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Provider Education Program



Pharmacological Management of COPD: The Journey from Mild to Advanced Disease

Presented by: Alan Kaplan MD CCFP(EM) FCFP

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Disclosure of Financial support

**Presenter's name: Alan Kaplan MD CCFP(EM) FCFP
Chairperson, Family Physician Airways Group of Canada
Professor of Respiratory Medicine Research, OPRI**

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- Grants/Research Support: Novartis
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- Other: Co-chair Health Quality Ontario Community COPD Mgmt,
 Medical director, LHIN Pulmonary Rehabilitation
 Chairperson, Family Physician Airways Group of Canada
 Member, Health Canada Section of Allergy/Respiratory therapeutics
 Vice President Respiratory Effectiveness Group



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Learning Objectives

By the end of this session, participants will be able to:

1. Apply key principles of **pharmacological** management of COPD based on the Canadian Thoracic Society 2019 position statement and most recent clinical practice guidelines
2. Summarize approaches toward a more **personalized** COPD management based on updated CTS position statement
3. Assess components of advance care planning, such as refractory dyspnea management and palliative care





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What is COPD?

Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable and treatable disease that is characterized by **persistent respiratory symptoms** and **airflow limitation** that is due to airway and/or alveolar abnormalities usually caused by **significant exposure to noxious particles or gases**.

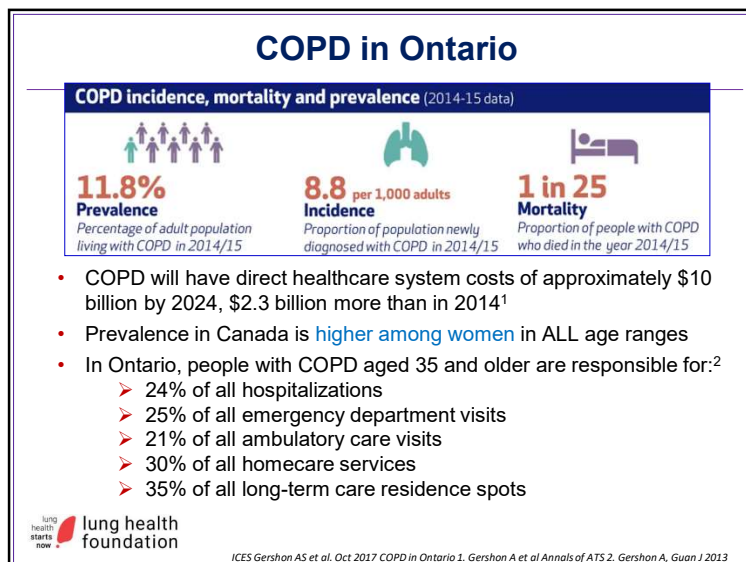



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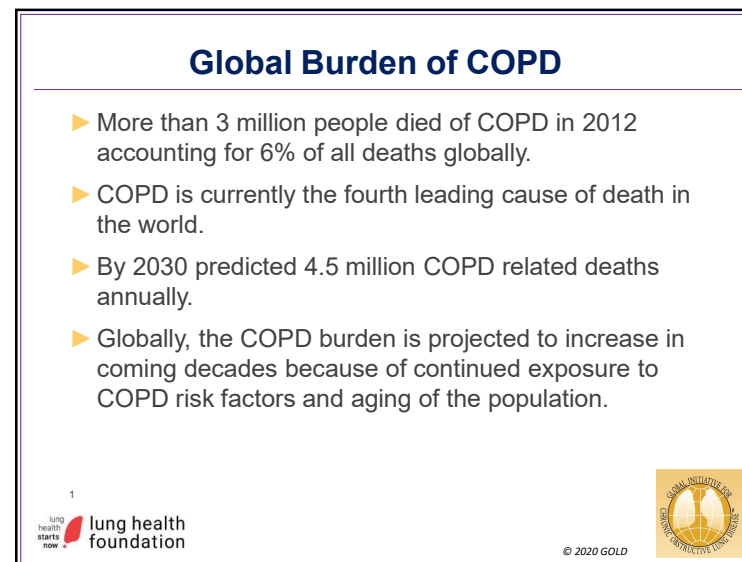
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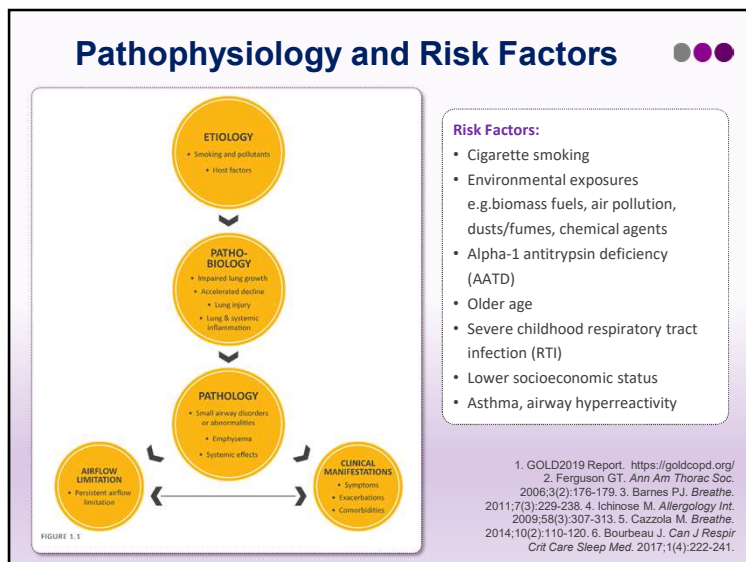
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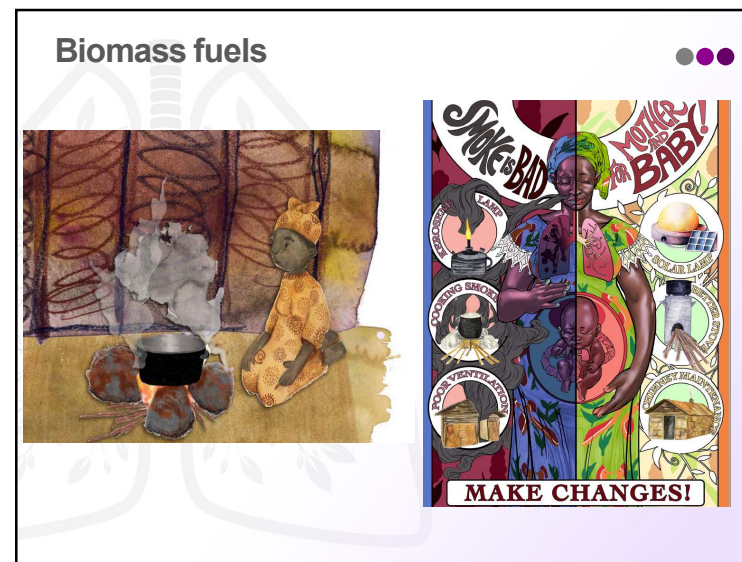
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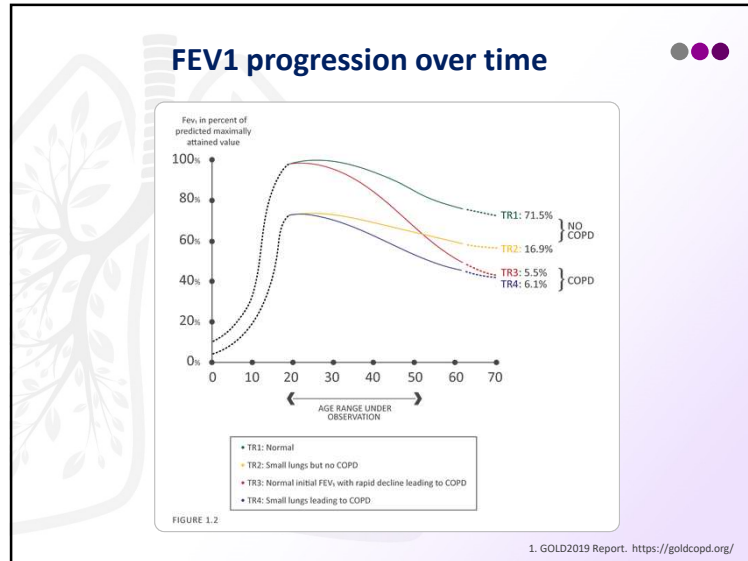
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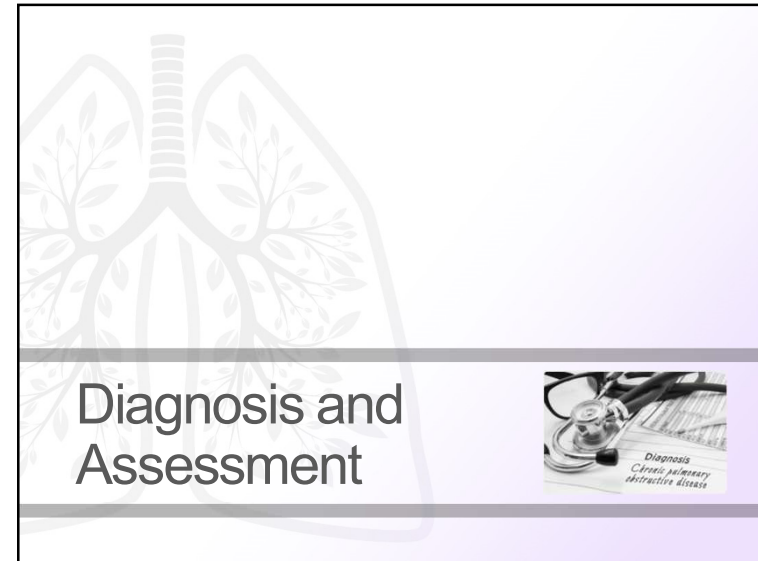
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Impact of delayed diagnosis of COPD

