
GOLD

At-A-Glance Outpatient COPD Management Reference



**BASED ON THE WORKSHOP REPORT:
GLOBAL STRATEGY FOR THE DIAGNOSIS, MANAGEMENT,
AND PREVENTION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE
(UPDATED 2004)**

DIAGNOSING COPD

A diagnosis of COPD should be considered in any individual who presents characteristic symptoms and a history of exposure to risk factors for the disease, especially cigarette smoking.

© Key Indicators for Considering a COPD Diagnosis

- **Chronic cough:** Present intermittently or every day.
Often present throughout the day; seldom only nocturnal.
- **Chronic sputum production:** Any pattern of chronic sputum production may indicate COPD.
- **Acute bronchitis:** Repeated episodes.
- **Dyspnea that is:** Progressive (worsens over time).
Persistent (present every day).
Worse on exercise.
Worse during respiratory infections.
- **History of exposure to risk factors:**
Tobacco smoke (including popular local preparations).
Occupational dusts and chemicals.
Smoke from home cooking and heating fuel.

The diagnosis should be confirmed by spirometry*.

*Where spirometry is unavailable, the diagnosis of COPD should be made using all available tools. Clinical symptoms and signs (abnormal shortness of breath and increased forced expiratory time) can be used to help with the diagnosis. A low peak flow is consistent with COPD but has poor specificity since it can be caused by other lung diseases and by poor performance. In the interest of improving the accuracy of a diagnosis of COPD, every effort should be made to provide access to standardized spirometry.

ASSESS AND MONITOR COPD

A detailed medical history of a new patient known or thought to have COPD should assess:

- Exposure to risk factors, including intensity and duration.
- Past medical history, including asthma, allergy, sinusitis or nasal polyps, respiratory infections, and other respiratory diseases.
- Family history of COPD or other chronic respiratory disease.
- Pattern of symptom development.
- History of exacerbations or previous hospitalizations for respiratory disorder.
- Presence of comorbidities, such as heart disease and rheumatic disease, that may also contribute to restriction of activity.
- Appropriateness of current medical treatments.
- Impact of disease on patient's life, including limitation of activity; missed work and economic impact; effect on family routines; and feelings of depression or anxiety.
- Social and family support available to the patient.
- Possibilities for reducing risk factors, especially smoking cessation.

Physical Examination

Though an important part of patient care, a physical examination is rarely diagnostic in COPD. Physical signs of airflow limitation are usually not present until significant impairment of lung function has occurred, and their detection has a relatively low sensitivity and specificity. A number of physical signs may be present in COPD, but their absence does not exclude the diagnosis.

CLASSIFICATION OF COPD BY SEVERITY

Stage 0: At Risk - Chronic cough and sputum production; lung function is still normal.

Stage I: Mild COPD - Mild airflow limitation ($FEV_1/FVC < 70\%$ but $FEV_1 \geq 80\%$ predicted) and usually, but not always, chronic cough and sputum production.

- At this stage, the individual may not be aware that his or her lung function is abnormal.

Stage II: Moderate COPD - Worsening airflow limitation ($50\% \leq FEV_1 < 80\%$ predicted), and usually the progression of symptoms, with shortness of breath typically developing on exertion.

Stage III: Severe COPD - Further worsening of airflow limitation ($30\% \leq FEV_1 < 50\%$ predicted), increased shortness of breath, and repeated exacerbations which have an impact on patients' quality of life.

- Exacerbations of symptoms, which have an impact on a patient's quality of life and prognosis, are especially seen in patients with $FEV_1 < 50\%$ predicted.

Stage IV: Very Severe COPD - Severe airflow limitation ($FEV_1 < 30\%$ predicted) or $FEV_1 < 50\%$ predicted plus chronic respiratory failure. Patients may have very severe (Stage IV) COPD even if the FEV_1 is $> 30\%$ predicted, whenever these complications are present.

- At this stage, quality of life is very appreciably impaired and exacerbations may be life-threatening

GOALS OF COPD MANAGEMENT

- Prevent disease progression
- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent and treat complications
- Prevent and treat exacerbations
- Reduce mortality
- Prevent or minimize side effects from treatment.

Cessation of cigarette smoking should be included as a goal throughout the management program.

