation and blood pressure are monitored. Comprehensive Breath to Breath Exercise Stress Test: The patient is exercised to quantify exercise tolerance and measure cardio respiratory response to exercise by monitoring oxygen consumption and carbon dioxide production. This test will evaluate functional limitations of the cardiovascular system. Oxygen saturation, EKG and blood pressure along with gas exchange is monitored.

**Methacholine Test:** (Requires normal spirometry prior to test)  
This test is used for assessing airway responsiveness and determining hyper-reactivity in the airways. In this test, the patient inhales an aerosol of one or more Concentrations of methacholine and performs spirometry after each inhalation of medication until there is a 20% drop in lung functions or the highest dose of inhalant has been given. There is a possibility of an asthma exacerbation during this test. Pulmonary physicians are readily available during the test.

**Basal Metabolic Energy Expenditure:** There are 3 different protocols to choose from depending on the patient's needs.  
PROTOCOL 1: Allow us to determine how much energy the patient is using and allows for adjustments in the caloric intake.  
PROTOCOL 2: Allows us to fully evaluate the patient with regards to protein anabolism and catabolism as well as caloric needs, evaluating patients with rare metabolic conditions or determining needs for optimal healing.  
PROTOCOL 3: Allows us to determine caloric needs for a patient needing to safely lose weight.