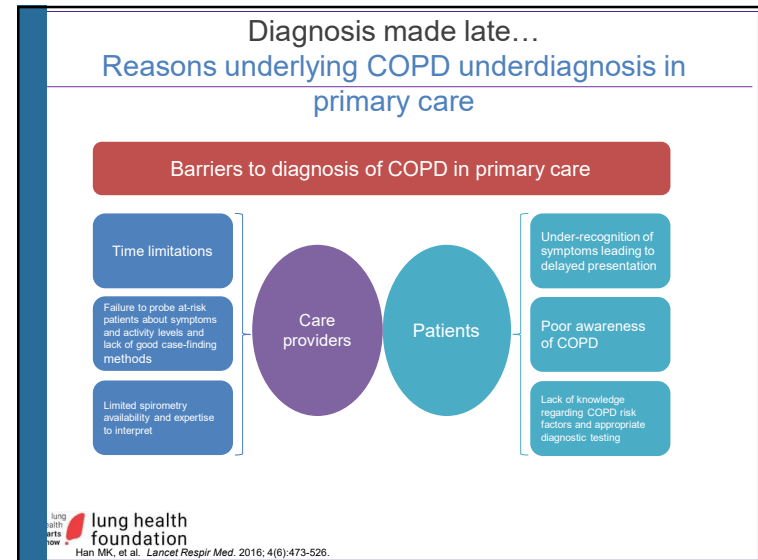
Patient utilization of healthcare resources in the years preceding a diagnosis of COPD

	0–5 years (n=38,859)	6–10 years (n=22,286)	11–15 years (n=9351)
Lower respiratory consultation*	85%	58%	42%
Lower respiratory Rx consultation†	68%	48%	34%
Rx oral steroids	40%	17%	10%
Rx antibiotics	55%	39%	27%
Chest x-ray	38%	15%	7%
Outpatient consultation	11%	7%	4%
Hospital admission	2%	1%	1%

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Jones RM, et al. *Lancet Respir Med.* 2014;2(4):267-76.

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Who might have COPD?

- Current or ex-smokers over the age of 40 screen with the Canadian Lung Health Test

The Canadian Lung Health Test

		Yes	No
1	Do you cough regularly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Do you cough up phlegm regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Do even simple chores make you short of breath?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Do you wheeze when you exert yourself, or at night?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Do you get frequent colds that persist longer than Those of other people you know?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If you answered yes to any one of the above questions, talk to your doctor about undertaking a **simple breathing test called spirometry**.

COPD symptoms are treatable. Talk to your doctor.

THE LUNG ASSOCIATION™

http://www.starft.ca/COPD_CLHT.pdf

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Criterion for COPD diagnosis Spirometry

Spirometrically confirmed diagnosis

▶ Normal

▶ Obstructive disease

Post-bronchodilator FEV₁/FVC < 0.7

Spirometry is not recommended for routine, general population, or practice-based screening in asymptomatic patients

COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity
Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease (2019 Report). Available at: <http://goldcopd.org>. Accessed March 27, 2019

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COPD Assessment Test

How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your health care professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your scores and test scores can be used by you and your health care professional to help improve the management of your COPD and to provide benefit from treatment. For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy. I am very sad.

I never cough. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I cough all the time. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	SCORE
I have no phlegm (mucus) in my chest at all. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	My chest is completely full of phlegm (mucus). <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
My chest does not feel tight at all. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	My chest feels very tight. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
When I walk up a hill or one flight of stairs I am not breathless. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	When I walk up a hill or one flight of stairs I am very breathless. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
I am not limited during my activities at home. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I am very limited during activities at home. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
I am confident leaving my home despite my lung condition. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I am not at all confident leaving my home because of my lung condition. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
I sleep peacefully. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I don't sleep peacefully because of my lung condition. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
I have lots of energy. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I have no energy at all. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
TOTAL SCORE		

©2019 Assessment Test and CAT logo are trademarks of the Canadian Lung Association. ©2019 Lung Health Now. All rights reserved.

COPD Assessment Test

- CAT is validated, short (8-item) and simple patient completed questionnaire.
- Reliable measure of the impact of COPD on a patient's health status.
- Scoring range of 0-40.
- MCID ≥ 2.
- Score < 10 = low impact of COPD on health status.
- 2 questions relate to exercise limitation.

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Assessing Disability in COPD

none

Modified MRC Dyspnea Scale


mMRC Grade 0 →	Breathless with strenuous exercise	} Mild
mMRC Grade 1 →	Short of breath when hurrying on the level or walking up a slight hill	
mMRC Grade 2 →	Walks slower than people of the same age on the level or stops for breath while walking at own pace on the level	} Moderate
mMRC Grade 3 →	Stops for breath after walking 100 meters or after a few minutes on the level	
mMRC Grade 4 →	Too breathless to leave the house or breathless when dressing	

COPD Stage

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Management of Stable COPD



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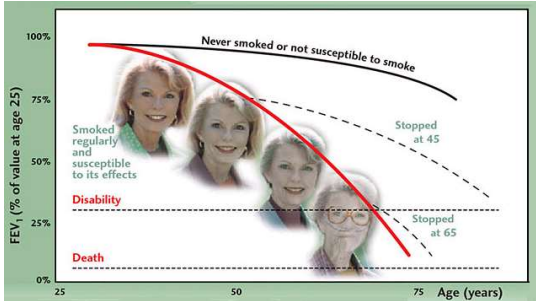

Goals of COPD Management

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Single Most Effective Intervention

- If effective resources and time are dedicated to **smoking cessation**, long-term quit success rates of up to 25% can be achieved.
- Brief strategies to assist patients willing to quit (5 A's):
 - ✓ **Ask** about habits
 - ✓ **Advise** of consequence
 - ✓ **Assess** willingness to quit
 - ✓ **Assist** with cessation plan
 - ✓ **Arrange** for follow up


Fletcher CM. BMJ 1960; 2:1662.

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Air Quality Health Index

Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population*	General Population
Low Risk	1 - 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Moderate Risk	4 - 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High Risk	7 - 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High Risk	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

*People with heart or breathing problems are at greater risk.

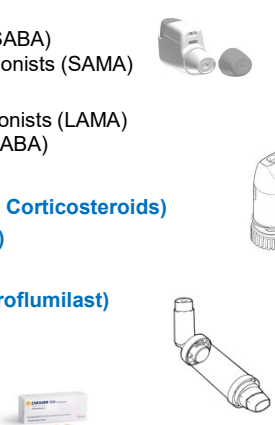


Health Canada: Airhealth.ca

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Pharmacotherapy in COPD

- **Short-acting Bronchodilators:**
 - ✓ Short-Acting Beta₂-agonists (SABA)
 - ✓ Short-Acting Muscarinic Antagonists (SAMA)
- **Long-acting Bronchodilators:**
 - ✓ Long-Acting Muscarinic Antagonists (LAMA)
 - ✓ Long-Acting Beta₂-Agonists (LABA)
- **LABA/LAMA Combination**
- **ICS/LABA Combination (Inhaled Corticosteroids)**
- **ICS/LABA/LAMA (Triple therapy)**
- **Oral Theophyllines**
- **Phosphodiesterase-4 Inhibitor (roflumilast)**
- **Oral Corticosteroids (OCS)**
- **Macrolide (azithromycin)**
- **Mucolytic (N-acetylcysteine)**




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Before Escalating Pharmacotherapy, Remember:

Always assess for:

- COPD **comorbidities** (is change in symptoms related to COPD?)
- Triggers/Exposures of relevance
- **History of exacerbations** (>2 AEs over 2 years)
- Patient's **compliance** with therapy
- **Poor inhaler technique** can lead to ineffective drug delivery
- Inhaler device videos: youtube or <https://lunghealth.ca/lung-disease/a-to-z/asthma/how-to-use-an-inhaler/>
- The **inhaler device** choice will depend on:
 - ✓ Patient's ability (hand strength, cognition, eye sight)
 - ✓ Patient's Age and Preference
 - ✓ Multiple devices
 - ✓ Peak Inspiratory Flow
 - ✓ Access and Cost

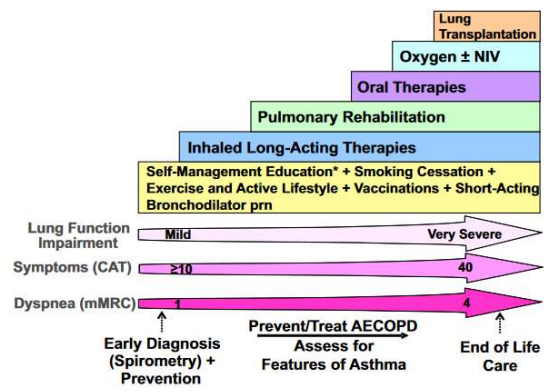


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Comprehensive Management of COPD – CTS 2019 Update



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Bourbeau J et al. CTS position statement: Pharmacotherapy in patients with COPD - An update. Canadian Journal of Respiratory, Critical Care, and Sleep Medicine 1(4): 222-241; Oct 2019; Figure 1

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Canadian Guidelines

COPD
Treatable. Preventable.