These goals can be achieved through implementation of a COPD Management Program with four components:

- 1. Assess and Monitor Disease**
- 2. Reduce Risk Factors**
- 3. Manage Stable COPD**
- 4. Manage Exacerbations**

THERAPY AT EACH STAGE OF COPD

	0: At Risk	I: Mild	II: Moderate	III: Severe	IV: Very Severe
Characteristics	<ul style="list-style-type: none"> • Chronic symptoms • Exposure to risk factors • Normal spirometry 	<ul style="list-style-type: none"> • FEV₁/FVC < 70% • FEV₁ ≥ 80% • With or without symptoms 	<ul style="list-style-type: none"> • FEV₁/FVC < 70% • 50% ≤ FEV₁ < 80% • With or without symptoms 	<ul style="list-style-type: none"> • FEV₁/FVC < 70% • 30% ≤ FEV₁ < 50% • With or without symptoms 	<ul style="list-style-type: none"> • FEV₁/FVC < 70% • FEV₁ < 30% or FEV₁ < 50% predicted plus chronic respiratory failure
Avoidance of risk factor(s); influenza vaccination					
Add short-acting bronchodilator when needed					
Add regular treatment with one or more long-acting bronchodilators Add rehabilitation					
Add inhaled glucocorticosteroids if repeated exacerbations					
Add long-term oxygen if chronic respiratory failure Consider surgical treatments					

Bronchodilators.

These medications are central to symptom management in COPD.

- Give "as-needed" to relieve intermittent or worsening symptoms, and on a regular basis to prevent or reduce persistent symptoms.
- The choice between beta-2-agonists, anticholinergics, methylxanthines, and combination therapy depends on the availability of medications and each patient's individual response in terms of both symptom relief and side effects.
- Regular treatment with long-acting bronchodilators is more effective and convenient than treatment with short-acting bronchodilators, but more expensive.
- Combining drugs with different mechanisms and durations of action may increase the degree of bronchodilation for equivalent or lesser side effects.
- Theophylline is effective in COPD, but due to its potential toxicity inhaled bronchodilators are preferred when available.

Glucocorticosteroids.

Regular treatment with inhaled glucocorticosteroids is only appropriate for patients with:

- symptomatic improvement and a documented spirometric response to inhaled glucocorticosteroids or
 - an FEV₁ < 50% predicted and repeated exacerbations (for example, 3 in the last three years).
- Prolonged treatment with inhaled glucocorticosteroids may relieve symptoms in this carefully selected group of patients but does not modify the long-term decline in FEV₁. The dose-response relationships and long-term safety of inhaled glucocorticosteroids in COPD are not known.

Long-term treatment with oral glucocorticosteroids is not recommended.

Commonly Used Formulations of Drugs for COPD					
Drug	Inhaler (μ g)	Solution for Nebulizer (mg/ml)	Oral	Vials for Injection (mg)	Duration of Action (hours)
β_2-agonists					
Short-acting					
Fenoterol	100-200 (MDI)	1	0.05% (Syrup)		4-6
Salbutamol (albuterol)	100, 200 (MDI & DPI)	5	5mg (Pill) Syrup 0.024%	0.1, 0.5	4-6
Terbutaline	400, 500 (DPI)	-	2.5, 5 (Pill)	0.2, 0.25	4-6
Long-acting					
Formoterol	4.5-12 (MDI & DPI)				12+
Salmeterol	25-50 (MDI & DPI)				12+
Anticholinergics					
Short-acting					
Ipratropium bromide	20, 40 (MDI)	0.25-0.5			6-8
Oxitropium bromide	100 (MDI)	1.5			7-9
Long-acting					
Tiotropium	18 (DPI)				24+
Combination short-acting β_2-agonists plus anticholinergic in one inhaler					
Fenoterol/ Ipratropium	200/80 (MDI)	1.25/0.5			6-8
Salbutamol/ Ipratropium	75/15 (MDI)	0.75/4.5			6-8
Methylxanthines					
Aminophylline		200-600 mg (Pill)	100-600 mg (Pill)	240 mg	Variable, up to 24
Theophylline (SR)					Variable, up to 24
Inhaled glucocorticosteroids					
Beclomethasone	100, 250, 400 (MDI & DPI)	0.2-0.4			
Budesonide	100, 200, 400 (DPI)	0.20, 0.25, 0.5			
Fluticasone	50-500 (MDI & DPI)				
Triamcinolone	100 (MDI)	40		40	
Combination long-acting β_2-agonists plus glucocorticosteroids in one inhaler					
Formoterol/ Budesonide	4.5/80, 160 (DPI) (9/320) (DPI)				
Salmeterol/ Fluticasone	50/100, 250, 500 (DPI) 25/50, 125, 250 (MDI)				
Systemic glucocorticosteroids					
Prednisone			5-60 mg (Pill)		
Methyl- prednisolone	10-2000 mg		4, 8, 16 mg (Pill)		

MDI=metered dose inhaler; DPI=dry powder inhaler

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GOLD (2004) source documents are at www.goldcopd.org