



# TRANSFORMING RESPIRATORY CARE

*Simple Interventions today can improve COPD  
and asthma patient outcomes*

Accredited by CCCEP for 1.5  
CEUs  
1613-2023-3719-L-P





# Presenter Personal Disclosure

**Presenter's Name:** Mike Boivin

**I have the following relationships with commercial interests:**

- Advisory Board/Speakers Bureau: Novo-Nordisk, Emergent BioSolutions, Pfizer, Novava
- Speaker/Consulting Fees: Teva, Pfizer, Novo-Nordisk, mdBriefcase, J & J, AbbVie, Astra Zeneca, Boehringer Ingelheim, Moderna, Canopy, Valneva, Abbott Diabetes, ICEBM

**Speaking Fees for current program:**

I have received a speaker's fee from ICEBM for this learning activity



# Commercial Disclosure

This learning activity has received **financial support** from International Centre for Evidence-Based Medicine Canada in the form of unrestricted educational grant.

# Accreditation

This Group Learning program has been certified by CCCEP (8002-2024-3756-L-P) for 1.5 CEUs.





# Learning Objectives

After completion of these learning modules pharmacists will be better able to:

1. Discuss the burden of asthma and COPD on patients and the healthcare system.
2. Assess and customize inhalation device selection for patients with asthma and COPD.
3. Address the importance of optimizing treatment plans early to prevent symptoms/exacerbations.
4. Educate patients on the importance of disease control and adherence to their treatment plan.



# Asthma and COPD Respiratory Care



## MODULE 1

Key factors that you can address today with your asthma and COPD patients



## MODULE 2

Asthma Control:  
Taking steps to ensure asthma patients are reaching their goals



## MODULE 3

Preventing Exacerbations:  
Strategies you can use today to improve COPD outcomes



## Module 1

Key factors that you can address today with your asthma and COPD patients



# Learning Objectives

After completion of these learning modules pharmacists will be better able to:

1. Assess the level of disease control for patients with asthma and COPD.
2. Educate patients on the importance of device use and adherence to inhaled therapy.
3. Engage patients in integrating non-pharmacological interventions in the management of their asthma or COPD.





# Why Focus on Asthma and COPD?

The conditions are very common:

- Asthma – 10.8% (3.8 million) Canadians
- COPD – 4% Canadians aged 35 to 79 years diagnosed with COPD

They have significant impact on the health care system

- Chronic lower respiratory diseases are the 5th leading cause of death of Canadians in 2019
- COPD accounts for the highest rate of hospital admissions among chronic diseases

Treatment of many patients is not optimized:

- 53-90% of patients with asthma meet the criteria for poor control

Bourbeau, Jean, Mohit Bhutani, Paul Hernandez, Shawn D. Aaron, Meyer Balter, Marie-France Beauchesne, Anthony D'Urzo, et al. "Canadian Thoracic Society Clinical Practice Guideline on Pharmacotherapy in Patients with COPD – 2019 Update of Evidence." *Canadian Journal of Respiratory, Critical Care, and Sleep Medicine*, October 18, 2019, 1–23. <https://doi.org/10.1080/24745332.2019.1668652>. Yang, Connie L., Elizabeth Anne Hicks, Patrick Mitchell, Joe Reisman, Delanya Podgers, Kathleen M. Hayward, Mark Waite, and Clare D. Ramsey. "Canadian Thoracic Society 2021 Guideline Update: Diagnosis and Management of Asthma in Preschoolers, Children and Adults." *Canadian Journal of Respiratory, Critical Care, and Sleep Medicine* 5, no. 6 (November 2, 2021): 348–61. <https://doi.org/10.1080/24745332.2021.1945887>. Public Health Agency of Canada. "Asthma and Chronic Obstructive Pulmonary Disease (COPD) in Canada, 2018." Research, May 1, 2018. <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/asthma-chronic-obstructive-pulmonary-disease-canada-2018.html>. Statistics Canada Government Of Canada. "Leading Causes of Death in Canada, 2019," November 26, 2020. <https://www150.statcan.gc.ca/n1/daily-quotidien/201126/t001b-eng.htm>.



## Pharmacists are Ideally Positioned to Help Patients with Respiratory Conditions

- We see patients more frequently than other HCPs
- Our scope is changing to be able to offer more support and services
- We play a crucial role in device and adherence education
- These conditions are not static:
  - Control → Flare → Change in plan → Control
  - Treatment changes and education can significantly improve outcomes
  - Small interventions can have a major impact



# ASTHMA SUMMARY



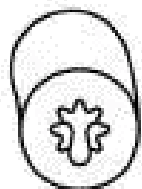
# Asthma Prevalence and Symptoms

- Approximately 1 in 10 Canadians have been diagnosed with asthma
- It is a chronic relapsing inflammatory condition
  - The symptoms can vary over time and in intensity
- Common triggers for exacerbations
  - Exercise, allergen, irritant, weather change or viral infections
- Symptoms can be absent for weeks/months and then an exacerbation can occur

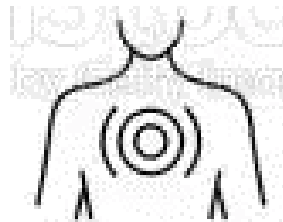
## ASTHMA SIGNS AND SYMPTOMS



Cough



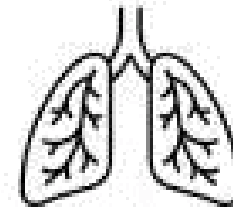
Inflammation



Chest tightness



Shortness of breath

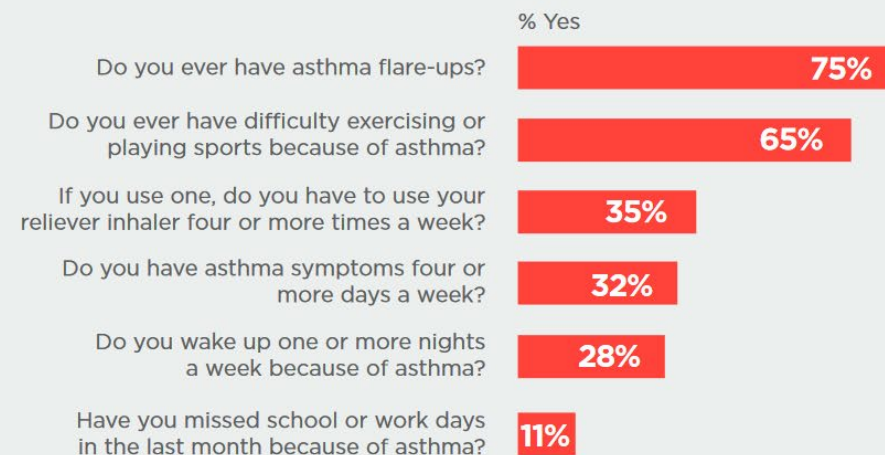


Variable expiratory  
flow limitation

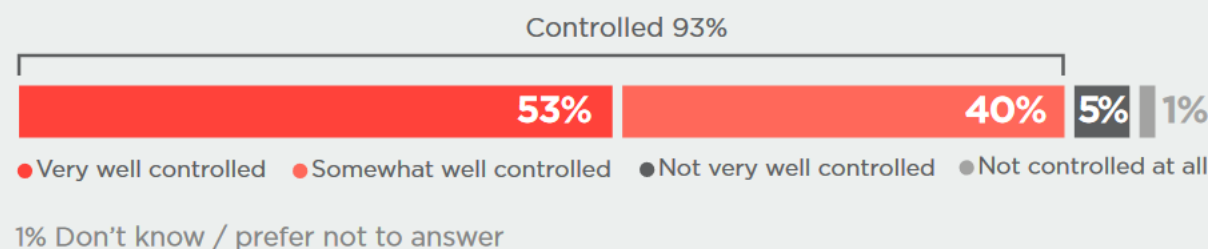
# Most Patients with Asthma are Not Controlled