Taylor & Francis
Taylor & Francis Group



Canadian Journal of Respiratory, Critical Care, and Sleep Medicine
Revue canadienne des soins respiratoires et critiques et de la médecine du sommeil

ISSN: 2474-5332 (Print) 2474-5340 (Online) Journal homepage: <https://www.tandfonline.com/loi/ucts20>

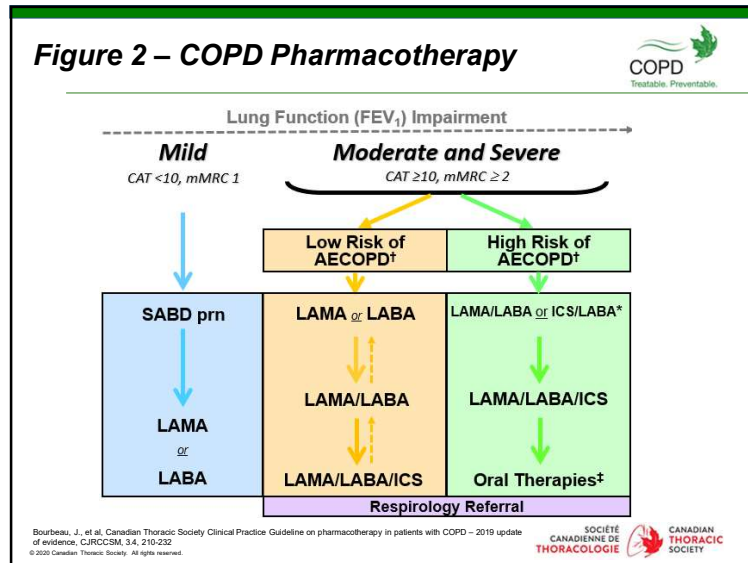
Canadian Thoracic Society Clinical Practice Guideline on Pharmacotherapy in patients with COPD – 2019 Update of Evidence

Jean Bourbeau*, Mohit Bhutani*, Paul Hernandez^z, Shawn D. Aaron, Meyer Balter, Marie-France Beaulac, Anthony D'Urzo, Roger Goldstein, Alan Kaplan, François Maltais, Don D. Sin, & Darcy D. Marciniuk*

SOCIÉTÉ CANADIENNE DE THORACOLOGIE CANADIAN THORACIC SOCIETY

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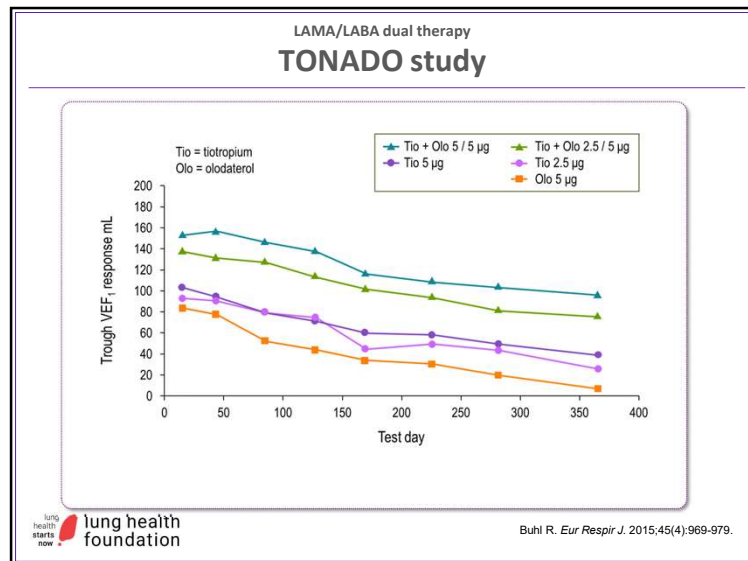


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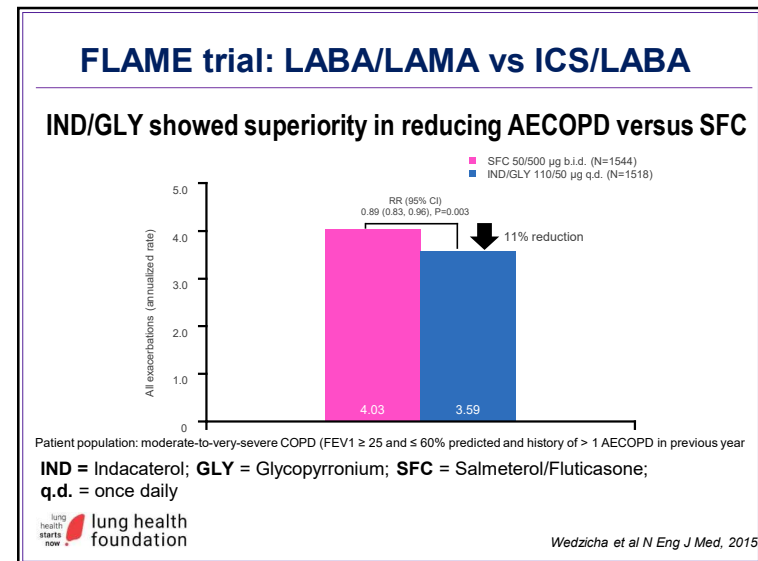
Data behind these recommendations

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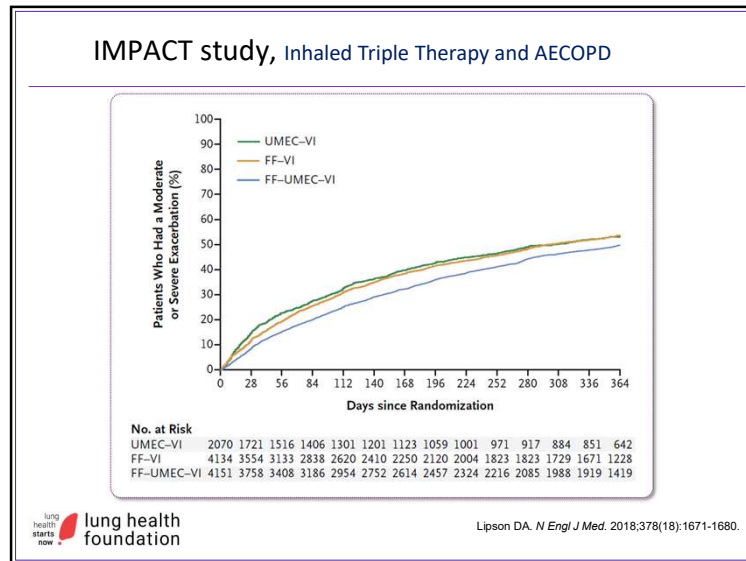
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Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate-to-Very-Severe COPD

ORIGINAL ARTICLE

Klaus F. Rabe, M.D., Ph.D., Fernando J. Martinez, M.D., Gary T. Ferguson, M.D., Chen Wang, M.D., Ph.D., Dave Singh, M.D., Jadwiga A. Wedzicha, M.D., Rospa Trivedi, M.S., Earl St. Rose, M.S., Shala Ballal, M.S., Julie McLaren, M.D., Patrick Darken, Ph.D., Magnus Aurivillius, M.D., Ph.D., Colin Reissner, M.D., and Paul Dorinsky, M.D., for the ETHOS Investigators*

ABSTRACT

BACKGROUND: Triple fixed-dose regimens of an inhaled glucocorticoid, a long-acting muscarinic antagonist (LAMA), and a long-acting β -agonist (LABA) for chronic obstructive pulmonary disease (COPD) have been studied at single-dose levels of inhaled glucocorticoid, but studies at two dose levels are lacking.

METHODS: In a 52-week, phase 3, randomized trial to evaluate the efficacy and safety of triple therapy at two dose levels of inhaled glucocorticoid in patients with moderate-to-very-severe COPD and at least one exacerbation in the past year, we assigned patients in a 1:1:1:1 ratio to receive twice-daily inhaled doses of triple therapy (inhaled glucocorticoid [120 μ g or 160 μ g of budesonide], a LAMA [18 μ g of glycopyrrate], and a LABA [9.6 μ g of formoterol] or one of two dual therapies [18 μ g of glycopyrrate plus 9.6 μ g of formoterol or 120 μ g of budesonide plus 9.6 μ g of formoterol]. The primary end point was the annual rate (the estimated mean number per patient per year) of moderate or severe COPD exacerbations, as analyzed in the modified intention-to-treat population with the use of on-treatment data only.

