

Chronic Obstructive Pulmonary Disease: Global Strategy for the Diagnosis, Management, and Prevention of COPD (2022)

About the Guideline

- The Global Initiative for Chronic Obstructive Lung Disease (GOLD) began work on COPD guidelines in 1998.
- The goal was to develop unbiased guidelines for evidenced-based care of the patient with COPD. The GOLD Scientific Committee was formed in 2001 and is made up of leading experts from around the world.
- GOLD's first report was published in 2001 and is revised annually.

Key Clinical Considerations

Become familiar with the recommendations and best-practice statements provided in this guideline, especially if you work in an acute care setting.

Definition and Key Points

- Chronic obstructive pulmonary disease (COPD) is a treatable, common disease characterized by persistent, often progressive, airflow limitation and respiratory symptoms developed from significant exposure to noxious particles or gases that cause airway (bronchitis, bronchiolitis) and alveolar (emphysema) abnormalities.
- The most common symptoms are a productive or nonproductive cough, activity limitation, and dyspnea.
- Risk factors for COPD include air pollution (indoor and outdoor) and tobacco smoking, genetic abnormalities, accelerated aging, and abnormal lung development.
- Patients with COPD can experience exacerbations of the disease.
- Morbidity and mortality are increased when COPD is associated with other chronic diseases.
- COPD is one of the top three leading causes of death in the world. COPD is preventable and treatable.

Diagnosis and Assessment

- Patients tend to underreport symptoms. COPD should be considered if the patient has any of the following symptoms:
 - Dyspnea (progressive over time, worse with exercise, persistent)
 - Chronic cough (may be intermittent with progression to daily, may be nonproductive or productive)
 - Chronic sputum production of any pattern (progressive over time, worse with exercise, persistent)
 - Chest tightness
 - Recurrent wheezing
- Suspect COPD in patients with the above symptoms and the following medical history:
 - Recurrent lower respiratory tract infections
 - COPD risk factors (genetic, congenital, exposure to tobacco smoke, smoke from home cooking and heating fuels, and occupational exposures)
 - Presence of comorbidities such as osteoporosis or cardiovascular disease

- Family history of COPD or other childhood experiences such as low birth weight and childhood respiratory infections
- Certain comorbid conditions may be mistaken for COPD. These conditions include:
 - Asthma
 - Heart failure
 - Bronchiectasis
 - Tuberculosis
 - Obliterative bronchiolitis
 - Diffuse panbronchiolitis
- In addition to an assessment of the patient's physical symptoms (using the COPD Assessment Test [CAT™] and/or the patient's dyspnea scale modified Medical Research Council [mMRC] questionnaire), spirometry is required to make the diagnosis of COPD.
- Spirometry readings, assessment of symptoms, and history of exacerbations (moderate-severe) are required to determine the severity of COPD. The Refined ABCD assessment tool provides information about symptom burden and risk of exacerbation, which can be used to guide therapy.
- All patients and their family members should be screened for alpha-1 antitrypsin deficiency (AATD), especially in areas with high prevalence of AATD.
- Chest X-ray and computed tomography are not useful to diagnose COPD, but can exclude other respiratory, cardiac, and skeletal diagnoses.

Prevention and Maintenance Therapy

- Smoking cessation is important in both the prevention and maintenance of COPD. Nicotine replacement therapy, pharmacotherapy, and counseling delivered by healthcare professionals are more effective than placebo and increase smoking abstinence and cessation rates.
- Influenza, pneumococcal, and COVID-19 vaccinations are recommended to reduce serious illness, death, bacteremia, and serious invasive pneumococcal disease in COPD patients.
 - In addition, Tetanus, diphtheria, and acellular pertussis (Tdap) vaccination, for COPD patients not vaccinated in adolescence, and shingles (herpes zoster) vaccination are also recommended.
- Medications can reduce symptoms in stable COPD, decreasing the number and severity of exacerbations and improving health and exercise tolerance.
 - Bronchodilators are commonly given for symptom prevention and management.
 - Antimuscarinic drugs improve forced expiratory volume.
 - Methylxanthines are controversial as nonselective phosphodiesterase inhibitors.
 - Combination bronchodilator therapy may increase bronchodilation with fewer side effects, compared to higher doses of a single bronchodilator.
 - Long-acting beta₂-agonists (LABAs) and long-acting muscarinic agents (LAMAs) reduce exacerbation rates and significantly improve lung function; combination LABA and LAMA therapy is more effective than monotherapy. Tiotropium can improve exercise performance and pulmonary rehabilitation.
 - Theophylline has modest bronchodilator effects.
- The best inhaler is one that the patient will use correctly. Technique should be assessed and reinforced regularly.
- Additional recommendations:
 - Pulmonary rehabilitation and long-term oxygen as indicated.
 - Consider noninvasive ventilation (NIV) for acute respiratory failure.