90% of Patients  
have a Sign of  
Uncontrolled  
Asthma

90%  
SAY YES TO AT LEAST  
ONE STATEMENT

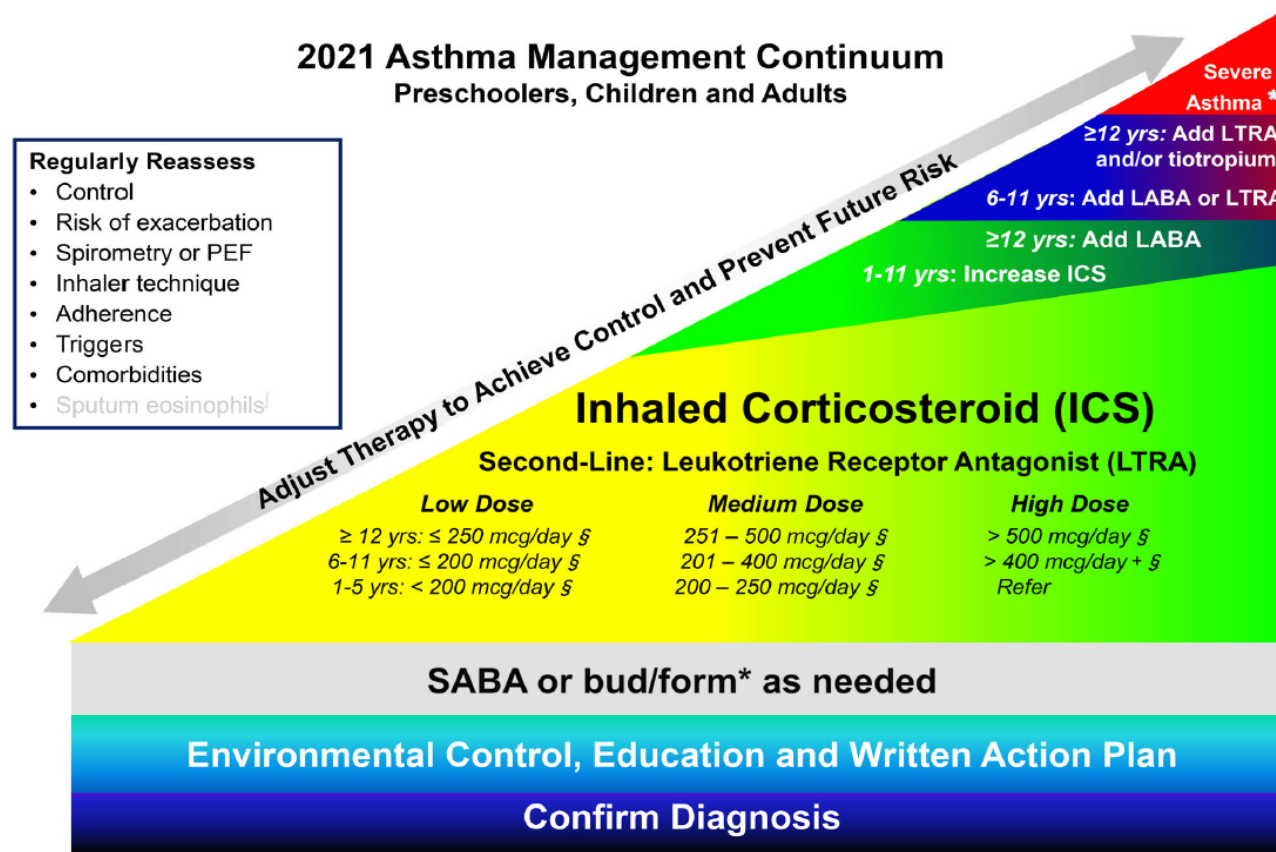


BUT... 93%  
thought they  
were controlled





# There are Clear Guidelines for Pharmacotherapy

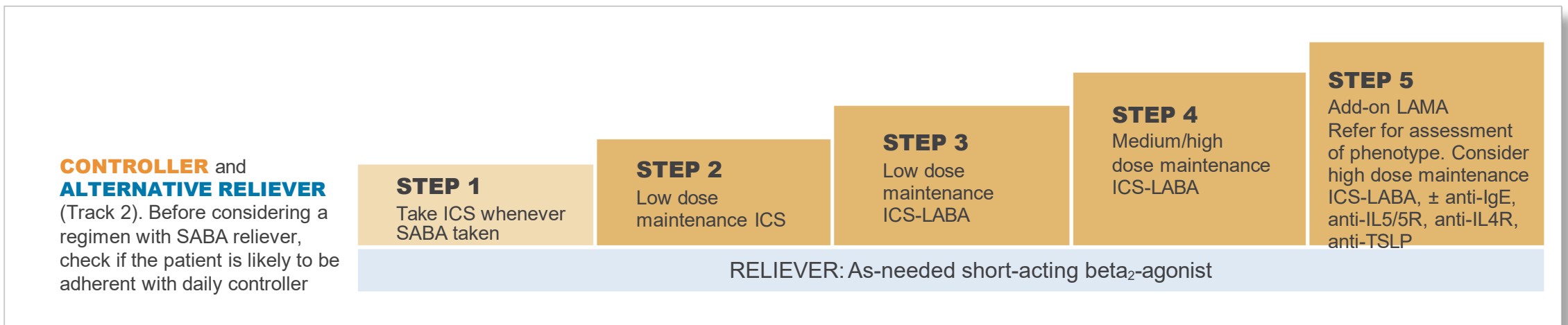


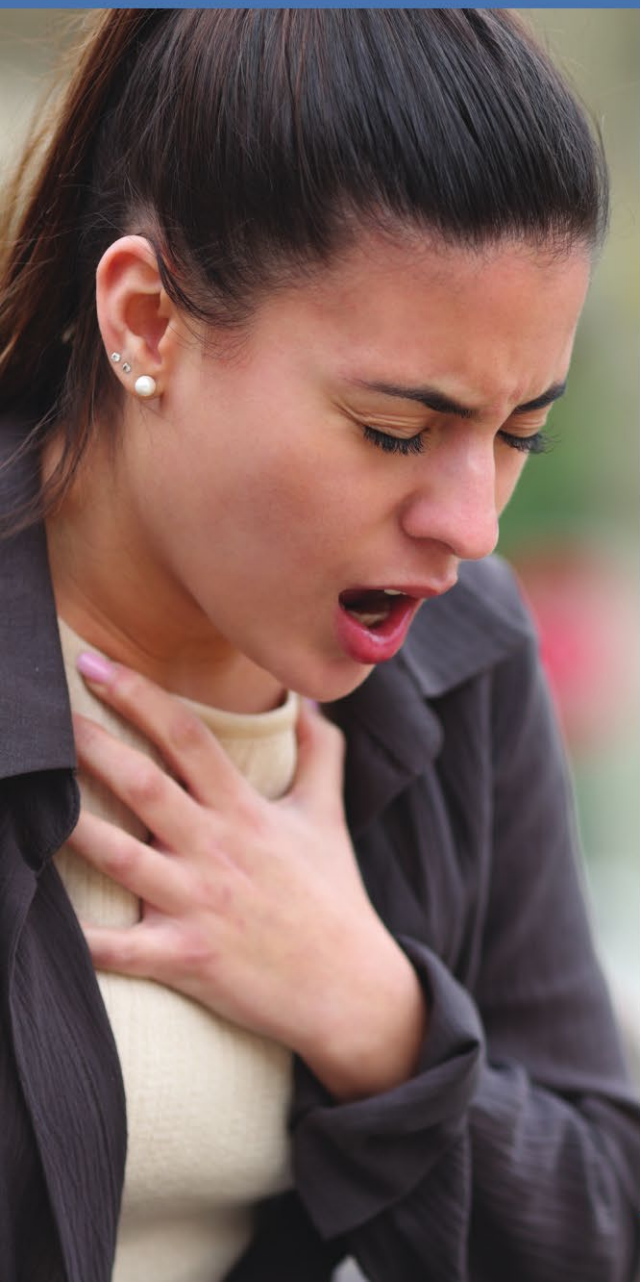
Yang, Connie L., Elizabeth Anne Hicks, Patrick Mitchell, Joe Reisman, Delanya Podgers, Kathleen M. Hayward, Mark Waite, and Clare D. Ramsey. "Canadian Thoracic Society 2021 Guideline Update: Diagnosis and Management of Asthma in Preschoolers, Children and Adults." *Canadian Journal of Respiratory, Critical Care, and Sleep Medicine* 5, no. 6 (November 2, 2021): 348–61. <https://doi.org/10.1080/24745332.2021.1945887>.

