



Interpreting spirometry reports

When suspecting COPD

Spirometry is a reliable test to measure airflow limitation. It identifies three abnormal ventilatory patterns: obstructive (such as in COPD and asthma), restrictive (such as in pulmonary fibrosis and pleural disease), and mixed (when both obstructive and restrictive lung diseases are present).

If $FEV_1/FVC < 0.70$, there is airflow limitation.¹ Post-bronchodilator $FEV_1/FVC < 0.70$ confirms COPD in patients with consistent risk factors and symptoms.¹ Some patients with untreated asthma may also have post-bronchodilator $FEV_1/FVC < 0.70$.

Compare the patient’s spirometry indices against reference or predicted values

Table 1. Features of ventilatory patterns

Spirometry indices	Normal pattern	Abnormal ventilatory patterns		
		Obstructive	Restrictive	Mixed
FEV_1/FVC	>0.70	▼	Normal or ▲	▼
FEV_1	>80% predicted	▼	Normal or ▼	▼
FVC	>80% predicted	Normal or ▼	▼	▼

▲ Increased
▼ Decreased

FEV_1 , Forced expiratory volume in one second is the air volume forcibly expelled in the first second following a maximum inspiration.
 FVC, Forced vital capacity is the total air volume forcibly expelled following a maximum inspiration.
 FEV_1/FVC , the ratio of both measurements.

Consider the limitations of post-bronchodilator spirometry readings $FEV_1/FVC < 0.7$ in young adults and the elderly

Using a fixed $FEV_1/FVC < 0.7$ can cause underdiagnosis in young adults and overdiagnosis of COPD in the elderly. Therefore, any workup for COPD should also take account of symptom presentation and risk factors.

For example, a young adult with chronic respiratory symptoms and a risk factor for alpha-1 antitrypsin deficiency but a FEV_1/FVC just above 0.7 should still be considered for a diagnosis of COPD. Alternatively, an elderly gentleman without respiratory symptoms or risk factors, but a FEV_1/FVC just below 0.7 may not have COPD.

Alternative methods for identifying obstruction on spirometry reports include the use of lower limit of normal (LLN).

Examine curve shape to confirm pattern

The spirometry curve shapes indicate the type of ventilatory pattern. Refer to a specialist when spirometry is abnormal but not diagnostic.²

Figure 1. Features of ventilatory patterns

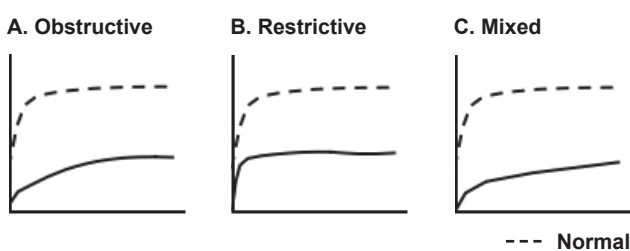
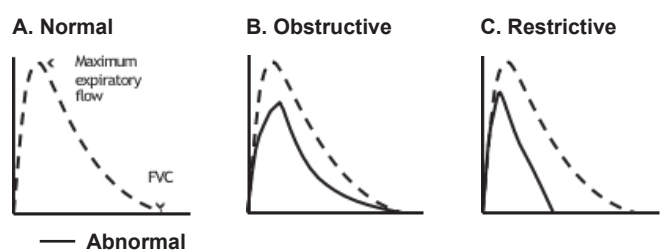


Figure 2. Flow-volume curves



¹ Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for the Diagnosis, Management, and Prevention of COPD. 2024

² Global Initiative for Chronic Obstructive Lung Disease (GOLD). Spirometry for Healthcare Providers. 2010..

This Supplementary Guide has been adapted with permission from the Global Initiative for Chronic Obstructive Lung Disease (GOLD), Global Strategy for the Diagnosis, Management, and Prevention of COPD (2024) and GOLD, Spirometry for Healthcare Providers (2010).