Stages of COPD and Spirometric Classifications

Stage I: Mild COPD	Mild airflow limitation ($FEV_1/FVC < 70\%$; $FEV_1 \geq$ 80% predicted) and sometimes, but not always, chronic cough and sputum production. At this stage, the individual may not be aware that his or her lung function is abnormal.
Stage II: Moderate COPD	Worsening airflow limitation ($FEV_1/FVC < 70\%$; $50\% \leq FEV_1 < 80\%$ predicted), with shortness of breath typically developing during exertion. This is the stage at which patients typically seek medical attention because of chronic respiratory symptoms or an exacerbation of their disease.
Stage III: Severe COPD	Further worsening of airflow limitation ($FEV_1/FVC < 70\%$; $30\% \leq FEV_1 < 50\%$ predicted), greater shortness of breath, reduced exercise capacity, and repeated exacerbations which have an impact on patients' quality of life.
Stage IV: Very Severe COPD	Severe airflow limitation ($FEV_1/FVC < 70\%$; $FEV_1 <$ 30% predicted) or $FEV_1 < 50\%$ predicted plus chronic respiratory failure. Patients may have Very Severe (Stage IV) COPD even if the FEV_1 is > 30% predicted, whenever this complication is present. At this stage, quality of life is very appreciably impaired and exacerbations may be life-threatening.

Spirometry for Diagnosis of COPD

Spirometry is a simple test to measure the amount of air a person can breathe out, and the amount of time taken to do so.

A **spirometer** is a device used to measure how effectively and how quickly the lungs can be emptied.

Spirometry measurements used for diagnosis of COPD include:

- **FVC** (forced vital capacity): maximum volume of air that can be exhaled during a forced maneuver.

- **FEV_1** (forced expired volume in one second): volume expired in the first second of maximal expiration after a maximal inspiration. This is a measure of how quickly the lungs can be emptied.

- **FEV_1/FVC**: FEV_1 expressed as a percentage of the FVC, gives a clinically useful index of airflow limitation.

The ratio FEV_1/FVC is between 70% and 80% in normal adults; a value less than 70% indicates airflow limitation and the possibility of COPD.

FEV_1 is influenced by the age, sex, height, and ethnicity, and is best considered as a percentage of the predicted normal value.