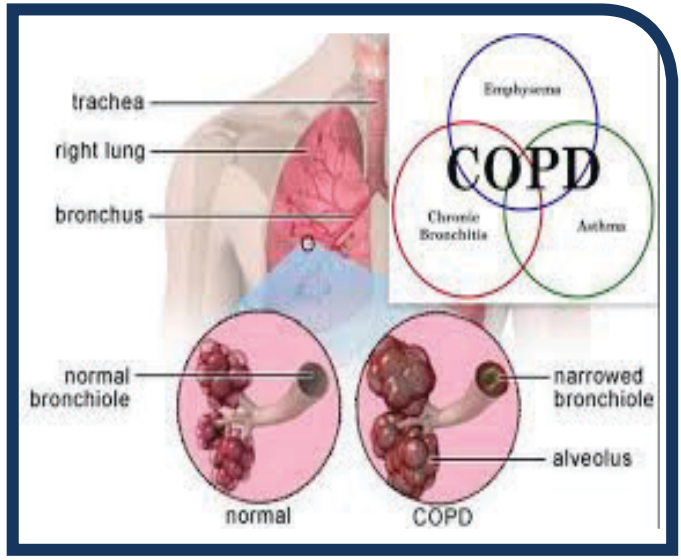


COPD

Taking a Fresh Look
at a Continually Increasing Problem -
Best-Practice Strategies
for Primary Care Providers

PCP Reference Guide

Foundation for Care Management
Center for Learning & Change

Funded through an Educational Grant From
Boehringer Ingelheim Pharmaceuticals, Inc.

SPIROMETRY FOR HEALTH CARE PROVIDERS: QUICK GUIDE
Global Initiative for Chronic Obstructive Lung Disease (GOLD)

Assessment of airway obstruction plays a key role in the diagnosis and assessment of chronic obstructive pulmonary disease (COPD). The spirometric criterion required for a diagnosis of COPD is an **FEV_1/FVC ratio below 0.7 after bronchodilator.**

How to perform spirometry: Explain the purpose of the test and describe it clearly to the patient. It may help to demonstrate or mimic the procedure yourself . Emphasize the need to take a full breath and blow out as fast and hard as possible. Record the patient's age, sex, and height, and time of last bronchodilator use.

- Instruct the patient to **breathe in fully** until the lungs feel full.
- The patient should only hold their breath long enough to **seal their lips tightly around the mouthpiece.**
- **Blast the air out as forcibly and fast as possible** until there is no more air left.
- Check that an adequate **trace** has been achieved.
- **Repeat the procedure** – you need three acceptable blows within 150 mL or 5% of each other and best.
- Record the best readings of FEV_1 and FVC.

Reversibility testing: Perform pre-bronchodilator spirometry, give 400 μg of salbutamol, and wait 15 minutes before performing post-bronchodilator spirometry. Prior to testing, withhold:

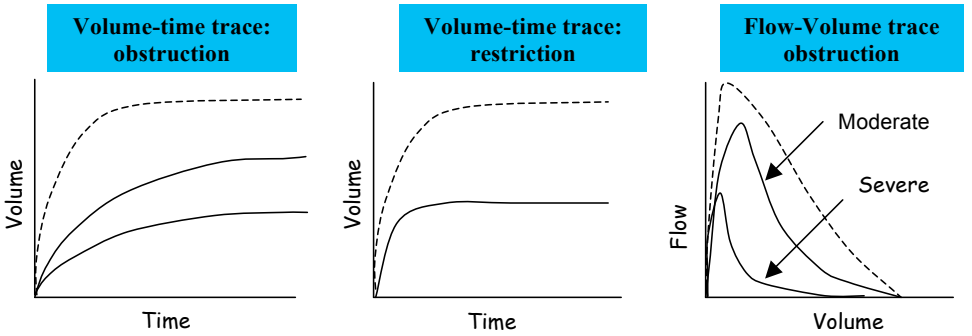
- Short-acting bronchodilators 6 hours
- Long-acting bronchodilators for 12 hours

In making a diagnosis of COPD, post bronchodilator FEV_1/FVC remains < 0.7. However, the FEV_1 may improve significantly after bronchodilator, and a change of > 12% AND > 200 mL in FEV_1 can occur in COPD. Larger changes in FEV_1 do not negate a diagnosis of COPD, although the greater these are, the greater the likelihood that asthma is present.