† Or an alternative ICS/form preparation if another is approved for use as a reliever in the future

\*\* For severe asthma refer to CTS 2017 Recognition and management of Severe Asthma Position

# GINA 2023 Asthma Management Continuum





## A Key Focus of Asthma is to Reduce Exacerbations

- Exacerbations are a progressive increase in symptoms and decrease in lung function
- Usually occur in response to a trigger:
  - Viral infection
  - Allergen
  - Pollution
  - Poor adherence to controller therapy
- **Severe exacerbations can even occur in people with mild and well-controlled asthma**
- Symptom control and asthma exacerbation reduction are a key component to asthma management

Global Initiative for Asthma. "Global Initiative for Asthma Management and Prevention - 2022." Accessed December 27, 2022. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>.



# COPD SUMMARY



# COPD Prevalence and Symptoms

- Leading cause of morbidity and mortality worldwide
- 4% of Canadians (aged 35 to 79) diagnosed with COPD
  - 13% of Canadians have airflow limitation consistent with COPD
- Leading cause of:
  - Hospitalization in Canada
  - Mortality
- Burden of COPD is likely to continue to increase

## COPD SIGNS AND SYMPTOMS



Sputum



Chest tightness



Wheezing



Fatigue



Cough

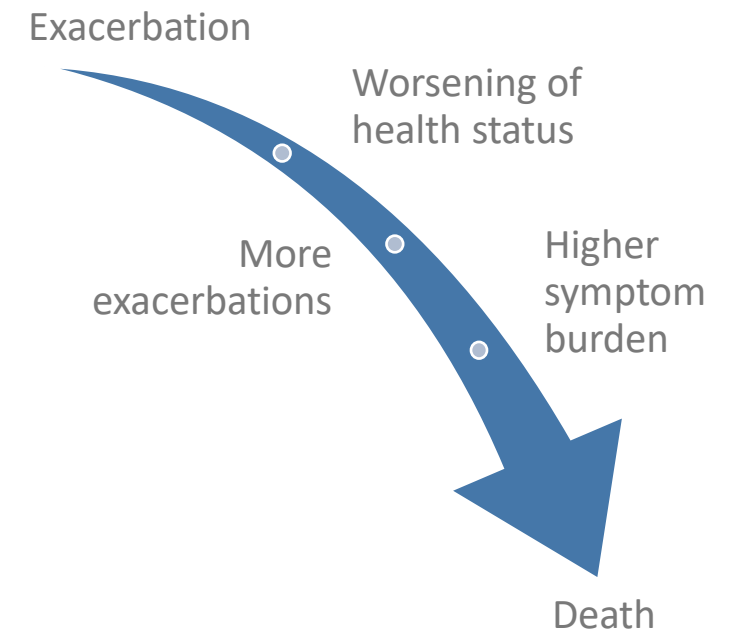


Exacerbations



# COPD Exacerbations

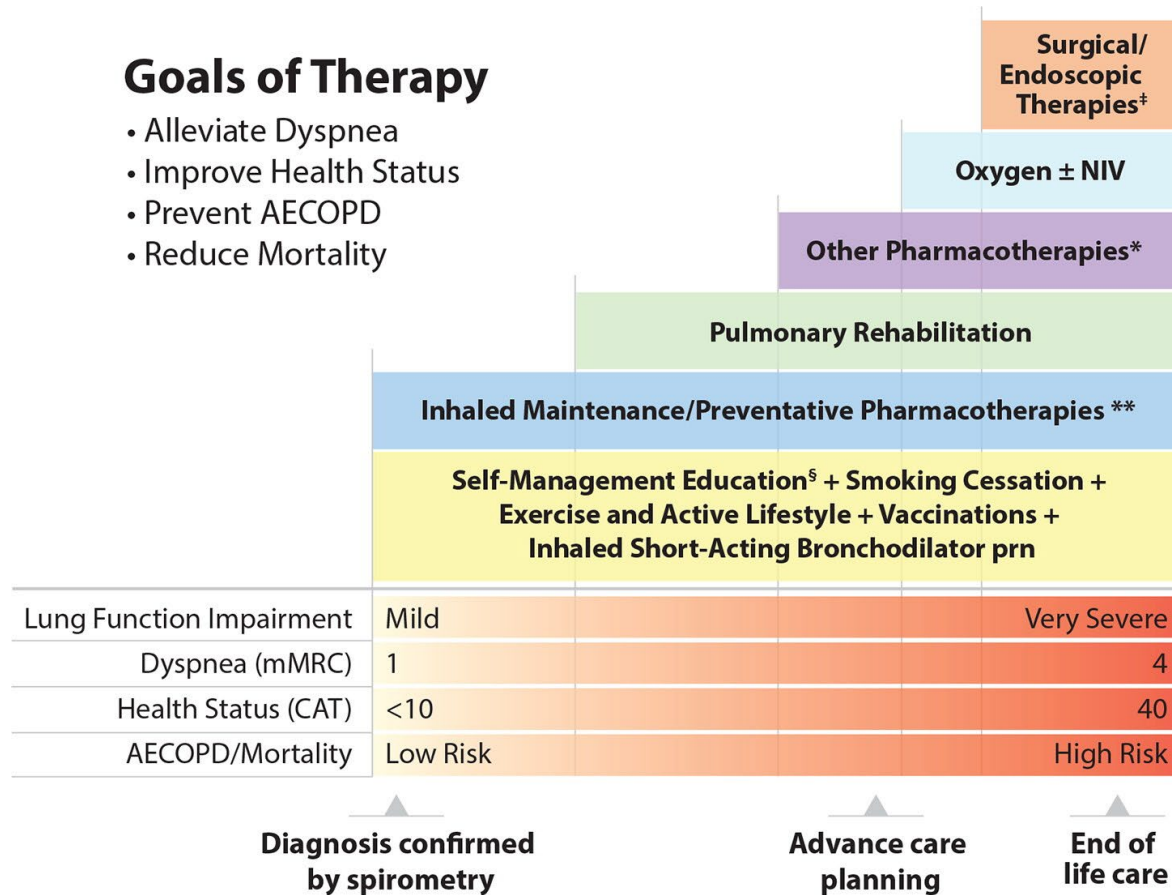
- An event with increased dyspnea/cough and sputum that worsens in < 14 day and is often caused by triggers
- These exacerbations:
  - Negatively impact health status
  - Increase hospitalization and readmission
  - Disease progression
- Cost of COPD hospitalizations is  $\geq 30\%$  higher than the next most expensive condition (heart failure)



# Comprehensive Management of COPD

## Goals of Therapy

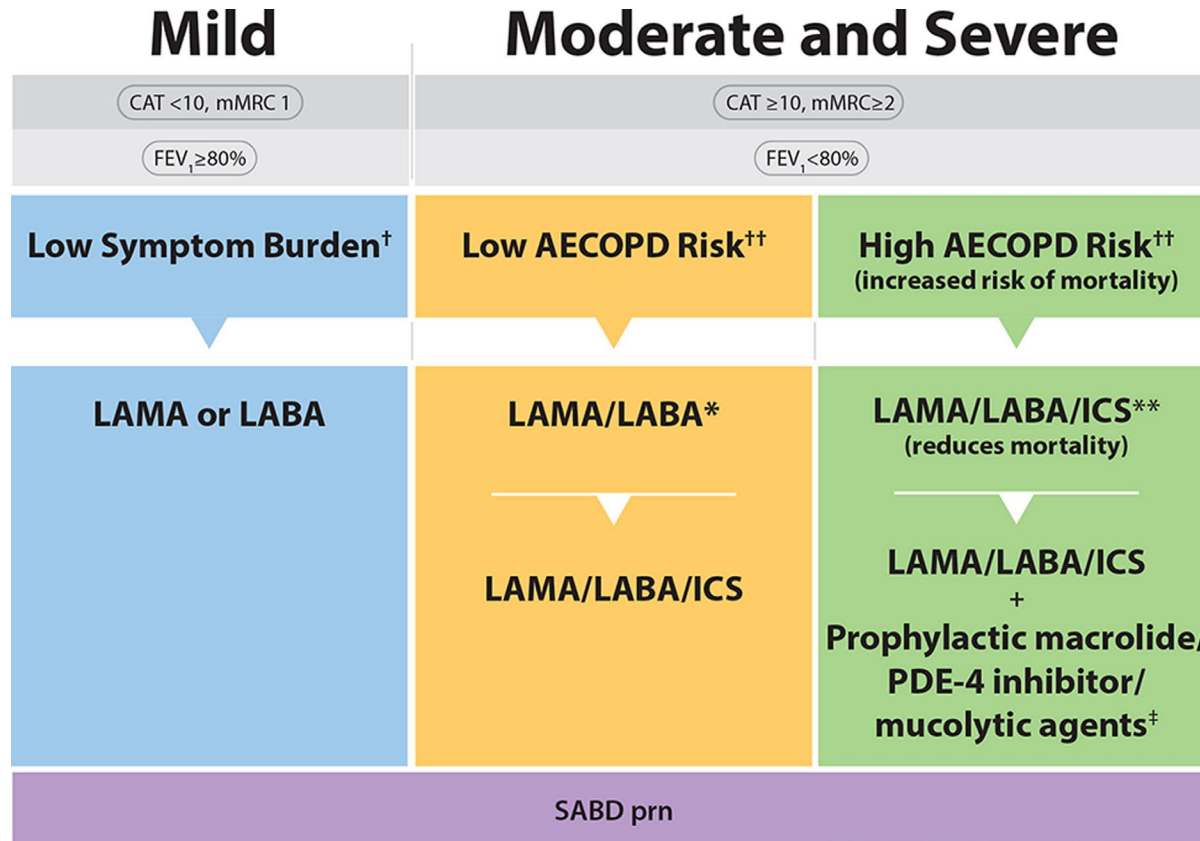
- Alleviate Dyspnea
- Improve Health Status
- Prevent AECOPD
- Reduce Mortality