RESULTS: The modified intention-to-treat population comprised 8509 patients. The annual rates of moderate or severe exacerbations were 1.08 in the 320- μ g-budesonide triple-therapy group (2137 patients), 1.07 in the 160- μ g-budesonide triple-therapy group (2121 patients), 1.42 in the glycopyrrate-formoterol group (2120 patients), and 1.24 in the budesonide-formoterol group (2131 patients). The rate was significantly lower with 320- μ g-budesonide triple therapy than with glycopyrrate-formoterol (24% lower; rate ratio, 0.76; 95% confidence interval [CI], 0.69 to 0.83; $P<0.001$) or budesonide-formoterol (17% lower; rate ratio, 0.77; 95% CI, 0.79 to 0.95; $P<0.001$). Similarly, the rate was significantly lower with 160- μ g-budesonide triple therapy than with glycopyrrate-formoterol (25% lower; rate ratio, 0.75; 95% CI, 0.69 to 0.83; $P<0.001$) or budesonide-formoterol (14% lower; rate ratio, 0.86; 95% CI, 0.79 to 0.95; $P=0.002$). The incidence of any adverse event was similar across the treatment groups (range, 61.7 to 64.5%); the incidence of confirmed pneumonia ranged from 3.5 to 4.5% in the groups that included inhaled glucocorticoid use and was 2.3% in the glycopyrrate-formoterol group.

ETHOS trial

Released June 24, 2020!

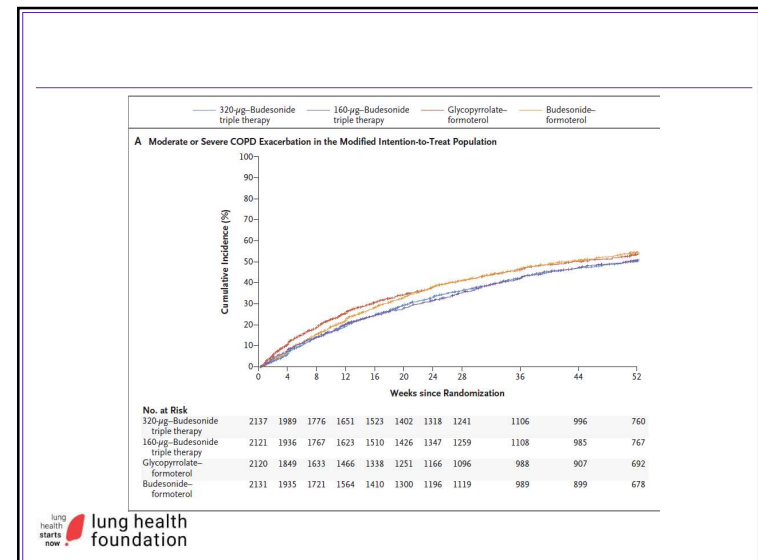
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Patients:

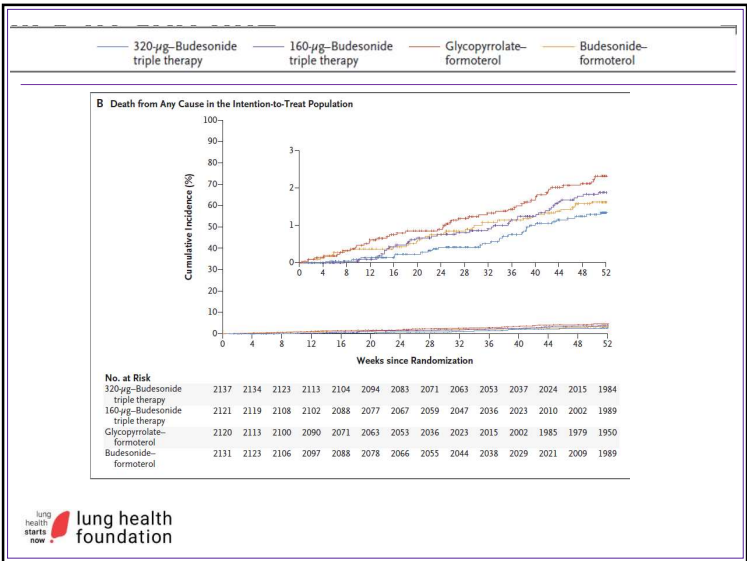
Eligible patients :

- 40 to 80 years of age
- CAT \geq 10
- \geq 2 inhaled maintenance therapies
- postbronchodilator ratio less than 0.7,
- a postbronchodilator FEV1 of 25 to 65%
- a smoking history of at least 10 pack-years
- a documented Exacerbation history
- of at least one moderate or severe COPD exacerbation (if FEV1 <50%)
- Or
- at least two moderate or at least one severe COPD exacerbation (if FEV1 \geq 50%)
- NO Active Asthma in last ten years

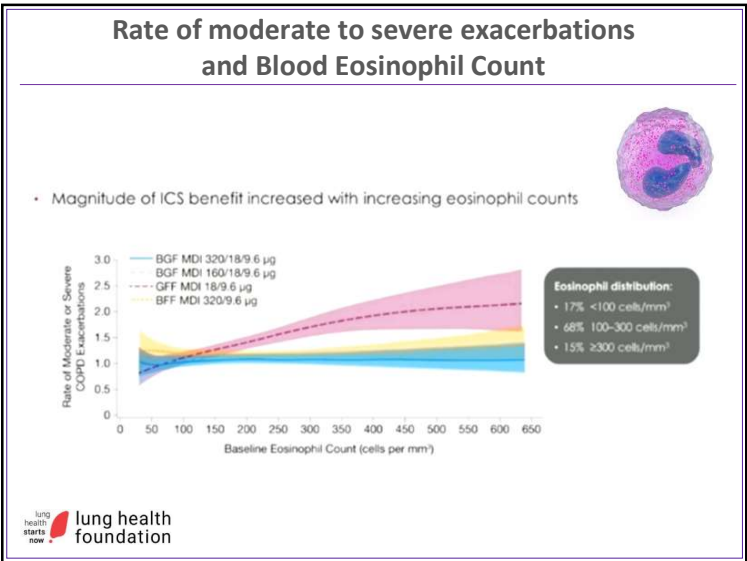
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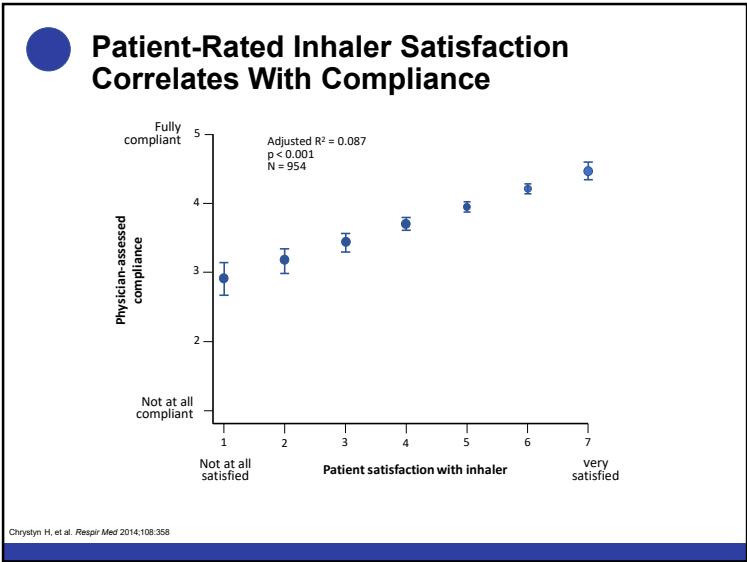
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New inhaler devices

Device	Drug(s)	Brand name	Comments
 Breezhaler (DPI)	Indacaterol	Onbrez	<ul style="list-style-type: none"> • High inspiratory flow needed • Rattling/whirring if inhaled correctly • Multi-step set-up • Must place capsules in correct compartment
	Glycopyrronium	Seebri	
	Glycopyrronium + Indacaterol	Ultibro	
 Ellipta (DPI)	Umeclidinium	Incruse	<ul style="list-style-type: none"> • Simple to use • Require sharp forceful inhalation for full dose • Dose counter, large print • No way to identify if proper inspiratory effort achieved • Hold horizontally to prevent loss of dose
	Vilanterol + Fluticasone furoate	Breo	
	Umeclidinium + Vilanterol	Anoro	

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New inhaler devices (contd.)

