Current COPD Diagnostic Criteria and Management Strategies

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Chronic Obstructive Pulmonary Disease (COPD) Diagnosis

COPD is the fourth leading cause of death in Canada and worldwide. The main risk factors for COPD are active/passive tobacco smoking, air pollution, and occupational exposure to chemicals or dusts.

COPD is caused by chronic bronchitis and/or emphysema. The diagnosis of chronic bronchitis (CB) is established by clinical history and defined by the presence of chronic/recurrent cough most days, for ≥ 3 months during two consecutive years; other causes of chronic cough, such as asthma, bronchiectasis,

Paul's case

Paul, who is 65-years-old, is a 25 packs per year smoker. He has had productive cough, mostly in the mornings, for about five years and has had slowly progressive dyspnea for the past two years. Currently, Paul has to walk slower than usual on level surfaces due to his dyspnea (3/5 on the Medical Research Council [MRC] Dyspnea Scale). His FEV1/FVC ratio is 65% and FEV1 is 70% on spirometry. He has had one acute exacerbation of his COPD in the past two years.

1. **How severe is Paul's COPD?**
2. **What is the recommended management for him?**

Table 1

Classification of COPD Severity by Lung Function or Dyspnea

Stage	FEV1 Post-Bronchodilator	Dyspnea Severity
Mild	≥ 80% predicted	**MRC 2***: Dyspnea hurrying on level or walking up a slight hill
Moderate	50–79% predicted	**MRC 3–4**: Dyspnea causing the patient to stop after walking at own pace or after 100 m on the level
Severe	30–49% predicted	**MRC 5**: Dyspnea resulting in the patient being too breathless to leave the house or get dressed or evidence of chronic respiratory failure or right heart failure
Very Severe	< 30% of predicted	**MRC 5**

*MRC 1 is dyspnea only during strenuous exertion

and tuberculosis should be ruled out. Emphysema manifests with slowly progressive dyspnea and is confirmed by chest CT; however, chest CT is not routinely required, as the presence of emphysema does not alter the management of most COPD cases.

All patients with suspected COPD — because of CB or dyspnea — should have a spirometry; a post bronchodilator FEV1/FVC < 0.7 is necessary to establish the diagnosis of COPD.

After the diagnosis of COPD is confirmed, it is important to assess its severity in order to guide treatment decisions. The management of COPD depends on the severity of the disease, based on either FEV1 or the severity of dyspnea (Table 1).[1] However, treatment is only recommended for patients who are symptomatic.[2] Paul has moderate COPD, based on both FEV1 and dyspnea.

COPD Management

Chronic Management

The main goals of COPD management are shown in Table 2.[1] As COPD is largely caused by smoking, the single most important preventive and treatment measure is smoking cessation, which improves quality of life and survival. Other measures that improve survival include oxygen therapy, influenza vaccination, and lung transplantation.

Table 2

Goals of COPD Management

- Prevent disease progression
- Alleviate dyspnea
- Improve exercise tolerance
- Improve health status
- Treat exacerbations and complications of COPD

The main measures that effectively improve quality of life and reduce COPD exacerbations are pharmacological treatment, education, and pulmonary rehabilitation and an active lifestyle.

Bronchodilators are the mainstay of COPD pharmacotherapy; they reduce air trapping and dyspnea and improve quality of life. Short-acting bronchodilators (SABA) are used (as needed) and may be the only treatment needed in mild COPD. If dyspnea is persistent and the patient has less than one acute COPD exacerbation (ACOPDE) per year, a long-acting anticholinergic (LAAC), such as tiotropium, or a long-acting β agonist (LABA), such as formoterol or salmeterol, should be added. If a patient has severe COPD or ≥ 1 ACOPDE per year, inhaled corticosteroids, combined with a LABA, can effectively reduce the number of exacerbations.[3, 4]

An active lifestyle is recommended for all patients with COPD; formal pulmonary rehabilitation should be offered to patients with severe COPD and considered for those with moderate COPD based on dyspnea.

Since Paul has moderate COPD — based on dyspnea and FEV1 — and infrequent exacerbations, the regular use of a LAAC or a LABA and a short-acting β agonist (SABA) as needed are recommended.

Management of Acute COPD Exacerbations

Acute COPD exacerbations are defined as worsening of dyspnea, cough, or sputum production lasting ≥ 48 hours. Exacerbations could be purulent or nonpurulent; purulent exacerbations are characterized by increased expectoration of purulent sputum and dyspnea.[1]

It is important to consider other causes of increased dyspnea (particularly if severe), such as congestive heart failure, pulmonary embolism, and pneumothorax.

It is now recognized that ACOPDEs are the most common cause of medical visits, hospitalizations, and death among COPD patients and that the main predictor of recurrent exacerbations is having had a previous exacerbation. The adequate treatment and prevention of ACOPDE is, therefore, an essential component of COPD management.

Oral or parenteral corticosteroids (25 to 50 mg of prednisone or equivalent q.d. for 7 to 14 days) are recommended in most patients with moderate to severe ACOPDE; in addition, increased doses of SABA should be used as needed for dyspnea.[1]

Antibiotics are indicated in purulent ACOPDE. For patients with mild or moderate COPD, several antibiotics are appropriate during a purulent ACOPDE: amoxicillin, second or third generation cephalosporins, newer macrolides (azithromycin or clarithromycin), doxycycline, or sulfamethoxazole. For patients with severe or very severe COPD or frequent ACOPDE (≥ 4 per year), fluoroquinolones or amoxicillin/clavulanate are preferred.[1,5] ACOPDE preventive measures are shown in Table 3.

Education about COPD, including the prevention and opportune treatment of ACOPDE, is an essential components of COPD management. It is advisable to provide a prescription for steroids and antibiotics for self-management of ACOPDE.

Referral to a specialist should be considered in patients with severe/recurrent symptoms or exacerbations, poor response to therapy, diagnostic uncertainty, or suspicion of α1-antitrypsin. Dx

Table 3

ACOPDE Preventive Measures

- Smoking cessation
- Influenza and pneumococcal vaccinations
- Regular use of LABAs
- Regular ICS/LABA in moderate to severe COPD with > 1 ACOPDE per year
- Education on self-managment and action plan
- Daily azithromycin or roflumilast in selected patients with recurrent COPD exacerbations

Resources

1. O'Donnell DE, Hernandez P, Kaplan A, *et al*: Canadian Thoracic Society Recommendations for Management of Chronic Obstructive Pulmonary Disease — 2008 Update — Highlights for Primary Care. Can Respir J 2008; 15 (Suppl A):1A.
2. Tashkin DP, Celli B, Senn S, *et al*: A 4-year Trial of Tiotropium in Chronic Obstructive Pulmonary Disease. N Engl J Med 2008; 359(15):1543–1554.
3. Calverley PM, Anderson JA, Celli B, *et a:* Salmeterol and Fluticasone Propionate and Survival in Chronic Obstructive Pulmonary Disease. N Engl J Med 2007; 356(8):775–789.
4. Qaseem A, Wilt TJ, Weinberger SE, *et al*: Diagnosis and Management of Stable Chronic Obstructive Pulmonary Disease: A Clinical Practice Guideline Update from the American College of Physicians, American College of Chest Physicians, American Thoracic Society, and European Respiratory Society. Ann Int Med 2011; 155(3):179–191.
5. O'Donnell DE, Aaron S, Bourbeau J, *et al*: Canadian Thoracic Society Recommendations for Management of Chronic Obstructive Pulmonary Disease — 2007 Update. Can Respir J 2007; 14 (Suppl B): 5B–32B.

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