COPD
Quick Reference Guide
For the Diagnosis and Treatment of COPD

Screen for Risk of COPD¹

- Smoking history
- Occupational or environmental exposure to pollutants (eg, dust, gas, vapors; fumes from home cooking or heating fuels; secondhand smoke)
- Family history
- History of airway disease, including asthma, chronic bronchitis, and emphysema
- Age is 40 years or older

Assess Symptoms and Contributing Factors

COPD should be considered in patients with¹,²

- Chronic or persistent cough
- Sputum production
- Dyspnea
- History of COPD risk factors

If COPD is suspected, assess the following¹:

- Frequency and severity of symptoms
- Past medical history (smoking history, occupational exposures; history of other respiratory illnesses; family history of COPD; history of previous hospitalizations for respiratory disorders; other comorbidities)
- Physical signs of airflow limitation (usually not present until significant impairment of lung function has occurred)
- Evidence of airflow limitation via spirometry
Diagnose and Stage

Diagnosis of COPD requires spirometry. Spirometry should be obtained in all persons with

- Presence of cough, sputum, or dyspnea
- Exposure to tobacco smoke and/or environmental or occupational pollutants
- Family history of chronic respiratory disease

### SPIROMETRIC CLASSIFICATION OF COPD

<table>
<thead>
<tr>
<th>Severity</th>
<th>Postbronchodilator FEV₁/FVC</th>
<th>FEV₁ % predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I: Mild COPD</td>
<td>&lt;0.7</td>
<td>≥80</td>
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<tr>
<td>Stage II: Moderate COPD</td>
<td>&lt;0.7</td>
<td>≥50 and &lt;80</td>
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<tr>
<td>Stage III: Severe COPD</td>
<td>&lt;0.7</td>
<td>≥30 and &lt;50</td>
</tr>
<tr>
<td>Stage IV: Very Severe COPD</td>
<td>&lt;0.7</td>
<td>&lt;30 or FEV₁ &lt;50% predicted plus chronic respiratory failure</td>
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</tbody>
</table>

FEV₁=forced expiratory volume in 1 second; FVC=forced vital capacity

Other Useful Measures

In addition to FEV₁, body mass index (BMI) and dyspnea have proved useful in predicting outcomes such as survival. They should be evaluated in all patients.

\[
\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}
\]

BMI <21 is associated with increased mortality.

Functional dyspnea can be assessed using the Medical Research Council dyspnea scale:

0: not troubled with breathlessness except with strenuous exertion
1: troubled by shortness of breath when hurrying or walking up a slight hill
2: walks slower than people of the same age due to breathlessness or has to stop for breath when walking at own pace on the level
3: stops for breath after walking about 100 m or after a few minutes on the level
4: too breathless to leave the house or breathless when dressing or undressing
COPD Assessment and Management\textsuperscript{1,2}

Following routine medical history and physical examination, if COPD is suspected, assess patient for\textsuperscript{1,2}
- Chronic cough — intermittent or daily
- Chronic sputum production
- Dyspnea — progressive, persistent, “increased effort to breathe”
- History of exposure to risk factors — tobacco smoke, occupational dust and chemicals, smoke from home cooking and heating fuels
- Family history of COPD (eg, alpha,-antitrypsin deficiency)

Perform spirometry to measure airflow limitation\textsuperscript{1,2}

**Spirometry results within normal limits**
Postbronchodilator FEV\textsubscript{1}/FVC >0.7
FEV\textsubscript{1} ≥80% predicted\textsuperscript{1,2}

- Consider differential diagnoses
- Offer smoking cessation support, intervention, and/or pharmacotherapy as needed at every visit\textsuperscript{1,2}
- Counsel to reduce the risk of exposure to occupational and environmental sources of smoke, chemicals, and pollution\textsuperscript{1,2}
- Provide educational materials as appropriate\textsuperscript{1,2}
- Offer influenza vaccination\textsuperscript{1,2}

**Spirometry results confirm the presence of airflow limitation that is not fully reversible (COPD)**
Postbronchodilator FEV\textsubscript{1}/FVC ≤0.7

- Offer smoking cessation support, intervention, and/or pharmacotherapy as needed at every visit\textsuperscript{1,2}
- Assess exacerbation history\textsuperscript{1,2}
- Provide pharmacotherapy and other treatment\textsuperscript{1,2}
- Offer influenza and consider pneumococcal vaccinations\textsuperscript{1,2}
- Provide education about COPD and self-management of COPD\textsuperscript{1,2}
- Monitor disease progression and development of complications\textsuperscript{1,2}
- Evaluate impact of comorbidities\textsuperscript{1,2}
- Assess need for pulmonary rehabilitation\textsuperscript{1,2}
- Assess need for oxygen therapy\textsuperscript{1,2}
- Assess need for surgery\textsuperscript{1,2}
Pharmacologic Treatment

