

Chronic Obstructive Pulmonary Disease (COPD)

Overview

1. Consider the diagnosis of COPD in all smokers and ex-smokers over the age of 45; cigarette smoking accounts for about 85 percent of the risk of developing COPD.
2. Smoking cessation is the single most effective way to reduce the risk of developing COPD and slow the rate of decline in lung function compared to that of non-smokers.
3. The diagnosis of COPD rests on the clinical history and on the requirement that spirometry demonstrates an airflow limitation that is not fully reversible.
4. Spirometry is the most reproducible, standardized, and objective way of measuring airflow limitation and is closely associated with prognosis.
5. Airflow limitation that is not fully reversible is defined as being present when the post-bronchodilator values for the ratio of forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) (FEV1/FVC) is below 0.70
6. Severity of COPD is based on the level of airflow limitation; tailored therapy for COPD is based on the severity of symptoms and functional limitation.
7. Breathlessness and functional limitation can be rated numerically with the simple Modified Medical Research Council (MMRC) dyspnea scale.
8. Step-Care for bronchodilators:
 - Inhaled bronchodilators provide symptom relief
 - Long-acting bronchodilators provide sustained relief of symptoms in moderate to very severe COPD
 - Combination therapy is useful in moderate and very severe COPD
 - Adding inhaled glucocorticoids to optimize bronchodilator therapy reduces exacerbations in patients with both severe COPD (FEV1 < 50 percent predicted) and frequent exacerbations (> one/year); long-term use of oral glucocorticoids is not recommended
9. Pulmonary rehabilitation reduces dyspnea, anxiety, and depression; improves exercise capacity and quality of life (QOL); and may reduce hospitalizations
 - Exercise alone or as part of a comprehensive rehabilitation program improves symptoms, self-confidence, endurance, and QOL.
10. Long-term oxygen for more than 15 hours/day prolongs life in hypoxemic patients with PaO₂ of 55 mm Hg or less.
11. Diagnostic sleep tests should be considered if patients with COPD have pulmonary hypertension, hypercapnia, and daytime somnolence or witnessed apneas.
12. End-of-life care in patients with end-stage COPD may be considered.

Case Finding

The diagnosis of COPD should be suspected in any patient who has a history of tobacco use (smoking) and any of the following:

- • Chronic cough, or
- • Chronic sputum production, or
- • Dyspnea on exertion or rest
- The diagnosis of COPD must be confirmed by spirometry.

Table One: Step Therapy for COPD

Step	Symptoms ①	Maintenance Therapy ②	Rescue therapy	Other Interventions
A	Asymptomatic	No medication indicated	--	Smoking cessation; influenza, and other vaccinations
B	Symptoms less than daily	No scheduled medication indicated	SABA ⑥	Smoking cessation; influenza, and other vaccinations
C	Symptoms not controlled with rescue therapy or daily symptoms	Scheduled SAAC or Combination SABA + SAAC ③	SABA ⑥	Smoking cessation; influenza, and other vaccinations
D	Symptoms not controlled ②	Combination SAAC + LABA or LAAC ④	SABA ⑥	Smoking cessation; influenza, and other vaccinations Consider Pulmonary Rehabilitation ⑦
E	Symptoms not controlled ②	Combination LABA + LAAC ④	SABA ⑥	Smoking cessation; influenza, and other vaccinations Refer to Pulmonary Rehabilitation ⑦
F	Exacerbations of more than one per year and severe disease (FEV1 < 50%)	Consider adding an inhaled glucocorticoid ⑤	SABA ⑥	Smoking cessation; influenza, and other vaccinations Refer to Pulmonary Rehabilitation ⑦

SAAC – Short-acting anticholinergic; SABA – Short-acting beta-agonist; LABA – Long-acting inhaled beta-agonist; LAAC – Long-acting anticholinergic