Device	Drug(s)	Brand name	Comments
 Genuair (DPI)	Acclidinium mcg	Tudorza	<ul style="list-style-type: none"> Simple to use Provides visual and audible feedback when taken correctly Deep forceful inspiratory flow required Hold horizontally to prevent loss of dose
	Acclidinium + Formoterol	Duaklir	
 Respimat (SMI)	Tiotropium	Spiriva	<ul style="list-style-type: none"> Uses spring to deliver soft mist Delivery independent of respiratory flow
	Tiotropium + Olodaterol	Inspilo Respimat	<ul style="list-style-type: none"> Requires slow, deep breath and holding of breath Cartridge loading and priming required for each new device
	Ipratropium + Salbutamol	Combivent	<ul style="list-style-type: none"> Requires reasonable strength to load dose Dose counter Loading base locks to signal empty

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Peak inspiratory flow rate

PIFR (L/min), which can be measured through an inhaler of specific airflow resistance, is the maximal airflow generated during an inspiratory cycle¹

- Optimal/suboptimal/minimal PIFRs may vary depending on the inhaler^{1,2}
- There is no defined PIFR that is considered optimal for all inhalers²

PIFR range³

< 30 L/min 30 to < 60 L/min ≥ 60 L/min

← Generally considered to be suboptimal³ Generally considered to be optimal³ →

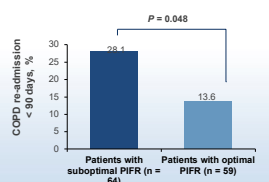
PIFR, peak inspiratory flow rate
1. Ghosh S, et al. J Aerosol Med Pulm Drug Deliv. 2017;30:381-387; 2. Dhand R. Respir Care. 2017;62:978-996; 3. Mahler DA. Ann Am Thorac Soc. 2017;14:1103-1107

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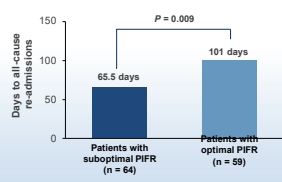
Suboptimal PIFR is associated with hospital re-admissions

In a retrospective study of patients admitted for COPD exacerbations, PIFR ≤ 60 L/min was the only significant variable correlating with re-admission due to COPD^{1,†}

Suboptimal PIFR correlated with increased rates of COPD re-admission within 90 days



Suboptimal PIFR correlated with fewer days to all-cause re-admissions[‡]



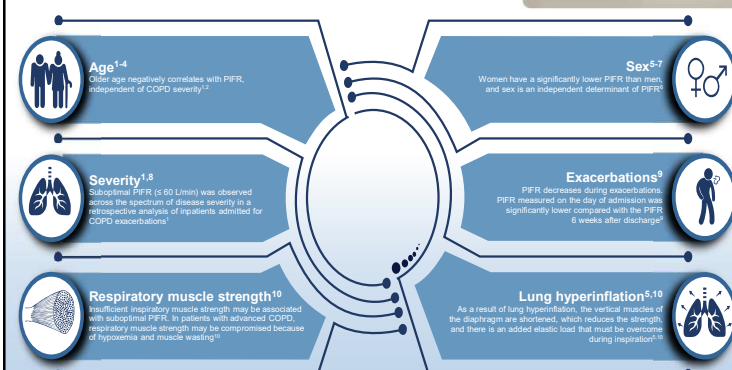
A separate study with different parameters that prospectively evaluated COPD re-admissions did not identify a difference in re-admission rates between patients with suboptimal PIFR and optimal PIFR^{2,†} further studies are needed to understand the relationship between suboptimal PIFR and clinical outcomes

Correlation between inhaler choice and clinical outcomes has not been established

†A retrospective chart review of patients hospitalized and enrolled in a hospital-wide AECOPD care plan (airflow obstruction FEV₁/FVC < 0.7; age ≥ 40 years); the study was limited by the dataset, which was obtained from a single hospital system. PIFR measurement was performed using an In-Check Diaphragm of no resistance.
[‡]Study variables were age, sex, race, height, body mass index, length of stay, Charlson Comorbidity Index, PIFR, COPD Assessment Test score, modified Medical Research Council grade, left ventricular ejection fraction, forced expiratory volume in 1 second % predicted, forced vital capacity, and respiratory capacity.
 †38 of 64 patients with suboptimal PIFR were re-admitted within 65.5 days; 33 of 59 patients with optimal PIFR were re-admitted within 101 days.
 Suboptimal PIFR < 60 L/min; optimal PIFR ≥ 60 L/min.
 AECOPD, acute exacerbation of COPD; COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; PIFR, peak inspiratory flow rate.
 1. Loh CH, et al. Ann Am Thorac Soc. 2017;14:1305-1311; 2. Sharma G, et al. Chronic Obstr Pulm Dis. 2017;4:217-224

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Some factors that may influence PIFR



COPD, chronic obstructive pulmonary disease; PIFR, peak inspiratory flow rate.
 1. Loh CH, et al. Ann Am Thorac Soc. 2017;14:1305-1311; 2. Jarvis S, et al. Age Ageing. 2007;36:213-218; 3. Janssens W, et al. Eur Respir J. 2008;31:78-83; 4. Nsouli WM, et al. Respir Med. 2001;95:965-968; 5. Mahler DA, et al. J Aerosol Med Pulm Drug Deliv. 2013;26:174-179; 6. Malmberg LP, et al. Int J Chron Obstr Pulm Dis. 2010;5:207-252; 7. Sharma G, et al. Chronic Obstr Pulm Dis. 2017;4:217-224; 8. Prime D, et al. J Aerosol Med Pulm Drug Deliv. 2015;28:486-497; 9. Broeders ME, et al. Respir Med. 2004;98:1173-1179; 10. Mahler DA. Ann Am Thorac Soc. 2017;14:1103-1107

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AECOPD = Lung Attacks

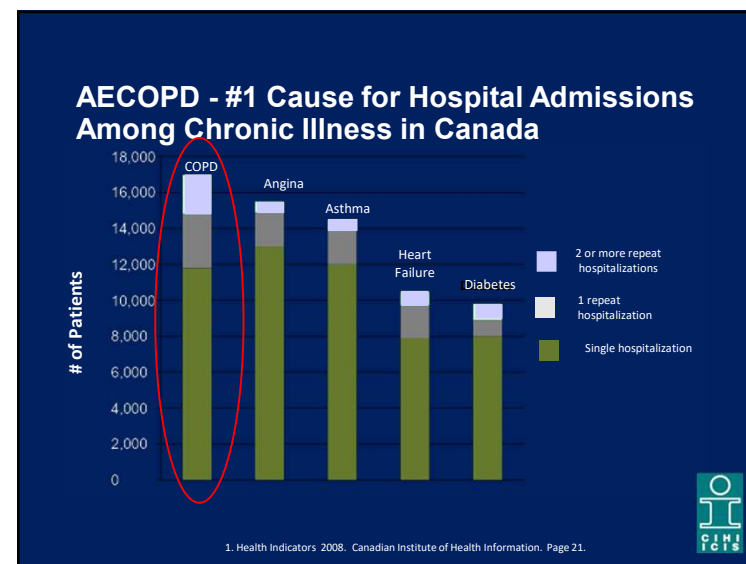
- AECOPD is an **acute worsening** of respiratory symptoms that results in an additional therapy
- Lead to reduced quality of life, **accelerated decline** in lung function, increased health utilization and resources
- Hospitalization** for a COPD exacerbation is associated with poor prognosis and increased risk of death
- “Exacerbations are to COPD what myocardial infarctions are to coronary artery disease: they are acute, trajectory changing and often deadly manifestations of a chronic disease.”¹
- Mortality related to AECOPD is **similar to MI** (the risk of dying is similar within the first year)²

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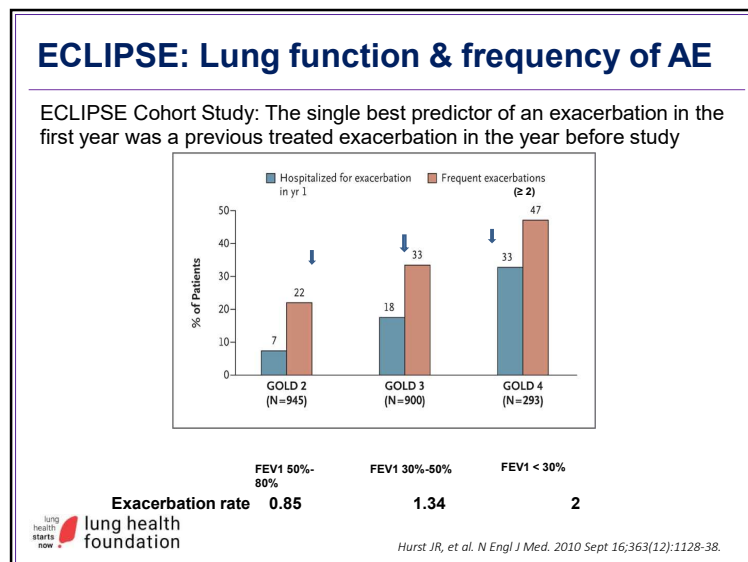
1. J. Bourbeau et al. CTS position statement Can Jour of Respir, Critical Care, and Sleep Medicine 2017

2. © 2020 GOLD

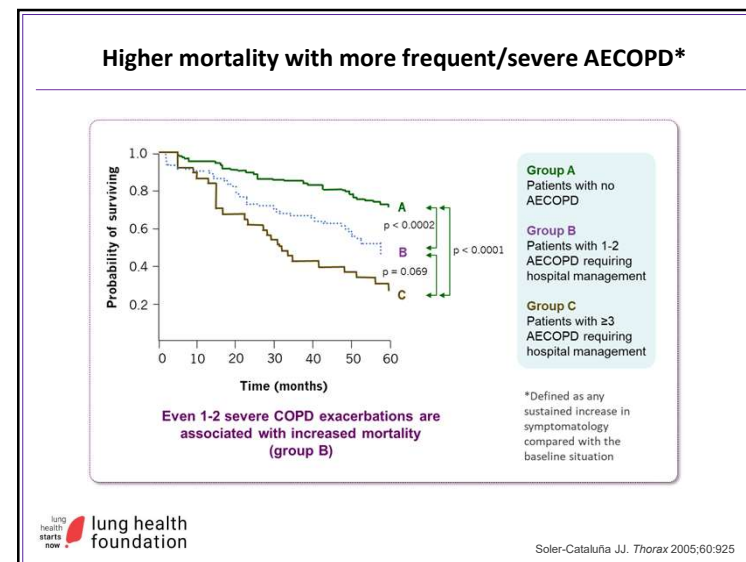
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Assessment of AECOPD Frequency

- **FEV₁**, by itself is a **poor predictor** of exacerbations or mortality
- The best predictor of frequent AE is a history of previous AECOPD

Moderate and Severe
CAT ≥10, mMRC ≥2

Low Risk of AECOPD†

High Risk of AECOPD†

Lung Function (FEV₁) Impairment

Mild
CAT <10, mMRC 1

Moderate and Severe
CAT ≥10, mMRC ≥2

The symbol "I" refers to: combination products (in the same device) and combination regimens (in separate devices).