## KEY POINTS

- This chart should **not be viewed as “stepwise”** and may not necessarily occur in the order they appear for all patients.
- Self-Management Education includes:
  - Optimizing inhaler device technique
  - Assessment and review of medication adherence
  - Breathing and cough techniques
  - Early recognition of acute exacerbations of COPD (AECOPD)
  - Written AECOPD action plan and implementation (**when appropriate**)
  - Promoting physical activity and/or exercise
  - Other healthy habits including diet and smoking cessation

# There are Clear Guidelines for Pharmacotherapy in COPD



AECOPD, acute exacerbation of COPD; CAT, COPD assessment test; ICS, inhaled corticosteroid; LABA, long-acting β<sub>2</sub>-agonist; LAMA, long-acting muscarinic antagonist; mMRC, Modified Medical Research Council; SABD prn, short-acting bronchodilator as needed.

Bourbeau, Jean, Mohit Bhutani, Paul Hernandez, Shawn D. Aaron, Marie-France Beaulieu, Sophie B. Kermelly, Anthony D'Urzo, et al. "2023 Canadian Thoracic Society Guideline on Pharmacotherapy in Patients With Stable COPD." *CHEST* 0, no. 0 (September 8, 2023). <https://doi.org/10.1016/j.chest.2023.08.014>.



# Interventions you can do to improve the care of your asthma and COPD patients

# What Can Pharmacists Do to Help These Patients – Quick Interventions that Can Help

- Assess control (asthma) and dyspnea/impact/exacerbation risk (COPD)
- Assess device use
- Assess adherence
- Recommend non-pharmacological management strategies
- Engage the patient in shared decision making



# 1 Is Asthma Well-Controlled?

Characteristic	Frequency or Value
Daytime symptoms	$\leq 2$ days/week
Nighttime symptoms	$< 1$ night/week and mild
Physical activity	Normal
Exacerbations	Mild and infrequent (no oral steroids, emergency department visit or hospitalizations)
Absence from work or school due to asthma	None
Need for reliever	$\leq 2$ doses per week
FEV <sub>1</sub> or Peak Expiratory Flow (PEF)	$\geq 90\%$ of personal best

**A patient who does not meet all of these criteria is not well-controlled and could require an intensification in their asthma therapy**

# Asthma Control Test (ACT) – Patient Completes to Assess Control

## ASTHMA CONTROL TEST™

### Know your score

The Asthma Control Test™ provides a numerical score to help you and your healthcare provider determine if your asthma symptoms are well controlled.

Take this test if you are 12 years or older. Share the score with your healthcare provider.

**Step 1:** Write the number of each answer in the score box provided.

**Step 2:** Add up each score box for the total.

**Step 3:** Take the completed test to your healthcare provider to talk about your score.

If your score is 19 or less, your asthma symptoms may not be as well controlled as they could be. No matter what the score, bring this test to your healthcare provider to talk about the results.

					SCORE
1. In the <u>past 4 weeks</u> , how much of the time did your <u>asthma</u> keep you from getting as much done at work, school or at home?					
All of the time [1]	Most of the time [2]	Some of the time [3]	A little of the time [4]	None of the time [5]	.....
2. During the <u>past 4 weeks</u> , how often have you had shortness of breath?					
More than Once a day [1]	Once a day [2]	3 to 6 times a week [3]	Once or twice a week [4]	Not at all [5]	.....
3. During the <u>past 4 weeks</u> , how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?					
4 or more nights a week [1]	2 to 3 nights a week [2]	Once a week [3]	Once or twice [4]	Not at all [5]	.....
4. During the <u>past 4 weeks</u> , how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?					
3 or more times per day [1]	1 or 2 times per day [2]	2 or 3 times per week [3]	Once a week or less [4]	Not at all [5]	.....
5. How would you rate your asthma control during the past 4 weeks?					
Not Controlled at All [1]	Poorly Controlled [2]	Somewhat Controlled [3]	Well Controlled [4]	Completely Controlled [5]	.....

If your score is 19 or less, your asthma symptoms may not be as well controlled as they could be. No matter what your score is, share the results with your healthcare provider.

TOTAL: .....

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Asthma Control Test is a trademark of QualityMetric Incorporated.

# Reliever Reliance Test – Assesses Patient's Thoughts



Developed by leading expert in behavioural medicine, Professor Rob Horne, University College London (UCL). IPCRG and AstraZeneca provided input into the development of the Reliever Reliance Test but do not have any editorial control, which is the responsibility of Professor Rob Horne. The production and distribution of this tool has been fully funded by AstraZeneca.

## Reliever Reliance Test

This is a self-test designed to help you and your doctor, nurse or pharmacist to understand what you think about your Blue Reliever Inhaler\* for asthma and whether you might be relying on it too much. **This is not medical advice. DO NOT stop or change your medication without consulting your health care professional.**

### PART 1 Your views about your Blue Reliever Inhaler

- 1 Please circle the score that best represents your current view
- 2 Please write the score for each statement in the score box next to it
- 3 Please add up the scores to get your total score
- 4 Share your score with your doctor, nurse or pharmacist

These are statements other people have made about their Blue Reliever Inhaler.

#### PART 1

18-25: High risk of over-reliance | 11-17: Medium risk of over-reliance | ≤ 10: Low risk of over-reliance

#### PART 2

≥ 3: Sign that patient is using too much reliever



<https://www.ipcr.org/sites/ipcr/files/content/attachments/2021-11-29/Reliever%20Reliance%20Test%20English.pdf>

There are no right or wrong answers. We are interested in your views.