Figure 1. GOLD Spirometric Criteria for COPD Severity

I: Mild COPD	• FEV_1/FVC < 0.7 • FEV_1 ≥ 80% predicted
II: Moderate COPD	• FEV_1/FVC < 0.7 • 50% ≤ FEV_1 < 80% predicted
III: Severe COPD	• FEV_1/FVC < 0.7 • 30% ≤ FEV_1 < 50% predicted
IV: Very Severe COPD	• FEV_1/FVC < 0.7 • FEV_1 < 30% predicted *or* FEV_1 < 50% predicted *plus* chronic respiratory failure

Figure 2. PATTERNS OF VENTILATORY ABNORMALITIES
(-------- normal pattern; _____abnormal pattern)

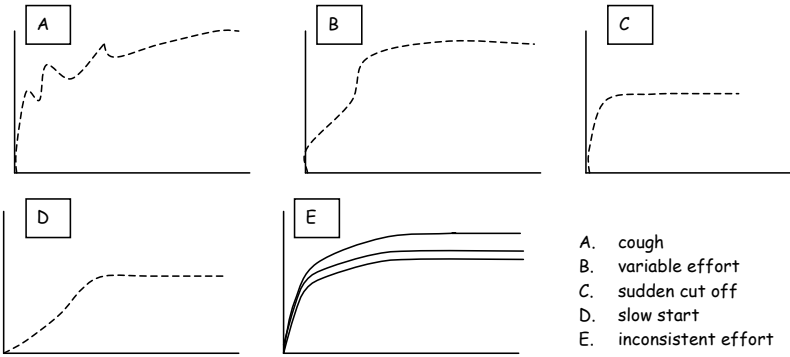


	OBSTRUCTIVE	RESTRICTIVE	MIXED
FEV_1	REDUCED	REDUCED OR NORMAL	REDUCED
FVC	REDUCED OR NORMAL	REDUCED	REDUCED
FEV_1/FVC	REDUCED	NORMAL OR INCREASED	REDUCED

Troubleshooting: The most common reason for inconsistent readings is patient technique. Common problems (and examples of traces where appropriate) include:

- Inadequate or incomplete inhalation and sub-maximal expiratory effort (*3C, 3E*)
- Delayed onset of maximal effort → under-estimates FEV_1 (*3D*)
- Incomplete emptying of lungs – common in COPD and elderly and infirm patients (*3E)*
- Lips not tight around mouthpiece → under-estimate FEV_1 and FVC
- A slow start to the blow → under-estimates FEV_1 (*3D)*
- Exhaling in part through the nose
- Coughing (*3A)*
- Glottic closure or obstruction of mouthpiece by teeth or tongue

Figure 3: Examples - Visual Patterns of Poor Spirometric Performance



Name:

Today's Date:

How is your COPD? Take the COPD Assessment Test (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

Example: I am very happy  I am sad

		SCORE
I never cough	0 1 2 3 4 5 I cough all the time	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5 My chest is full of phlegm (mucus)	
My chest does not feel tight at all	0 1 2 3 4 5 My chest feels very tight	
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5 When I walk up a hill or one flight of stairs I am very breathless	
I am not limited doing any activities at home	0 1 2 3 4 5 I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5 I am not at all confident leaving my home because of my lung condition	
I sleep soundly	0 1 2 3 4 5 I don't sleep soundly because of my lung condition	
I have lots of energy	0 1 2 3 4 5 I have no energy at all	

CLICK TO GET YOUR TOTAL SCORE!

HEALTHCARE PROFESSIONAL USER GUIDE

COPD Assessment Test

Expert guidance on
frequently asked questions

Issue 3: February 2012

In addition, for each scenario, the CAT Development Steering Group has proposed some potential management considerations:[11]