SABD prn ↓ LAMA or LABA	LAMA or LABA ↓ LAMA/LABA ↓ LAMA/LABA/ICS	LAMA/LABA or ICS/LABA* ↓ LAMA/LABA/ICS ↓ Oral Therapies†
Respirology Referral		

Low Risk of AECOPD:

- ≤1 moderate exacerbation in the last year
- (An event requiring antibiotic and/or steroids), no hospital admission/no ED visit;

High Risk of AECOPD:

- ≥2 moderate or ≥1 severe exacerbation in the last year
- Severe exacerbation an event requiring hospitalization or ED visit

Bourbeau J et al CTS Clinical Practice Guideline on Pharmacotherapy in Patients with COPD 2019 Update; Can J of Respiratory, Critical Care, and Sleep Medicine Oct 2019

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Pharmacologic management of AECOPD

- Oral steroids 40 mg po daily x 5 days
- Antibiotics based on risk of resistance
 - If more dyspnea, increased sputum and coloured sputum
- Assess oxygenation
- Assess comorbidities
 - Watch out for cytokine induced cardiac issues
- Mucus hypersecretion: Aerobika etc (more coming on this)

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COPD Management Plan

My support contacts are _____ and _____
(Name & Phone Number) (Name & Phone Number)

My Symptoms	I Feel Well	I Feel Worse	I Feel Much Worse URGENT
I have sputum.	My usual sputum colour is: _____	Changes in my sputum, for at least 2 days. Yes <input type="checkbox"/> No <input type="checkbox"/>	My symptoms are not better after taking my flare-up medicine for 48 hours.
I feel short of breath.	When I do this: _____	More short of breath than usual for at least 2 days. Yes <input type="checkbox"/> No <input type="checkbox"/>	I am very short of breath, nervous, confused and/or drowsy, and/or I have chest pain.
My Actions	Stay Well	Take Action	Call For Help
	I use my daily puffers as directed.	If I checked 'Yes' to one or both of the above, I use my prescriptions for COPD flare-ups.	I will call my support contact and/or see my doctor and/or go to the nearest emergency department.
	If I am on oxygen, I use _____ L/min.	I use my daily puffers as usual. If I am more short of breath than usual, I will take _____ puffs of _____ up to a maximum of _____ times per day.	I will dial 911.
Notes:		I use my breathing and relaxation methods as taught to me. I pace myself to save energy.	Important information: I will tell my doctor, respiratory educator, or case manager within 2 days if I had to use any of my flare-up prescriptions. I will also make follow-up appointments to review my COPD Action Plan twice a year.
		If I am on oxygen, I will increase it from _____ L/min to _____ L/min.	

Produced in collaboration with the COPD & Asthma Network of Alberta (CANA). The Canadian Thoracic Society (CTS) acknowledges the past contributions of Living Well with COPD and the Family Physician Always Group of Canada. PART 1 OF 2

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My COPD Action Plan

Patient's Copy (Patient's Name) _____ Date _____

Canadian Respiratory Guidelines COPD Treatable. Preventable.

This is to tell me how I will take care of myself when I have a COPD flare-up.

My goals are _____

My support contacts are _____ and _____
(Name & Phone Number) (Name & Phone Number)

Prescriptions for COPD flare-up (Patient to take to pharmacist as needed for symptoms)

These prescriptions may be refilled two times each, as needed, for 1 year, to treat COPD flare-ups. Pharmacists may fax the doctor's office once any part of this prescription has been filled.

Patient's Name _____ Patient Identifier (e.g. DOB, PHN) _____

1. (A) If the colour of your sputum **CHANGES**, start antibiotic _____ Dose: _____ #pills: _____
How often: _____ for #days: _____

(B) If the first antibiotic was taken for a flare-up in the **last 3 months**, use this different antibiotic instead:
Start antibiotic _____ Dose: _____ #pills: _____
How often: _____ for #days: _____

AND / OR

2. If you are **MORE short of breath** than usual, start prednisone _____ Dose: _____ #pills: _____
How often: _____ for #days: _____

Once I start any of these medicines, I will tell my doctor, respiratory educator, or case manager within **2 days**.

Doctor's Name _____ Doctor's Fax _____ Doctor's Signature _____

License _____ Date _____

Produced in collaboration with the COPD & Asthma Network of Alberta (CANA). The Canadian Thoracic Society (CTS) acknowledges the past contributions of Living Well with COPD and the Family Physician Always Group of Canada. PART 2 OF 2

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Non-pharmacologic management

Education, self management, rehabilitation
Written action plan; physical activity

Treatment of hypoxemia
Long term oxygen if resting hypoxemia

Pulmonary rehabilitation for patients with symptoms and risk for exacerbations

Intervention bronchoscopy, surgery - For selected patients

Vaccination
Influenza, pneumococcal

Intervention bronchoscopy, surgery
End-of-life and palliative care

Nutrition
Supplementation if malnourished

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Pulmonary Rehabilitation: Indications

Quality Standards
Chronic Obstructive Pulmonary Disease
Care in the Community for Adults
May 2019

QUALITY STATEMENT 9: Pulmonary Rehabilitation
People with moderate to severe, stable COPD are referred to a pulmonary rehabilitation program if they have activity or exercise limitations and breathlessness despite appropriate pharmacological management.

QUALITY STATEMENT 10: Long-Term Oxygen Therapy
People with stable COPD who have clinical indications of hypoxemia receive an assessment for and, if needed, treatment with long-term oxygen therapy.

QUALITY STATEMENT 11: Management of Acute Exacerbations of COPD
People with COPD have access to their primary care provider or a health care professional in their care team within 24 hours of the onset of an acute exacerbation.

QUALITY STATEMENT 12: Follow-Up After Hospitalization for an Acute Exacerbation of COPD
People with COPD who have been hospitalized for an acute exacerbation have an in-person follow-up assessment with a health care professional with expertise in COPD within 7 days after discharge.

QUALITY STATEMENT 13: Pulmonary Rehabilitation After Hospitalization for an Acute Exacerbation of COPD
People who have been admitted to hospital for an acute exacerbation of COPD are considered for pulmonary rehabilitation at the time of discharge. Those who are referred to a pulmonary rehabilitation program start the program within 1 month of hospital discharge.

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Comorbidities

- Common comorbidities in COPD patients
 - CVD: HF, CAD, PAD, arrhythmias, peripheral vascular disease, hypertension
 - Osteoporosis
 - Anxiety, depression
 - Metabolic syndrome, diabetes
 - GERD
 - Bronchiectasis, lung cancer
 - Obstructive sleep apnea
 - Lung cancer
- Comorbidities should not alter COPD treatment
- Ensure simplicity of treatment, minimize polypharmacy

TORCH Causes of death

Category	Percentage
Respiratory	35%
Cardiac	27%
Cancer	21%
Other	7%
Unknown	10%

McGarvey Thorax 2007

51

1. GOLD 2019 Report. <https://goldcopd.org>. 2. Cavallès A. Eur Respir Rev. 2013;22(130):454-475.

What is Refractory Dyspnea?

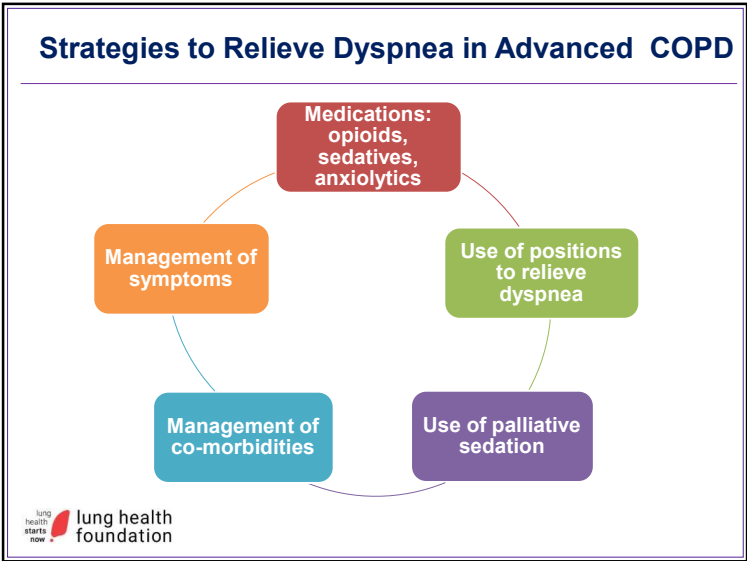
SPECIAL ARTICLE

Managing dyspnea in patients with advanced chronic obstructive pulmonary disease: A Canadian Thoracic Society clinical practice guideline