### 1 Using my Blue Reliever Inhaler to treat symptoms is the best way to keep on top of my asthma.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

### 2 I don't worry about asthma when I have my Blue Reliever Inhaler around.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

### 3 My Blue Reliever Inhaler is the only asthma treatment I can really rely on.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

### 4 The benefits of using my Blue Reliever Inhaler easily outweigh any risks.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

### 5 I prefer to rely on my Blue Reliever Inhaler than my Steroid Preventer Inhaler.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

### PART 1: See reverse to interpret your scores

PART 1 TOTAL

### PART 2 Using your Blue Reliever Inhaler

- 1 Please circle your answer below and write your score in the box
- 2 Share your score with your doctor, nurse or pharmacist

### On average, during the past 4 weeks, how often have you used your Blue Reliever Inhaler?

1 Not at all	2 Twice a week or less	3 3 times a week	4 4-5 times a week	5 More than 5 times a week
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\* Contains a medicine called SABA (short-acting β-agonist), prescribed to provide quick relief from asthma symptoms if they occur

© Prof Rob Horne

# COPD Assessment Test (CAT)

- Validated, short, patient-completed questionnaire
- Responsive to symptom and treatment changes
- Scoring
  - > 20: high COPD impact
  - 10–20: medium COPD impact
  - < 10: low impact
- Score of  $\geq 10$  shows there is room for improvement—optimize management

## COPD ASSESSMENT TEST (CAT)

								SCORE
I never cough	0	1	2	3	4	5	I cough all the time	
I have no phlegm (mucus) in my chest at all	0	1	2	3	4	5	My chest is completely full of phlegm (mucus)	
My chest does not feel tight at all	0	1	2	3	4	5	My chest feels very tight	
When I walk up a hill or one flight of stairs, I am not breathless	0	1	2	3	4	5	When I walk up a hill or one flight of stairs, I am very breathless	
I am not limited doing any activities at home	0	1	2	3	4	5	I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	0	1	2	3	4	5	I am not at all confident leaving my home because of my lung condition	
I sleep soundly	0	1	2	3	4	5	I don't sleep soundly because of my lung condition	
I have lots of energy	0	1	2	3	4	5	I have no energy at all	
TOTAL SCORE								

<https://www.catestonline.org>

# Modified MRC Dyspnea Scale

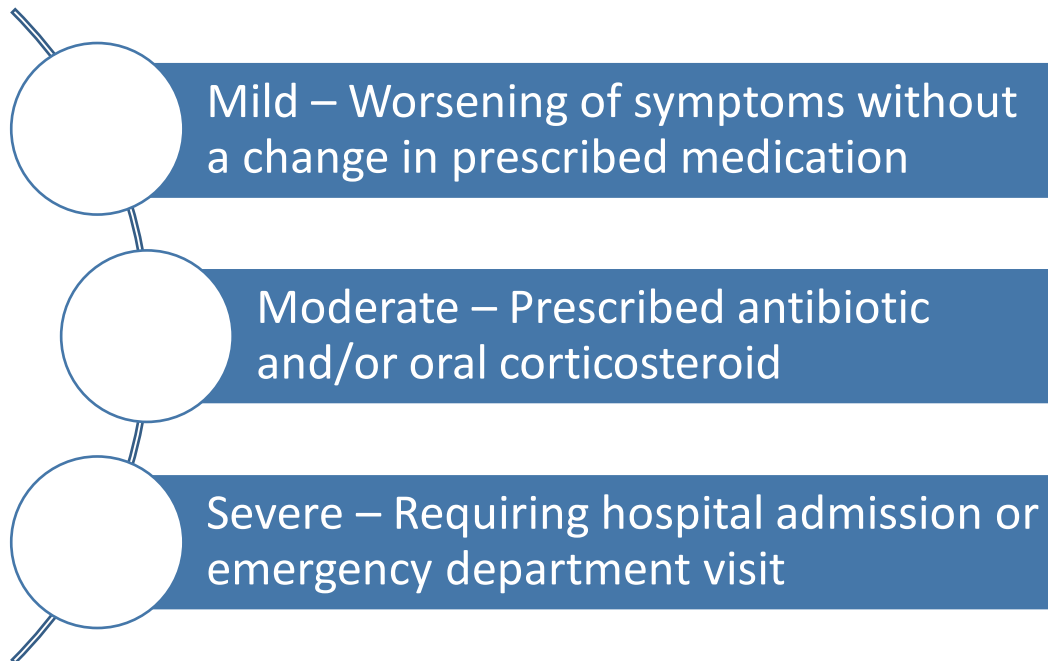
	Description
0	I only get breathless with strenuous exercise
1	I get short of breath when hurrying on the level or walking up a slight hill
2	I walk slower than people of the same age on the level because of breathlessness, or I have to stop for breath when walking on my own pace on the level
3	I stop for breath after walking about 100 meters 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

- A validated tool for categorizing disability related to dyspnea and COPD disease severity
- Unlike CAT, it is unresponsive to change

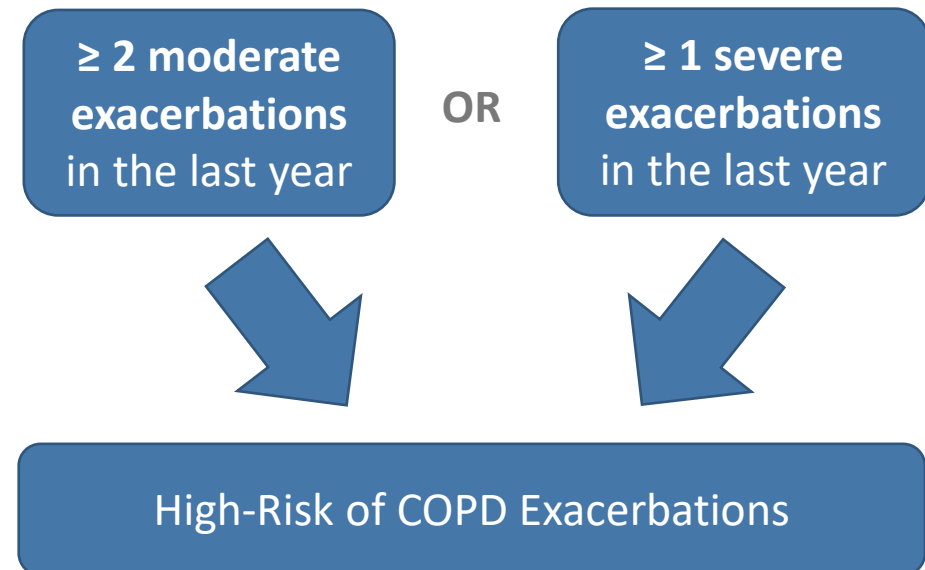


# Assessing if the Patient with COPD is at High-Risk of Exacerbations

## Types of Acute Exacerbations of COPD



## Which Patients are at High-Risk





















## 2

# Assess Device Use – Many Different Devices

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## ASTHMA MEDICATIONS

www.resptrec.org  
www.lungsask.ca

Corticosteroids		Combination Inhalers		Bronchodilators	
<b>ICS (Inhaled Corticosteroid) Controller</b>		<b>ICS/LABA (Inhaled Corticosteroid and Long-Acting Beta2-Agonist) Controller</b>		<b>SABA (Short-Acting Beta2-Agonist) Reliever</b>	
 <b>Aermony Resplick™</b> (fluticasone propionate) 55, 113, 232 mcg doses Duration: 12h Company: TEVA	 <b>Asmanox™ Twisthaler™</b> (salmeterol fumarate) 100, 200, 400 mcg doses Duration: 24h Company: Organon	 <b>Advair® MDI</b> (fluticasone propionate/ salmeterol xinafoate) 125/25, 250/50 mcg doses Duration: 12h Company: GSK	 <b>Breo™ Ellipta®</b> (fluticasone furoate/ vilanterol trifluoromethanesulfonate) 100/25, 200/25 mcg doses Duration: 24h Company: GSK	 <b>Airomir™ MDI</b> (salbutamol sulphate) 100 mcg/dose Duration: 4-6h Company: Valeant	 <b>Foradil® Aerolizer®</b> (formoterol fumarate) 12 mcg/dose Duration: 12h Company: Novartis
 <b>Alvesco® MDI</b> (ciclesonide) 100, 200 mcg doses Duration: 24h Company: AZ	 <b>Flovent® Diskus®</b> (fluticasone propionate) 100, 250, 500 mcg doses Duration: 12h Company: GSK	 <b>Advair® Diskus®</b> (fluticasone propionate/ salmeterol xinafoate) 100/50, 250/50, 500/50 mcg doses Duration: 12h Company: GSK	 <b>Symbicort® Turbuhaler®</b> (budesonide/ formoterol fumarate) 160/4.5, 250/4.5, 400/12 mcg doses Duration: 12h Company: AZ	 <b>Bricanyl® Turbuhaler®</b> (terbutaline sulphate) 0.5 mg/dose Duration: 4-6h Company: AZ	 <b>Oxeze® Turbuhaler®</b> (formoterol fumarate) 6, 12 mcg doses Duration: 12h Company: AZ
 <b>Aerway™ Ellipta®</b> (fluticasone furoate) 100, 200 mcg doses Duration: 24h Company: GSK	 <b>Flovent® MDI</b> (fluticasone propionate) 50, 125, 250 mcg doses Duration: 12h Company: GSK	 <b>Atecura® Breezhaler®</b> (budesonide/ formoterol fumarate) 160/4.5, 250/4.5, 400/12 mcg doses Duration: 24h Company: Valeo	 <b>Wixela® Inhub®</b> (fluticasone propionate/ salmeterol xinafoate) 100/50, 250/50, 500/50 mcg doses Duration: 12h Company: Viatris	 <b>Ventolin® Diskus®</b> (salbutamol sulphate) 200 mcg/dose Duration: 4-6h Company: GSK	 <b>Serevent® Diskus®</b> (salmeterol xinafoate) 50 mcg/dose Duration: 12h Company: GSK
<b>Company Key</b> AZ – AstraZeneca Canada Inc. BI – Boehringer Ingelheim Canada Ltd. GSK – GlaxoSmithKline Inc. Novartis – Novartis Pharmaceuticals Canada Inc. Organon – Organon Canada Inc. TEVA – TEVA Canada Valeant – Valeant Canada Valeo – Valeo Pharma Inc. Viatris – Viatris		<b>ICS/LAMA/LABA</b>		<b>LAMA (Long-Acting Muscarinic Antagonist) Controller</b>	
 <b>Pulmicort® Turbuhaler®</b> (budesonide) 100, 200, 400 mcg doses Duration: 12h Company: AZ *nebulizer also available		 <b>Enzerair® Breezhaler®</b> (indacaterol / glycopyrronium/ formoterol fumarate) 150/50/10 mcg dose Duration: 24h Company: Valeo		 <b>Ventiolin® MDI</b> (salbutamol sulphate) 100 mcg/dose Duration: 4-6h Company: GSK *nebulizer and generic brands available	
 <b>Qvar® MDI</b> (beclomethasone dipropionate) 50, 100 mcg doses Duration: 12h Company: Valeant		 <b>Zenhale® MDI</b> (mometasone furoate/ formoterol fumarate) 50/5, 100/5, 200/5 mcg doses Duration: 12h Company: Organon		 <b>Spiriva® Respimat®</b> (tiotropium bromide monohydrate) 2.5 mcg/dose Duration: 24h Company: BI	