CAT score	Impact level	Broad clinical picture of the impact of COPD by CAT score	Possible management considerations
>30	Very high	Their condition stops them doing everything they want to do and they never have any good days. If they can manage to take a bath or shower, it takes them a long time. They cannot go out of the house for shopping or recreation, or do their housework. Often, they cannot go far from their bed or chair. They feel as if they have become an invalid.	Patient has significant room for improvement In addition to the guidance for patients with low and medium impact CAT scores consider: • Referral to specialist care (if you are a primary care physician) Also consider: • Additional pharmacological treatments • Referral for pulmonary rehabilitation • Ensuring best approaches to minimising and managing exacerbations
>20	High	COPD stops them doing most things that they want to do. They are breathless walking around the home and when getting washed or dressed. They may be breathless when they talk. Their cough makes them tired and their chest symptoms disturb their sleep on most nights. They feel that exercise is not safe for them and everything they do seems too much effort. They are afraid and panic and do not feel in control of their chest problem.	
10-20	Medium	COPD is one of the most important problems that they have. They have a few good days a week, but cough up sputum on most days and have one or two exacerbations a year. They are breathless on most days and usually wake up with chest tightness or wheeze. They get breathless on bending over and can only walk up a flight of stairs slowly. They either do their housework slowly or have to stop for rests.	Patient has room for improvement – optimise management In addition to the guidance provided for patients with low impact CAT scores consider: • Reviewing maintenance therapy – is it optimal? • Referral for pulmonary rehabilitation • Ensuring best approaches to minimising and managing exacerbations • Reviewing aggravating factors – is the patient still smoking?
<10	Low	Most days are good, but COPD causes a few problems and stops people doing one or two things that they would like to do. They usually cough several days a week and get breathless when playing sports and games and when carrying heavy loads. They have to slow down or stop when walking up hills or if they hurry when walking on level ground. They get exhausted easily.	• Smoking cessation • Annual influenza vaccination • Reduce exposure to exacerbation risk factors • Therapy as warranted by further clinical assessment.
5		Upper limit of normal in healthy non-smokers	

Assessing Therapy for COPD

GOLD Stages		FEV1 % of predicted for age
I	Mild	≥80%
II	Moderate	50%-<80%
III	Severe	30%-<50%
IV	Very Severe	<30%

All COPD Patients:
Stop smoking: offer counseling and pharmacotherapy
Vaccinate: Pneumonia and flu
Regular physical activity
Long term oxygen therapy if hypoxic
Screen and treat comorbidities
Follow symptoms with questionaire
Spirometry annually for most

First Choice Therapy based on Symptoms, GOLD stages, Exacerbations

A	**Less symptomatic** CAT<10 Mild or infrequent sx dyspenea with strenuous exertion	**Low Risk** GOLD I or II 0 or 1 exacerbation/ year	Short acting bronchodilator PRN Beta-2 agonist or SABA Anticholinergic SAMA
B	**More Symptomatic** CAT≥10 Moderate to severe sx Need to stop walking due to dyspnea	**Low Risk** GOLD I or II 0-1 exacerbations/year	Long acting bronchodilator regularly Beta-2 agonist or LABA Anticholinergic LAMA PRN short acting bronchodilator Pulmonary Rehabilitation
C	**Less symptomatic** CAT<10 Mild or infrequent sx dyspenea with strenuous exertion	**High Risk** GOLD III or IV or ≥2 exacerbations/year or 1 hospitalization	Combined LABA and Inhaled glucocorticoid or ICS LAMA PRN short acting bronchodilator Pulmonary Rehabilitation
D	**More Symptomatic** CAT≥10 Moderate to severe sx Need to stop walking due to dyspnea	**High Risk** GOLD III or IV or ≥2 exacerbations/year or 1 hospitalization	Combined ICS and LABA or LAMA PRN short acting bronchodilator Pulmonary Rehabilitation

		Common COPD Inhalers					
SABA	**Beta 2 agonists**				Rescue		
	Short acting				Episodic use		
	Albuteol	Provental		QID PRN			
		ProAir					
		Ventolin					
	Levalbuterol	Xopenex					
	Pirbuterol	Maxair					
SAMA	**Anticholinergics**				Rescue		
	Short acting				Episodic use		
	Ipratriopium	Atrovent		QID PRN			
Combo	Albuterol/Ipratropium			QID PRN			
		Combivent					
LABA	**Beta 2 agonists**				Preferred		
	Long acting				for maintenance		
	Salmeterol	Serevent		BID			
	Fomoterol	Foradil		BID			
	Indacaterol	Arcapta		QD			
LAMA	**Anticholinergics/Muscarinics**				Preferred		
	Long acting				for maintenance		
	Tiotropium	Spiriva		QD			
	Aclidinium	Tudorza pressair					
Combo	Vilanterol/Umeclidinium			QD			
		Anoro Ellipta					
Combo	**Long acting bronchodilators and Corticosteroids**				Severe or		
with	Formoterol/Budesonide			BID	very severe		
ICS		Symbicort			COPD		
	Salmeterol/fluticasone			BID			
		Advair			Can add to LAMA		
	Vilanterol/Fluticasone						
		Breo Ellipta					
Oral Phosphodiesterase inhibitor				Severe/very severe COPD+chronic bronchitis			
	Roflimilast	Daliresp		QD	Maintenance to prevent exacerbations		
Adapted: Inhalers for COPD. Pharmacist's Letter/Prescriber's Letter August 2013							