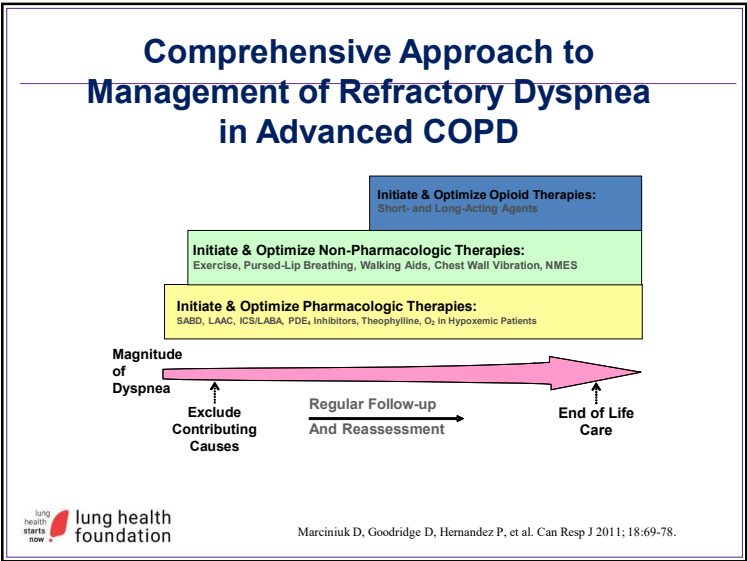
Darcy D Marciniuk MD FRCPC FCCP^{1*}, Donna Goodridge RN PhD¹, Paul Hernandez MDCM FRCP^{2*}, Graeme Rocker MHSc DM FRCPC FCCP³, Meyer Balter MD FRCPC FCCP^{4*}, Pat Bailey RN PhD⁵, Gordon Ford MD FRCP^{6*}, Jean Bourbeau MD MS FRCP^{7*}, Denis E O'Donnell MD FRCP FRCP^{8*}, Francois Maltais MD FRCP^{9*}, Richard A Mulanski MD MHS MCR FCCP^{10*}, Andrew J Cave MD PhD FCCP^{11*}, Irvin Mayers MD FRCP^{12*}, Vicki Kennedy RN BSc CRP¹³, Thomas K Oliver BA¹⁴, Candice Brown MSc CEP¹⁵; Canadian Thoracic Society COPD Committee Dyspnea Expert Working Group

- Affects up to 50% of patients with advanced COPD
- Profoundly Impacts QoL for patients with advanced COPD
- "...COPD patients at the end of life experience more dyspnea than lung cancer patients and, yet, are often prescribed less medication and have less access to comprehensive care than patients dying from lung cancer."

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Pursed Lip Breathing

Pursed Lip Breathing can be an effective strategy of dyspnea for patients with advanced COPD

Pursed-lip Breathing

STEP ONE: With your mouth closed, breathe in a normal amount of air through your nose.

STEP TWO: Purse your mouth as if you're whistling or making a candle flame flicker gently.

STEP THREE: Keeping your lips pursed, slowly blow the air out through your mouth. Do not strain yourself to force the air out.

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D. Marciniuk et al. Managing dyspnea in patients with advanced COPD: A CTS clinical practice guideline CRJ 18-2; March/April 2011 & Breathworks Breathlessness Factsheet The Lung Association - Ontario

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Airway Clearance Techniques

May be considered in COPD patients with secretion retention:

- to decrease obstruction in the airways
- to improve ventilation
- to promote effective breathing pattern

What techniques are available?

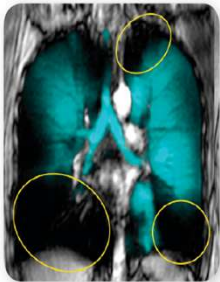
- Postural drainage
- Vibration, percussion and other manual techniques
- Forced Expiratory Technique
- Active Cycle of Breathing
- Mechanical devices (Aerobika, Acapella)
- Positive Expiratory Pressure (PEP) therapy
- Oscillating Positive Expiratory Pressure (OPEP)
- High Frequency Chest Wall Oscillation

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Validated by MRI: Shown to improve ventilation

Before
Baseline care



After
Baseline care plus *Aerobika** device



Teal colour and intensity show areas with gas distribution. Yellow circles represent areas of greatest change after 3-4 weeks of *Aerobika** device use.

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Reference: Sverrisdottir et al. COPD. 2016;13(1):66-74. MRI=magnetic resonance imaging; *He = hyperpolarized Helium-3.

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Validated by real world evidence: Clinically proven to reduce exacerbations

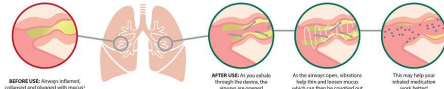
- The *Aerobika** device demonstrated a significant reduction over usual care in the percentage of patients with a moderate-to-severe exacerbation at 30 days

28%
reduction
in
exacerbations

Equates to

NNT = 14

The *Aerobika** device can help prevent **1 exacerbation** for every **14 patients treated**



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Reference: Sverrisdottir et al. COPD. 2016;13(1):66-74. MRI=magnetic resonance imaging; *He = hyperpolarized Helium-3.

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Canadian Respiratory Guidelines

COPD Treatable. Preventable.

Suggested Protocol for Managing Dyspnea with Opioids in Advanced COPD

- Initiate opioid therapy with oral immediate release morphine syrup – titrate slowly at weekly intervals over a 4 to 6 week period.
- Start therapy with morphine 0.5 mg orally twice daily for 2 days, and then increase to 0.5 mg orally every 4 hours while awake for remainder of week 1.
- If tolerated and indicated, increase to morphine 1.0 mg orally every 4 h while awake in week 2, increasing by 1.0 mg/week or 25% dosage increments/week until the lowest effective dose that appropriately relieves dyspnea is achieved.
- Once a stable dosage is achieved (i.e., no significant dose change for 2 weeks and dyspnea controlled), a sustained-release preparation at a comparable daily dose could be considered for substitution.
- If patients experience significant opioid-related side effects such as nausea or confusion, substitution of an equipotent dose of oral hydromorphone could be considered (1 mg hydromorphone = 5 mg morphine).
- Stool softeners and laxatives should be routinely offered to prevent opioid-associated constipation.

CANADIAN THORACIC SOCIETY SOCIÉTÉ CANADIENNE DE THORACOLOGIE

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Even easier?

Original Investigation

August 17, 2020

Effect of Sustained-Release Morphine for Refractory Breathlessness in Chronic Obstructive Pulmonary Disease on Health Status
A Randomized Clinical Trial

Cornelia A. Verberkt, MSc¹; Marieke H. J. van den Beuken-van Everdingen, MD, PhD²; Jos M. G. A. Schols, MD, PhD^{1,3}; et al

Author Affiliations

JAMA Intern Med. Published online August 17, 2020. doi:10.1001/jamainternmed.2020.3134

Regular, low-dose, oral sustained-release morphine (10 MG BID TITRATED TO TID PRN) for 4 weeks improved disease-specific health status in patients with COPD without affecting PaCO₂ or causing serious adverse effects. The worst breathlessness improved in participants with mMRC grades 3 to 4

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Potential Goals of Care

- Cure of disease
- Avoidance of premature death

Remember that goals of care may change as COPD disease trajectory is unpredictable!

Be prepared to discuss:

- Prognosis
- Patient's values
- Risks and expected outcomes of treatment



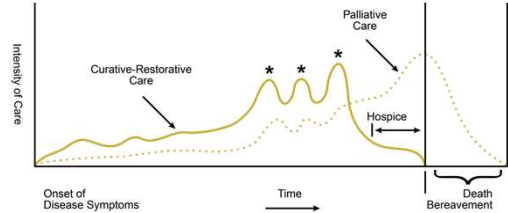
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Stone, MJ. Goals of care at the end of life. *BUMC Proceedings* 2001; 14: 134-137

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Difficulties of prognosis

"The variable and prolonged course of COPD patients makes prognostication difficult for both physicians, patients and their caregivers and makes addressing end-of-life goals difficult. A natural history of COPD is heterogeneous"





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Casanova C et al. *Am J Respir Crit Care Med.* 2011


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Advanced Care Planning:

- Address **worsening symptoms** (dyspnea) and decline in **health status**:
 - Nutritional support
 - Psychosocial: Depression/Anxiety
 - Insomnia/Fatigue
 - Advanced Directive
 - Need for palliative and hospice care

Table 3.9. Palliative care, end of life and hospice care in COPD

- Opiates, neuromuscular electrical stimulation (NMES), oxygen and fans blowing air onto the face can relieve breathlessness (Evidence C).
- In malnourished patients, nutritional supplementation may improve respiratory muscle strength and overall health status (Evidence B).
- Fatigue can be improved by self-management education, pulmonary rehabilitation, nutritional support and mind-body interventions (Evidence B).