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








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<https://www.lungsask.ca/media/11>

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## COPD MEDICATIONS

www.resptrec.org  
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Short-Acting Bronchodilators		Long-Acting Bronchodilators		Combination Inhalers	
<b>SAMA (Short-Acting Muscarinic Antagonist) USE REGULARLY or PRN</b>		<b>SABA (Short-Acting Beta2-Agonist) USE REGULARLY or PRN</b>		<b>LAMA (Long-Acting Muscarinic Antagonist) USE REGULARLY</b>	
 <b>Atrovent® MDI</b> (ipratropium bromide) 20 mcg/dose Duration: 4-6h Company: BI *nebulizer also available		 <b>Airomir™ MDI</b> (salbutamol sulphate) 100 mcg/dose Duration: 4-6h Company: Valeant		 <b>Incruse™ Ellipta®</b> (umeclidinium bromide) 62.5 mcg/dose Duration: 24h Company: GSK	
 <b>Bricanyl® Turbuhaler®</b> (terbutaline sulphate) 0.5 mg/dose Duration: 4-6h Company: AZ		 <b>Spiriva® Handihaler®</b> (tiotropium bromide monohydrate) 18 mcg/dose Duration: 24h Company: BI		 <b>Onbrez® Breezhaler®</b> (glycopyrronium bromide) 50 mcg/dose Duration: 24h Company: Novartis	
 <b>Ventolin® Diskus®</b> (salbutamol sulphate) 200 mcg/dose Duration: 4-6h Company: GSK		 <b>Serevent® Diskus®</b> (salmeterol xinafoate) 50 mcg/dose Duration: 12h Company: GSK		 <b>Striverdi® Respimat®</b> (vilanterol hydrochloride) 2.5 mcg/dose Duration: 24h Company: BI *Approved by Health Canada but may not be available in Canada	
 <b>Ventiolin® MDI</b> (salbutamol sulphate) 100 mcg/dose Duration: 4-6h Company: GSK *nebulizer and generic brands available		 <b>Spiriva® Respimat®</b> (tiotropium bromide monohydrate) 2.5 mcg/dose Duration: 24h Company: BI		 <b>Tudorza® Genuair®</b> (acclidinium bromide) 400 mcg/dose Duration: 12h Company: AZ	
<b>Company Key</b> AZ – AstraZeneca Canada Inc. BI – Boehringer Ingelheim Canada Ltd. GSK – GlaxoSmithKline Inc. Novartis – Novartis Pharmaceuticals Canada Inc. Organon – Organon Canada Inc. TEVA – TEVA Canada Valeant – Valeant Canada Valeo – Valeo Pharma Inc. Viatris – Viatris		<b>ICS/LAMA/LABA</b>		<b>ICS/LABA (Inhaled Corticosteroid/Long-Acting Beta2-Agonist) USE REGULARLY</b>	
 <b>Combivent® Respimat®</b> (ipratropium bromide/ salbutamol sulphate) 20/100 mcg/dose Duration: 4-6h Company: BI *nebulizer also available		 <b>Breo™ Ellipta®</b> (fluticasone furoate/ vilanterol trifluoromethanesulfonate) 100/25 mcg/dose Duration: 24h Company: GSK		 <b>Symbicort® Turbuhaler®</b> (budesonide/ formoterol fumarate) 160/4.5, 250/4.5, 400/12 mcg doses Duration: 12h Company: AZ	
 <b>Anoro™ Ellipta®</b> (umeclidinium bromide/ vilanterol trifluoromethanesulfonate) 62.5/25 mcg/dose Duration: 24h Company: GSK		 <b>Wixela® Inhub®</b> (fluticasone propionate/ salmeterol xinafoate) 100/50, 200/50, 500/50 mcg doses Duration: 12h Company: Viatris		 <b>Duaklir® Genuair®</b> (acclidinium bromide/ formoterol fumarate) 400/12 mcg/dose Duration: 12h Company: AZ	
 <b>Inspirito® Respimat®</b> (tiotropium bromide monohydrate/ hydrochloride) 2.5/2.5 mcg dose Duration: 24h Company: BI		 <b>Trelegy™ Ellipta®</b> (fluticasone furoate/ umeclidinium bromide/ vilanterol trifluoromethanesulfonate) 100/62.5/25 mcg/dose Duration: 24h Company: GSK		 <b>Ultibro® Breezhaler®</b> (glycopyrronium bromide/ indacaterol maleate) 50/110 mcg/dose Duration: 24h Company: Novartis	

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<https://www.lungsask.ca/media/20>



## All Devices are Effective, But Only if Taken Correctly

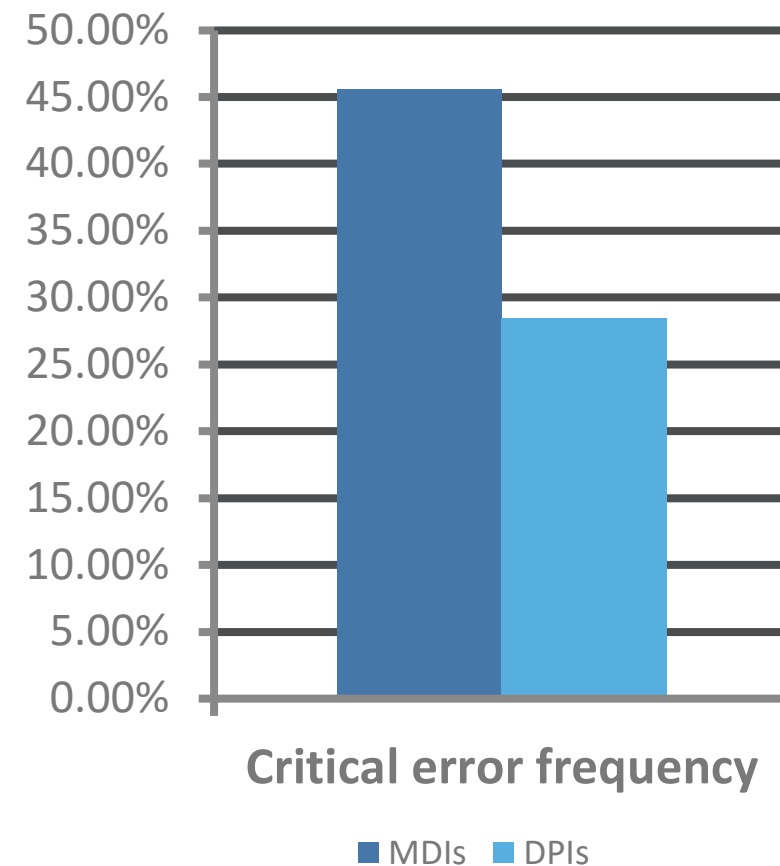
- Most patients state they know how to use their inhalers
- A meta-analysis found:
  - **Overall device error rate: 50-100%**
  - **Critical device error rate: 14-92%**
- Although errors are very common, there are several risk factors:
  - Older age
  - Lower education
  - COPD diagnosis
  - Female gender
  - Lower socioeconomic status
  - Higher comorbidities and disease severity