- 1. Spirometry** is essential to confirm the presence of airflow obstruction (low FEV1 and FEV1/VC ratio). Base therapy on symptoms, but consider alternate diagnoses (heart disease, pulmonary emboli, etc.) if out of proportion to spirometry.
- Use the lowest level of therapy that satisfactorily relieves symptoms and maximizes activity level. Assure compliance and proper use of medications before escalating therapy. It is unusual for patients with COPD with **FEV1 above 70%** to require therapy beyond short-acting bronchodilators; if these patients do not improve they should be considered for alternative diagnoses.
- Consider use of **inhaler** containing both a short-acting beta 2-agonist and an anticholinergic. Nighttime symptoms are frequently better controlled with a long-acting inhaled beta 2-agonist.
- Consider adding a **theophylline trial** (slow release theophylline adjusted to the level of 5 to 12 µg/ml) with caution due to adverse effects. Nighttime respiratory symptoms are frequently controlled, but theophylline may lead to insomnia. Discontinue if a benefit is not evident within several weeks.
- Consider high dose **inhaled glucocorticoids** in patients with severe COPD (FEV1 < 50 % predicted) and at least one exacerbation in the prior year. A combination of a high dose inhaled glucocorticoid and a long-acting beta 2-agonist may help

provide long-term maintenance for symptomatic COPD and improve quality of life (QOL). The use of oral glucocorticoids for maintenance therapy is discouraged.

6. Short-acting inhaled beta 2-agonists (less than 12 puffs/day) may continue to be used as needed. Inhaled long-acting beta 2-agonists should not be used as rescue therapy.
7. **Pulmonary rehabilitation** should be offered to patients who, despite optimal medical therapy, have reduced exercise tolerance and/or dyspnea limiting exercise.

Oxygen in COPD

1. Oximetry should be considered in patients with COPD and should be performed in all patients with severe or very severe COPD ($FEV_1 < 50$ percent predicted).
2. Evaluation of nocturnal desaturation should be considered in patients with severe or very severe COPD ($FEV_1 < 50$ percent predicted) who exhibit unexplained findings indicating nocturnal hypoxemia (e.g., polycythemia, pulmonary hypertension, and nocturnal restlessness).
3. Oxygen therapy should be initiated in patients who have hypoxemia ($PaO_2 < 55$ mm Hg and/or $SaO_2 < 88$ percent).
4. Oxygen therapy should be initiated in patients who have hypoxemia (PaO_2 of 56 to 59 mm Hg or $SaO_2 < 89$ percent) and signs of tissue hypoxia such as hematocrit above 55, pulmonary hypertension, or cor pulmonale.
5. Oxygen therapy should be provided during exercise in stable patients with COPD with exertional hypoxemia ($SaO_2 < 88$ percent).
6. Oxygen therapy should be considered for nocturnal hypoxemia ($SaO_2 < 88$ percent).
7. Patients who started to receive oxygen therapy while unstable or on suboptimal medical therapy should be reevaluated within one to 3 months for need of long-term oxygen therapy (LTOT). If repeated evaluation indicates a patient no longer qualifies for oxygen, cessation of oxygen should be considered.
8. Patients who continue to receive long-term oxygen therapy (LTOT) should be reevaluated at least annually for continued need of LTOT.
9. Patients prescribed oxygen should be cautioned about the potentially extreme fire hazard of smoking or lighting cigarettes in the presence of oxygen.

Pulmonary Rehabilitation and COPD

1. Pulmonary rehabilitation should be offered to COPD patient who have reduced exercise tolerance and dyspnea-limiting exercise in spite of optimal medical therapy.
2. Rehabilitation programs should include educational and self-management training to reduce healthcare resources use.

Table Two: Pulmonary Rehabilitation and COPD

Elements of Pulmonary Rehabilitation	Anticipated Benefit
Exercise training	Improves exercise endurance and maximal exercise capacity
Strength training of upper and lower extremities	Improves strength of upper and lower extremities
Psychosocial and educational training	May be beneficial long term to improve QOL and coping with chronic disease, which may reduce utilization of care

VA/DoD guideline http://www.healthquality.va.gov/copd/copd_20.pdf

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