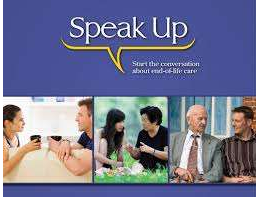
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Advanced Care Planning

- Discussions regarding advanced care planning should be initiated with the patient/family and health care team **as early as possible**




<http://speakupontario.ca/>
<http://www.advancecareplanning.ca>



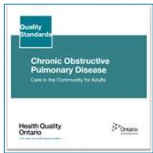
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Goals of Care and Individualized Care Planning

Quality Statement #3: “People with COPD discuss their goals of care with their future SDM, their primary care provider, and other members of their interprofessional care team. These discussions inform individualized care planning, which is reviewed and updated regularly.”

Quality Statement #13: People with COPD and their caregivers are offered palliative care support to meet their needs.







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Health Quality Ontario: COPD Quality Standards Report 2018

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Canadian Respiratory Guidelines



End of Life Care in COPD

- Patients should be encouraged to ask about their disease, prognosis and possible circumstances of their death.
- Physicians need to learn the necessary skills to conduct end of life care discussions with their patients at increased risk of dying.
- Need increased access and more formal links between clinicians caring for COPD and palliative care services.




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End of Life Care Discussion

HCPs should be encouraged to identify patients with COPD for whom end-of-life care discussions are especially important:

- FEV₁ < 30% predicted
- Oxygen dependence
- One or more hospital admissions in the previous year for an AECOPD
- Left heart failure or other comorbidities
- Weight loss or cachexia
- Decreased functional status
- Increasing dependence on others
- Age > 70yrs




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Curtis, J.R., Palliative and end-of-life care for patients with severe COPD. Eur Respir J 2008;32:796-803

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Management of psychological distress and suffering

- Psychological distress is common in patients with advanced respiratory diseases.
- At higher risk for depression, anxiety, and panic attacks.
- Treatment approaches include counseling with or without pharmacotherapy.
- End-of-life preferences should be reevaluated after the patient has had sufficient time to respond to treatment for depression.



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Lanken PN, et al. Am J Respir Crit Care Med 2008;177:912-27.
Symptom management in (advanced) IPF and COPD

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Management of psychological distress and suffering (cont'd)

- Agitated delirium may occur when death is imminent or during hospitalization in ICU settings.
- Manage with haloperidol when rapid relief is important.
- Combination therapy (e.g., oral haloperidol or a second-generation neuroleptic agent with a benzodiazepine) may be needed for long-term therapy for patients with prolonged agitation.
- Minimize environmental stimuli, such as excessive noise, day-night reversal, and disorientation.
 - Earplugs, eye covers, decreasing the volume of alarms, elimination of overhead paging, frequent orienting cues, easy access to family, personal music choices through headphones, and low lights at night.



Lanken PN, et al. *Am J Respir Crit Care Med* 2008;177:912-27.
Symptom management in (advanced) IPF and COPD

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Withdrawal of mechanical ventilation

- Terminal extubation (removal of the endotracheal tube) and terminal weaning (gradual reduction of inspired oxygen concentration and/or mandatory ventilator rate).
- Regularly assess for signs of dyspnea and pain after removal from assisted breathing.
- Continue to titrate opioids and benzodiazepines to control discomfort.
- Antibiotics and other life-prolonging treatments, particularly intravenous fluids that can cause respiratory congestion and gurgling, are usually discontinued before ventilator withdrawal.



Lanken PN, et al. *Am J Respir Crit Care Med* 2008;177:912-27. Symptom management in (advanced) IPF and COPD

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The death rattle and agonal breathing

- Approximately 1/4 of dying patients have noisy breathing, termed “the death rattle”, which may disturb the family
- Terminal weaning helps avoid noisy breathing due to airway secretions
- If a death rattle results from bronchial secretions, elimination of IV fluids and treatment with anticholinergic agents may be effective
- Noisy breathing due to intrinsic lung pathology usually resists therapy



Lanken PN, et al. *Am J Respir Crit Care Med* 2008;177:912-27. Symptom management in (advanced) IPF and COPD

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The death rattle and agonal breathing (cont'd)

- In the minutes before death, patients may exhibit “agonal breathing”, which is slow, irregular and noisy breathing that mimics grunting, hiccupping or gasping
- Families should be informed that agonal breathing is part of the dying process, not a sign of patient discomfort
- A death rattle and agonal breathing are not indications for increasing the dose of opioid administered



Lanken PN, et al. *Am J Respir Crit Care Med* 2008;177:912-27. Symptom management in (advanced) IPF and COPD

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What about MAiD?

Medical Assistance in Dying (MAiD): Ontario

Centre for Effective Practice **Medical Assistance in Dying (MAiD): Ontario**

Clinician conducts patient eligibility assessment for MAiD (Clinician Aid B)

Eligibility Criteria:^{1,2,3,4}

- Is at least 18 years of age
- Is capable of making decisions with respect to their health
- Has a grievous and irremediable medical condition
- Has made the request voluntarily (not due to external pressure)
- Has provided informed consent to receive MAiD, after having been apprised of alternate care options that are available to alleviate their suffering, including palliative care
- Is eligible for publicly funded health care services in Canada

Introduction

On June 17, 2018, the federal government passed Bill C-14 which outlines requirements that patients must meet to be eligible to receive medical assistance in dying, and establishes safeguards that a doctor or nurse practitioner must follow to legally provide medical assistance in dying. Bill C-14 amended the Criminal Code and made related amendments to other federal acts with respect to medical assistance in dying.

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Key Messages

- In many patients, the disease trajectory in COPD is marked by a **gradual decline** in health status and increasing symptoms, punctuated by **acute exacerbations that are associated with an increased risk of dying**¹
- Frequency and severity of exacerbations can be reduced²
- Respiratory symptoms can be assisted with bronchodilators
- Patients should be encouraged to ask about their disease, prognosis and possible circumstances of their death.²
- Health care providers need to learn necessary skills to conduct end of life discussions with their patients at increased risk of dying.²

1© 2018 Global Initiative for Chronic Obstructive Lung Disease
O'Donnell, DE, et al. CTS recommendations for management of COPD - 2008 update - highlights for primary care. Can Respir J Vol. 15 Suppl A Jan/Feb 2008

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ABCDE² for COPD

- A for Airway clearance
- B for adequate Bronchodilation
- C for Corticosteroids when appropriate/Smoking Cessation
- D for Depression and Anxiety screening along with other comorbidities/Device technique
- E for Exacerbation prevention including vaccination
- E for Exercise to ensure PR done when appropriate

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Provider Education Program Resources

E-Modules:

- Spirometry: A Clinical Primer
- Spirometry Interpretation
- Emergency Department Asthma Care Pathway
- Asthma Action Plans (coming soon)
- Work Related Asthma (coming soon)

Workshops:

- Adult and Pediatric Asthma
- COPD vs. Asthma
- Preschool Asthma
- COPD
- Spirometry Interpretation
- Asthma Action Plans

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www.resptrec.org

LHF Healthcare
Providers Website

hcp.lunghealth.ca

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The screenshot shows the website for the FPAGC (Federation of Primary Care Asthma Groups of Canada). The page features the FPAGC logo and navigation links. The main heading is "www.fpagc.com" in large red text. Below this, there are two columns of resources: "FPAGC Resources" and "Other Resources". The FPAGC Resources section lists various tools and documents developed by or in conjunction with the FPAGC, including: Adrenal Suppression in Pediatric Asthma, Applying The Wisdom of Stepping Down Inhaled Corticosteroids, Asthma Action Plan, Asthma Flow Sheet (Diagnostic Visit), Asthma Flow Sheet (Follow Up Visit), COPD Action Plan (2008) | Plan d'action pour MPOC (2008), COPD Action Plan (2013) | Plan d'action pour MPOC (2013), COPD Flow Sheet (Diagnostic Visit), COPD Flow Sheet (Follow Up Visit), and Cough Algorithm. The Other Resources section lists documents developed by other organizations, including: Alberta Asthma Action Plan (English) | (Chinese), Asthma Circle Of Care | La prise en charge de l'asthme, CAMH Pharmacotherapy Smoking Cessation Algorithm, CAN ADAPTT (Canadian Smoking Cessation Guidelines), COPD Exacerbation Severity Predictor, CTEPH Booklet For Health Professionals, Epworth Sleepiness Scale, OSA Screening Tool, Peak Flow Chart (Woodcock), and TraC (Tobacco Reduction and Cessation).

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References

The content used for this program is developed through incorporation of the following references sources:

- ❑ Canadian Thoracic Society (CTS) Clinical Practice Guideline on Pharmacotherapy in Patients with COPD 2019 Update
- ❑ CTS COPD Position Statement: Pharmacotherapy in patients with COPD - An Update, 2017
- ❑ CTS COPD Position Statement: Pharmacotherapy in patients with COPD, CTS Educational Slide Deck 2018
- ❑ Global Strategy for Diagnosis, Management, and Prevention of COPD (GOLD) Report 2020
- ❑ CTS Recommendations for management of COPD in primary care – 2008 Update
- ❑ CTS Managing Dyspnea in patients with advanced COPD – A CTS clinical practice guideline 2011

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How to Fill Out a COPD Management Plan

- Review **history** of previous exacerbations
- Encourage the patient to **self monitor**
- Give clear direction when to use an **antibiotic**
- Give clear direction when to use **corticosteroid**
- Ensure that action plan meds are available
- **What to do** if symptoms get worse, **who to call, where to go**
- **Follow-up** to review after exacerbation

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