**Ideally one device for all medications and engage patients in device selection**

Chrystyn, Henry, Job van der Palen, Raj Sharma, Neil Barnes, Bruno Delafont, Anadi Mahajan, and Mike Thomas. "Device Errors in Asthma and COPD: Systematic Literature Review and Meta-Analysis." *Npj Primary Care Respiratory Medicine* 27, no. 1 (April 3, 2017): 1–10.  
<https://doi.org/10.1038/s41533-017-0016-z>

# Critical Errors With Inhalers

- Significantly reduce/completely inhibit drug delivery
  - Related to incorrect use of inhaler
  - Occur with all devices
  - Need for patient education and training





# Inhaler Devices

Pressurized metered dose inhaler (pMDI)	Dry powder inhaler (DPI)	Soft mist inhaler (SMI)
Need to coordinate actuation with inhalation – difficult for some patients	Breath-actuated; no need to coordinate actuation with inhalation	Slow velocity aerosol; easier to coordinate actuation with inhalation than with pMDI, but some coordination still required
Ballistic dose delivery of pMDIs can exacerbate unpleasant taste in mouth	Drug delivery depends on patient achieving high enough peak inspiratory flow (PIF) to disperse the drug, and on turbulence produced by the intrinsic resistance of the DPI	High fine particle fraction and lung deposition  Loading and use of device can be difficult in people with lower hand strength
	Most COPD patients generate enough PIF for medium resistance DPI (Ellipta, Diskus, Genuair, Turbuhaler); low resistance (Breezhaler) may not be better, high-resistance (Handihaler) may be difficult for some patients	Respimat is an SMI

1. Kaplan A. *Can Respir J*. 2018;2018:9473051-9473051. 2. Grant AC. *J Aerosol Med Pulm Drug Deliv*. 2015;28(6):474-485. 3. Dhand R. *Cleve Clin J Med*. 2018;85(2 Suppl 1):S19-S27. 4. Dal Negro RW. *Multidiscip Respir Med*. 2015;10(1):13. 5. Usmani OS. *Ther Clin Risk Manag*. 2019;15:461-472. 6. Hamilton M. *J Aerosol Med Pulm Drug Deliv*. 2015;28(6):498-506. 7. Prime D. *J Aerosol Med Pulm Drug Deliv*. 2015;28(6):486-497. W. H. Kocks, Janwillem, Hans Wouters, Sinthia Bosnic-Anticevich, Joyce van Cooten, Jaime Correia de Sousa, Biljana Cvetkovski, Richard Dekhuijzen, et al. "Factors Associated with Health Status and Exacerbations in COPD Maintenance Therapy with Dry Powder Inhalers." *Npj Primary Care Respiratory Medicine* 32, no. 1 (May 26, 2022): 1–10. <https://doi.org/10.1038/s41533-022-00282-y>



# Videos on Device Use

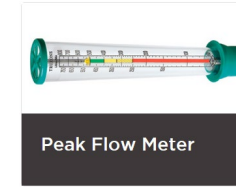
- Pharmacist
  - Videos can be very helpful for training
  - Can also validate how we are educating our patients
- Patient
  - Good refresh for patients
  - Easy resource to show the devices as well
- <https://www.lung.ca/lung-health/how-use-your-inhaler>



Inhub



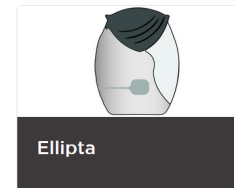
Twisthaler



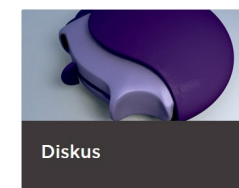
Peak Flow Meter



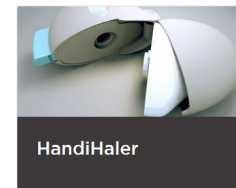
MDI - No spacer



Ellipta



Diskus



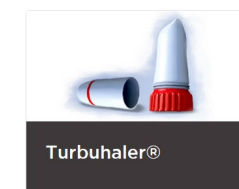
HandiHaler



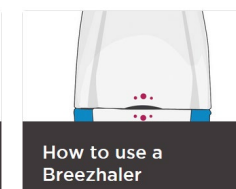
Respimat



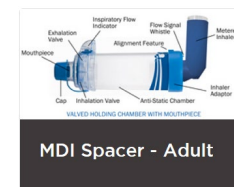
MDI Spacer - Preschooler



Turbuhaler®



How to use a Breezhaler



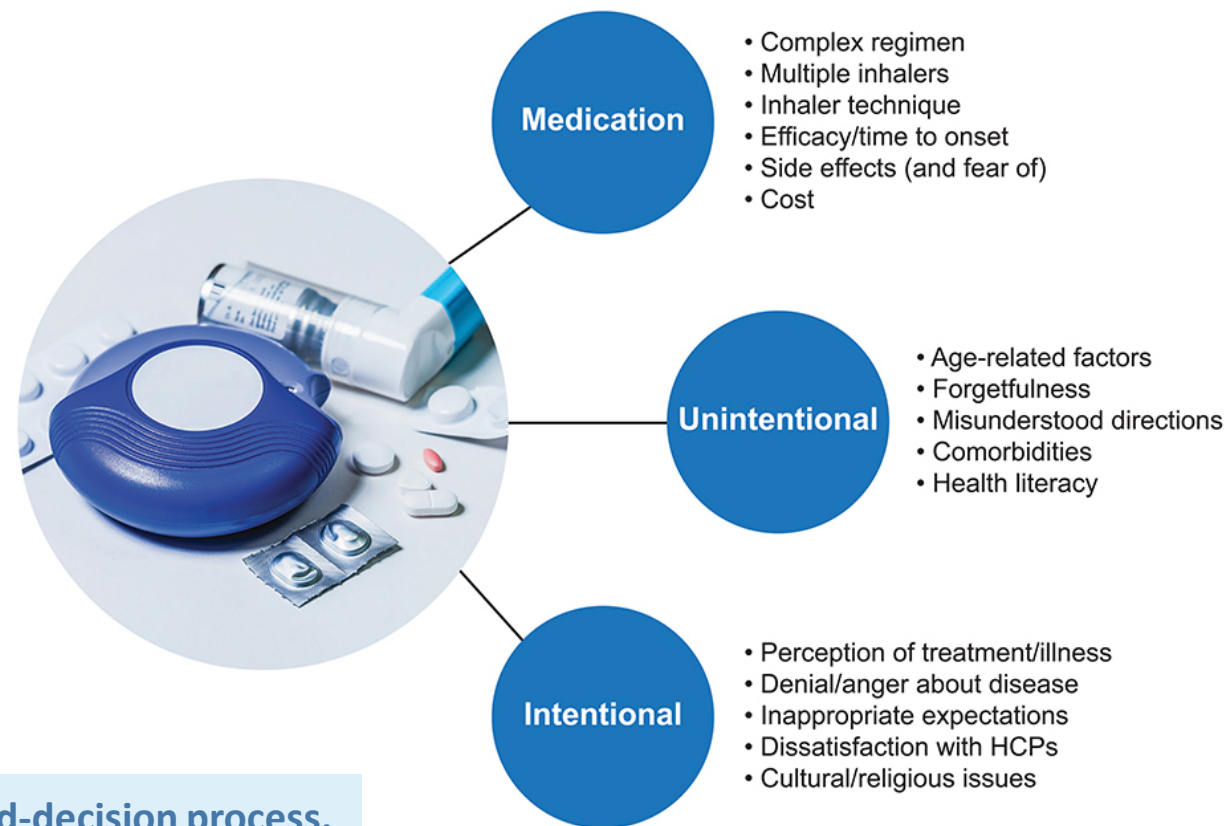
MDI Spacer - Adult



Genuair

### 3 Assess Adherence

- Adherence for most chronic conditions is ~50%
- Adherence rates are lower for patients with asthma or COPD:
  - Ranging from 22% to 78%
- Associated with:
  - ↓ Disease control
  - ↑ Mortality
  - ↑ Health care resource use