Effective medications for COPD are available. All patients who are symptomatic merit a trial of drug treatment.\textsuperscript{2}

Medications for treatment of COPD include\textsuperscript{1}

- Bronchodilators (Regular treatment with long-acting bronchodilators is more effective and convenient than short-acting bronchodilators)
  - \( \beta_2 \)-Agonists
  - Anticholinergics
  - Methylxanthines
- Combination long-acting bronchodilator and inhaled corticosteroids
  - Inhaled corticosteroids alone are not indicated for COPD

Medications for treatment of COPD exacerbations include\textsuperscript{1}

- Antibiotics
- Oral Corticosteroids

Medications for reduction and prevention of COPD exacerbations\textsuperscript{2}

- Combination long-acting bronchodilator and inhaled corticosteroids
  - Not all combination long-acting bronchodilator and inhaled corticosteroids are approved to reduce exacerbations

Pulmonary Rehabilitation

The goals of pulmonary rehabilitation are to\textsuperscript{4}

- Reduce symptoms
- Increase ability to do daily activities
- Increase participation in physical and social activities
- Improve overall quality of life

- Benefits in functional status have been seen in patients with a wide range of disability

Advanced Treatments\textsuperscript{2}

- Single or double lung transplant
- Lung volume reduction surgery (LVRS)
Algorithm for Pharmacological Treatment of COPD

Confirm diagnosis of COPD

Intermittent symptoms (eg, cough, wheeze, exertional dyspnea)

SA-BD as needed (eg, inhaled β₂-agonist, anticholinergic)

Persistent symptoms (eg, dyspnea, night-waking)

LA-BD/SA-BD q.i.d. + as-needed reliever

Limited benefit?

Yes

Alternative class/combine classes eg, LA-BD + ICS

Limited benefit? Side effects?

Yes

Add/substitute oral theophylline

Assess effectiveness by treatment response

- ATS guidelines recommend adding an inhaled corticosteroid (ICS) to a long-acting bronchodilator (LA-BD) if exacerbations require a course of antibiotics or oral corticosteroids in the past year, and FEV₁ <50% predicted.
- Always ensure the patient can use inhalers properly and understands their purpose.
- If multiple medications are used, consider prescribing a combination medication.

Key:
SA-BD: short-acting bronchodilator
LA-BD: long-acting bronchodilator
ICS: Inhaled corticosteroid

Oxygen Therapy

Long-term oxygen therapy reverses hypoxemia and has been shown to improve life expectancy in patients with chronic lung disease

- Long-term administration of oxygen (>15 hours per day) to patients with chronic respiratory failure has been shown to increase survival
- Prescribe based on arterial blood gas evidence of hypoxemia
- Therapeutic goal is to assure PaO₂ >60 mm Hg (arterial oxygen saturation: SaO₂ >90%)
Follow Up for Optimal Management

For all patients with COPD

- Strongly encourage the patient to quit smoking. Recommending a nicotine replacement program may help.
- Educate the patient. The goal is to help the patient develop living patterns that incorporate self-management.
- Prevent and manage exacerbations. The prevention of exacerbations is recognized as a key goal in COPD disease state management.
- Vaccinate for flu and pneumonia.

For patients with more severe COPD who are limited in activities of daily living

- Enroll the patient in a pulmonary rehabilitation program. The focus is on breathing retraining, exercise, and diet as part of a comprehensive self-management program, within the context of team support.
- Encourage patient and caregiver participation in support groups, if interested.
Patient Assessment Checklist

Ask the following questions at every visit[^5]:

Since your last visit
- Was your breathing worse than usual?
- Did you cough up more mucus than usual?
- Was your mucus thicker than usual?
- Was your mucus more green or brown than usual?
- Did you cough more than usual?
- Did you wheeze?
- Did your COPD symptoms wake you up at night?
- Did you take your regular medicine today?
- How often did you use your quick-relief inhaler?
- Have you smoked? How often?
- Is your health better, the same, or worse?

At every visit, discuss
- Patient’s symptoms
- Medication usage—prescription medications, OTC products, vitamins, herbal supplements
- Drug interaction potential
- Side effect management
- Adherence to medications
- Comorbid medical issues
- Smoking cessation (as appropriate)
References