- Surgical/bronchoscopic interventions with advanced emphysema, and palliative approaches for symptom control.

Management of Stable COPD

- Continue efforts to achieve smoking cessation and the reduction of exposure to noxious inhalants.
- Long-term use of monotherapy with inhaled corticosteroids (ICS) is **not** recommended, but in treating patients with prior exacerbations who have an eosinophil count greater than 300 cells/ μ L, the use of ICS combined with a LABA is more effective than individual medications. Oral glucocorticoids are **not** recommended.
- Triple therapy with a LABA and a LAMA plus an ICS can be used to improve lung function and decrease exacerbations.
- Other medications that may decrease exacerbations are phosphodiesterase-4 (PDE₄) inhibitors along with a LABA, either with or without a LAMA. In former smokers, consider macrolides such as azithromycin, and consider the use of roflumilast in patients with an FEV₁ less than 50%.
- Alpha-1 antitrypsin augmentation therapy may be used for patients with AATD.
- Nonpharmacologic therapy includes:
 - Education
 - Self-management
 - Pulmonary rehabilitation
 - Vaccination
 - Nutritional support
 - End-of-life/palliative care
 - Long-term oxygen therapy
 - NIV
 - Interventional bronchoscopy (such as endobronchial one-way valves) and surgery (bullectomy, lung volume reduction surgery, or lung transplantation)

Management of Exacerbations

- The most common cause of a COPD exacerbation is a respiratory tract infection.
- First-line treatment is a short-acting beta₂-agonist (SABA), followed with a LABA. Treatment with systemic corticosteroids and antibiotics (if necessary) should last no longer than 5 to 7 days. Use of supplemental oxygen is appropriate in patients who are hypoxemic; titrate to maintain SpO₂ between 88% and 92%. For patients who need mechanical ventilation, NIV should be considered over intubation.
- Follow-up within 1 month after hospital discharge is recommended and should include:
 - Review of all laboratory/clinical data
 - Maintenance therapy and inhaler technique
 - Tapering or discontinuation of medications
 - Management of comorbid conditions
- Additional follow-up is recommended at one to four weeks, then again at 12 to 16 weeks. The need for long-term oxygen therapy can be better assessed.

Comorbidities

- Other diseases may coexist with COPD, such as:
 - Lung cancer
 - Heart failure

- Ischemic heart disease
 - Arrhythmias
 - Peripheral vascular disease
 - Hypertension
 - Osteoporosis
 - Depression
 - Anxiety
 - Cognitive impairment
 - Frailty
 - Obstructive sleep apnea
 - Periodontitis
 - Metabolic syndrome
 - Diabetes
 - Anemia
 - Polycythemia
 - Gastroesophageal reflux
- Usually, these diseases do not change COPD treatment, but the treatment of these diseases should be considered in the complexity of the overall care of the patient with COPD.

COVID-19 and COPD

- Patients with COPD who have new or worsening symptoms, such as shortness of breath, increased cough, or fever, should be tested for COVID-19.
- Patients should continue their current oral and inhaled medications for COPD as ordered.
- Patients should follow basic infection control measures such as wearing a face covering, and physical distancing; but ensure that patients are not socially isolating and decreasing physical activity. The patient should be encouraged to utilize telecommunication to maintain contact with family and friends.

Reference

Global Initiative for Chronic Obstructive Lung Disease (GOLD). (2022). *Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: 2023 report*. https://goldcopd.org/wp-content/uploads/2022/12/GOLD-2023-ver-1.1-2Dec2022_WMV.pdf