Module B: Acute Exacerbation

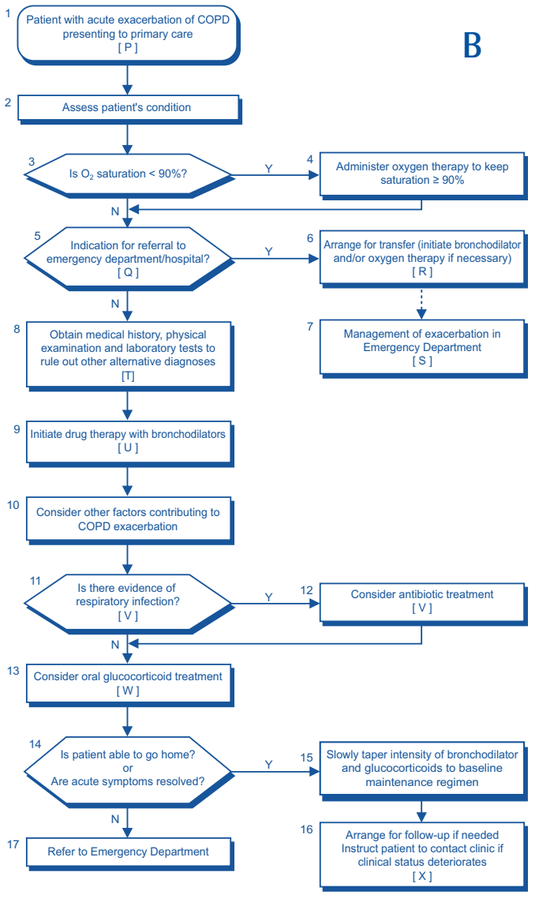


Table 1. Severity of COPD Based on FEV1

Stage	Severity	Post-bronchodilator FEV1/FVC	FEV1 % predicted
0	At-Risk (1)	≥ 0.7	≥80
1	Mild	≤ 0.7	≥80
2	Moderate	≤ 0.7	50 - 79.9
3	Severe	≤ 0.7	30 - 49.9
4	Very Severe	≤ 0.7	<30

(1) Patients who smoke or are exposed to pollutants; and have cough, sputum or dyspnea; or have family history of respiratory disease. (There is insufficient evidence to support this category)

FEV1: forced expiratory volume in one second; FVC: forced vital capacity

Table 2: Severity of COPD Based on Dyspnea (1)

Severity	Score	Level of Breathlessness
None	0	Not troubled with breathlessness except with **strenuous exercise**
Mild	1	Troubled by shortness of breath when hurrying or walking up a **slight hill**
Moderate	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**
Severe	3	**Stops** for breath after walking approximately 100 meters or after **a few minutes** on the level
Very Severe	4	Too breathless to **leave the house** or breathless when **dressing or undressing**

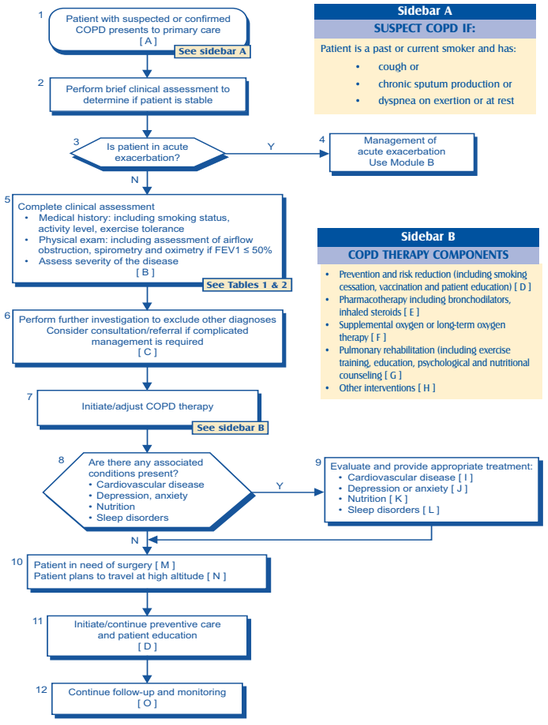
(1) Modified Medical Research Council (MMRC) Dyspnea Scale (Bestall et al., 1999)

Table 3: Evaluation of Patient with Mild/Moderate COPD

	√	
Clinical Assessment		**Prevention**
		Smoking status & readiness to quit
		Vaccination
		Symptom control
		• breathlessness
		• exercise tolerance
		• exacerbation frequency
		• sleep disruption
		• cough & sputum
		Use of drug treatment
		• adherence
		• adverse effect
		• inhaler technique
		Manage complications (in severe COPD)
		• presence of cor pulmonale
		• presence of depression
		• presence of sleep disorder
		• need for LTOT
		• change nutritional status
		Need for pulmonary rehabilitation
Measurements		**Spirometry FEV1 & FVC**
		Calculate BMI
		MRC dyspnea score

VA/DoD Clinical Practice Guideline Management of COPD Pocket Guide

Module A: Management of COPD



Sidebar A

SUSPECT COPD IF:

Patient is a past or current smoker and has:

- cough or
- chronic sputum production or
- dyspnea on exertion or at rest

Sidebar B

COPD THERAPY COMPONENTS

- Prevention and risk reduction (including smoking cessation, vaccination and patient education) [D]
- Pharmacotherapy including bronchodilators, inhaled steroids [E]
- Supplemental oxygen or long-term oxygen therapy [F]
- Pulmonary rehabilitation (including exercise training, education, psychological and nutritional counseling [G]
- Other interventions [H]

