



Approach to Pharmacotherapy in COPD and Assessment of Mortality Risk

Approach to Pharmacotherapy

The Canadian Thoracic Society (CTS) recommended approach to pharmacotherapy for COPD⁽¹⁾ is based on:

1. whether the patient has mild, moderate or severe symptom burden based on the patient’s CAT score, or their mMRC Dyspnea Score, and
2. whether they are at low risk or high risk for acute exacerbation COPD (AECOPD).

The following are the CTS recommendations for patients for initial pharmacotherapy.

- If the patient has COPD with a **low symptom burden** (mMRC ≤ 1 and/or CAT score < 10), start a **short-acting bronchodilator (SABD)** such as salbutamol 2-4 puffs as needed.
- If the patient has COPD with an **increased symptom burden** (mMRC ≥ 2 and/or CAT score ≥ 10), you need to **assess the exacerbation risk**.
 - o **Low exacerbation risk** (infrequent exacerbator, with ≤ 1 moderate exacerbation within the previous year) start a **long-acting bronchodilator**, either a long-acting muscarinic antagonist or long-acting beta-agonist (i.e., LAMA or LABA).
 - o **High exacerbation risk** (frequent exacerbator, with ≥ 2 moderate exacerbations or >1 severe exacerbation in the last year) start a **combination of long-acting bronchodilators (LAMA + LABA)** or a combination of inhaled corticosteroid (ICS) + LABA could be considered (especially if the blood eosinophil count is ≥ 300).
- The severity of an exacerbation event is categorized as **mild, moderate or severe⁽¹⁾**, Where **mild** requires the increased use of short acting beta agonist (SABA or SAMA); **moderate** requires therapy with an oral antibiotic or oral corticosteroid; and **severe** requires a visit to the emergency department or results in hospitalization.

Consult Lesson 8 in ‘Approach to Pharmacotherapy’ or the CTS 2019 Update⁽¹⁾ to review how best to escalate or de-escalate initial therapy based on a patient’s risk of acute exacerbation.

1. Bourbeau J, Bhutani M, Hernandez P, et al. Canadian Thoracic Society Clinical Practice Guideline on pharmacotherapy in patients with COPD – 2019 update of evidence. *Can J Respir Crit Care, Sleep Med.* 2019; 3(4):210–232. doi: 10.1080/24745332.2019.1668652

COPD Assessment Test™ (CAT)

The CAT is a simple, well-validated, 8-item questionnaire that can be used to: assess current COPD status and COPD-related quality of life, assess response to therapy or rehabilitation, and identify changes due to exacerbations or progression of disease. It is available for clinical use at no charge in over 50 languages from catestonline.org.

Modified Medical Research Council (mMRC) Dyspnea Scale

A patient is considered to have a significantly increased symptom burden if their dyspnea score is ≥ 2 on the mMRC Dyspnea Scale.

Modified mMRC Dyspnea Scale*

Grade	Description
0	I only get breathless with strenuous exercise.
1	I get short of breath when hurrying on the level or walking up a slight hill.
2	I walk slower than people of the same age on the level because of breathlessness or I have to stop for breath when walking at my own pace on the level.
3	I stop for breath after walking about 100 metres or after a few minutes on the level.
4	I am too breathless to leave the house or I am breathless when dressing or undressing.

*Fletcher CM. *BMJ* 1960; 2: 1662.

Assessing Mortality Risk with the Age, Dyspnea, and Obstruction (ADO) Index

Points are assigned using the ADO Index based on the patient's age, mMRC dyspnea score, and their FEV₁.⁽²⁾ Use the patient's post-bronchodilator FEV₁ if available, otherwise use the pre-bronchodilator value. Use this score to determine the patient's expected 3-year mortality.

ADO Index - Assignment of Points

Assignment of points	0	1	2	3	4	5	7
FEV ₁ (% predicted)	≥81	65-80	51-64	36-50	≤35		
Dyspnea (mMRC, 0-4)	0	1-2	3	4			
Age (in years)	40-49		50-59		60-69	70-79	≥80

The ADO Index - Prediction of 3-year Mortality in COPD patients

ADO score	Prediction of 3-year mortality in COPD patients in % (95% CI)
0	0.7 (0.6 to 0.9)
1	1 (0.9 to 1.2)
2	1.6 (1.3 to 1.8)
3	2.3 (2.0 to 2.6)
4	3.4 (3.0 to 3.7)
5	4.9 (4.5 to 5.4)
6	7.2 (6.7 to 7.7)
7	10.3 (9.7 to 10.9)
8	14.5 (13.8 to 15.3)
9	20.1 (19.1 to 21.1)
10	27.2 (25.8 to 28.6)
11	35.7 (33.7 to 37.7)
12	45.1 (42.6 to 47.7)
13	55.0 (52.0 to 58.0)
14	64.5 (61.2 to 67.7)

2. Puhan MA, Hansel NN, Sobradillo P, et al. Large-scale international validation of the ADO index in subjects with COPD: an individual subject data analysis of 10 cohorts. *BMJ Open* 2012;2(6):e002152. doi:10.1136/bmjopen-2012-002152