VA access to full guideline: http://www.oqp.med.va.gov/cpg/cpg.htm
DoD access to full guideline: http://www.qmo.amedd.army.mil/pguide.htm
Sponsored & produced by the VA Employee Education System in cooperation with the Offices of Quality & Performance and Patient Care Services and the Department of Defense

August 2003

Table 4: Inhaled Glucocorticoids[a-b]

Inhaled Glucocorticoid	Usual dosing interval	Low dose µg/day	Medium dose µg/day	High dose µg/day	Max dose per MFR[(e)] (µg/day)
Beclomethasone (MDI) 40 µg 80 µg	every 6-8 h or every 12 h	100-250 (2-6 puffs) (1-3 puffs)	250-500 (6-10 puffs) (3-5 puffs)	> 500 (> 10 puffs) (> 5 puffs)	640
Budesonide 200 µg[c] (DPI)	every 12 h	200-600 (1-3 inhalations)	600-1000 (3-5 inhalations)	> 1000 (> 5 inhalations)	1600
Flunisolide 250 µg (MDI)	every 12 h	500-1000 (2-4 puffs)	1000-2000 (4-8 puffs)	> 2000 (> 8 puffs)	2000
Fluticasone[d] (MDI) 44 µg 110 µg 220 µg	every 12 h	88-264 (2-6 puffs) — —	264-660 (6-15 puffs) (2-6 puffs) (1-3 puffs)	> 660 (> 15 puffs) (> 6 puffs) (> 3 puffs)	1760
Mometasone 220 µg (DPI)	every 24 h or every 12 h	200-400	400-800	> 800	880
Triamcinolone 100 µg (MDI with built-in spacer)	every 6-8 h or every 12 h	400-1000 (4-10 puffs)	1000-2000 (10-20 puffs)	> 2000 (> 20 puffs)	1600

MDI - Metered Dose Inhaler
DPI - Dry Powder Inhaler

a Not approved by the FDA for COPD. Beclomethasone, budesonide, fluticasone, and triamcinolone have been studied in clinical trials in COPD. The combination of fluticasone and salmeterol is approved by the FDA for COPD.

b Dosing adapted from Global Initiative for Asthma 2005 and Global Strategy for Asthma Management and Prevention 2004 update

c Also available in a formulation for use with a jet nebulizer (currently indicated for pediatric asthma)

d Also available in the following combination products:
fluticasone 100 µg/salmeterol 50 µg; fluticasone 250 µg/salmeterol 50 µg; fluticasone 500 µg/salmeterol 50 µg

e Per Manufacturer

Table 5. Step-Care Pharmacotherapy in COPD

Step		Symptoms [1]	Maintenance Therapy [2]	Rescue Therapy	Other Interventions
Worsening Symptoms	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 [3]	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 > 1 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.

2 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. Patients with FEV1 > 70% who do not improve should be considered for alternative diagnoses.

3 Consider use of **inhaler** containing both a short-acting beta 2-agonist and an anticholinergic. Nighttime symptoms are frequently better controlled with long-acting inhaled beta 2-agonist.

4 Consider adding a **theophylline trial** (slow release theophylline adjusted to the level of 5 to 12 µg/ml). Theophylline should be used with caution because of the potential for severe side effects. Nighttime respiratory symptoms are frequently controlled, but theophylline may lead to insomnia. Theophylline should be discontinued if a symptomatic benefit is not evident within several weeks.

5 Consider high dose **inhaled glucocorticoids** in patients with severe COPD (FEV1 < 50% predicted) and at least one exacerba6tion 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 Inhaled long-acting beta 2-agonists should not be used as rescue therapy. Short-acting inhaled beta 2-agonists (less than12 puffs/day) may continue to be used as needed.

7 **Pulmonary rehabilitation** should be offered to patients who, despite optimal medical therapy, have reduced exercise tolerance and/or dyspnea limiting exercise.

Table 6: Inhaled Bronchodilators [a]

Drug	Dosage (Max dose)	Nebulizer dosage
Short-acting beta 2-agonists (MDI)		
Albuterol 90 µg	1-2 puffs q4-6 h[b] (12 puffs/day[c])	2.5 mg 3-4 times daily
Metaproterenol 0.65 mg	2-3 puffs every 3-4 h[b] (12 puffs/day[c])	10-15 mg 3-4 times daily
Pirbuterol 200 µg	1-2 puffs every 4-6 h (12 puffs/day)	Not available
Levalbuterol 45 µg	1-2 puffs every 4-6 h (12 puffs/day)	0.63–1.25 mg 3 times daily
Long-acting beta 2-agonists (DPI)		
Formoterol 12 µg (capsules)	12 µg every 12 h (12 µg every 12 h)	Not available
Salmeterol 50 µg[d]	50 µg every 12 h (50 µg every 12 h)	Not available
Short-acting anticholinergics (MDI)		
Ipratropium 18 µg	2 puffs every 6 h[b] (12 puffs/day[c])	0.25–0.5 mg every 6-8 h
Long-acting anticholinergics (DPI)		
Tiotropium 18 µg (capsules)	18 µg once daily (18 µg once daily)	Not available
Combination bronchodilators (MDI)		
Albuterol 90 µg + ipratropium 18 µg	2 puffs every 6 h (12 puffs/day)	2.5 mg/0.5 mg 4 times daily

a Dosing information obtained from AHFS Drug Information 2005 and product package inserts

b These are usual recommended **maintenance** doses, although they may be modified in particular clinical circumstances

c Maximum doses per manufacturer's recommendations, although higher doses have been used clinically

d Also available in the following combination products:
fluticasone 100 µg/salmeterol 50 µg; fluticasone 250 µg/salmeterol 50 µg; fluticasone 500 µg/salmeterol 50 µg