**Regularly assess adherence and address through shared-decision process.  
Simplify the regimen as much as possible**

# Strategies to Address Nonadherence – It's SIMPLE

Strategy	Application to Respiratory Medicine
<b>S</b> implifying the regimen	<ul style="list-style-type: none"><li>• Minimize administration times per day</li><li>• Ideally, one device type and utilize combination inhalers (if, available)</li></ul>
<b>I</b> mparting knowledge	<ul style="list-style-type: none"><li>• Important to ensure patient knows why they must use the inhalers</li><li>• Not solely about symptom control now, but also exacerbation risk reduction</li><li>• Use tools from Lung Association and other groups to simplify education</li></ul>
<b>M</b> odifying patient beliefs	<ul style="list-style-type: none"><li>• Ask patients about their thoughts on their disease and medication</li></ul>
<b>P</b> atient communication	<ul style="list-style-type: none"><li>• Educate that medication is not solely about symptom control now, but also exacerbation risk reduction</li></ul>
<b>L</b> eaving the bias	<ul style="list-style-type: none"><li>• Although there are risk factors, nonadherence can affect any patient</li></ul>
<b>E</b> valuating adherence	<ul style="list-style-type: none"><li>• Frequent and regular assessment can improve adherence rates</li></ul>

## 4 Recommend Non-Pharmacological Management Strategies

### ASTHMA

- Smoking cessation
- Regular physical activity
- Avoid occupational irritants, pollution, medications associated with worsening symptoms
- Weight reduction
- Stress reduction
- Up to date immunizations

### COPD

- Smoking cessation
- Physical activity
- Proper nutrition
- Up to date immunizations

**Non-pharmacological recommendations can improve symptoms, reduce risk of comorbidities and improve quality of life.**





## 5

## Engage the Patient in Shared Decision Making

- Effective respiratory care requires partnership and active involvement of the patient
- Asking patients about their:
  - Goals of therapy
  - Thoughts on their condition and treatment
- Explaining:
  - Expected benefits of treatment
  - What optimal control could mean to their disease control
  - No need to have asthma dictate their life, they should expect optimal control, nothing less
  - How we can work together to reach these goals

Global Initiative for Chronic Obstructive Lung Disease (GOLD). "Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease (2023 Report)." Global Initiative for Chronic Obstructive Lung Disease - GOLD. Accessed March 23, 2023. <https://goldcopd.org/2023-gold-report-2/>. Global Initiative for Asthma. "Global Initiative for Asthma Management and Prevention - 2022." Accessed December 27, 2022. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>.





## Key Learning Points

1. Asthma and COPD are highly prevalent conditions that have significant impacts on Canadians and the healthcare system.
2. Pharmacists should assess asthma control and COPD function and dyspnea in partnership with their patient.
3. Engage patients in device selection, tailoring and simplifying their regimen to optimize control.
4. Regularly assess and address nonadherence with respiratory medications.
5. Non-pharmacological recommendations are important for asthma and COPD.
6. Effective partnership with the person with a respiratory condition is foundation to optimizing disease control.



## Module 2

Asthma Control: Taking steps to ensure asthma patients are reaching their treatment goals



# Learning Objectives

After completion of this module pharmacists will be better able to:

1. Assess a patient's asthma symptoms to ensure they are optimally controlled.
2. Apply the current Canadian Thoracic Society and Global Initiative for Asthma management algorithm to the management of asthma patients.
3. Discuss the role of long-acting muscarinic antagonist (LAMA) therapies in patients with asthma.
4. Recommend appropriate intensification of therapy in patients with asthma who are not well controlled.



# Meet James

## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## ASTHMA MEDICATIONS

- Fluticasone/salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Pharmacist notices he is now asking for a salbutamol refill every 1-3 months where it used to be every 4-6 months
- He had an asthma exacerbation 3 months ago requiring a course of prednisone



# Interactive Question

If James was your patient, what would be your course of action? (Check all that apply)

- a) Tell him to cut down on his salbutamol use
- b) I would assess his asthma control
- c) I would ask about his ICS/LABA use
- d) Assume he is nonadherent to his ICS/LABA
- e) I would consider adjusting his therapy
- f) I would refer him back to his family physician



## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone



# Interactive Question

If his asthma was well-controlled, how long should a two-hundred dose salbutamol inhaler last?

- a) At least 1 month
- b) At least 3 months
- c) At least 4 months
- d) At least 6 months
- e) At least 11 months

**Well-controlled asthma =  $\leq 2$  puffs per week, a 200 puff canister would last 50 weeks (11.5 months)**



## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone

# Managing a Patient with Possible Worsening Asthma Control

## Managing James

- Educate on the importance of asthma control – which includes fewer exacerbations, better quality of life and lower healthcare costs

## What to check in a patient with a reduction of control:

- Current symptoms and amount of salbutamol (SABA) use
- Assessment of asthma control
- The patient's thoughts on asthma management
- Adherence to pharmacotherapy
- Device technique
- Exposure to triggers



## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone

# Assessing James' Asthma Control and Salbutamol Use

## ASTHMA CONTROL TEST™

### Know your score

The Asthma Control Test™ provides a numerical score to help you and your healthcare provider determine if your asthma symptoms are well controlled.

Take this test if you are 12 years or older. Share the score with your healthcare provider.

**Step 1:** Write the number of each answer in the score box provided.

**Step 2:** Add up each score box for the total.

**Step 3:** Take the completed test to your healthcare provider to talk about your score.

If your score is 19 or less, your asthma symptoms may not be as well controlled as they could be. No matter what the score, bring this test to your healthcare provider to talk about the results.

1. In the <u>past 4 weeks</u> , how much of the time did your <u>asthma</u> keep you from getting as much done at work, school or at home?	<b>SCORE</b>				
All of the time [1]	Most of the time [2]	Some of the time [3]	A little of the time [4]	None of the time [5]	<b>3</b>
2. During the <u>past 4 weeks</u> , how often have you had shortness of breath?					
More than Once a day [1]	Once a day [2]	3 to 6 times a week [3]	Once or twice a week [4]	Not at all [5]	<b>1</b>
3. During the <u>past 4 weeks</u> , how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?					
4 or more nights a week [1]	2 to 3 nights a week [2]	Once a week [3]	Once or twice [4]	Not at all [5]	<b>2</b>
4. During the <u>past 4 weeks</u> , how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?					
3 or more times per day [1]	1 or 2 times per day [2]	2 or 3 times per week [3]	Once a week or less [4]	Not at all [5]	<b>1</b>
5. How would you rate your asthma control during the past 4 weeks?					
Not Controlled at All [1]	Poorly Controlled [2]	Somewhat Controlled [3]	Well Controlled [4]	Completely Controlled [5]	<b>4</b>

If your score is 19 or less, your asthma symptoms may not be as well controlled as they could be. No matter what your score is, share the results with your healthcare provider.

**TOTAL:** **12**



Developed by leading expert in behavioural medicine, Professor Rob Horne, University College London (UCL), IPCRG and AstraZeneca provided input into the development of the Reliever Reliance Test but do not have any editorial control, which is the responsibility of Professor Rob Horne. The production and distribution of this tool has been fully funded by AstraZeneca.



### Reliever Reliance Test

This is a self-test designed to help you and your doctor, nurse or pharmacist to understand what you think about your Blue Reliever Inhaler\* for asthma and whether you might be relying on it too much. **This is not medical advice. DO NOT stop or change your medication without consulting your health care professional.**

#### PART 1 Your views about your Blue Reliever Inhaler

- Please circle the score that best represents your current view
- Please write the score for each statement in the score box next to it
- Please add up the scores to get your total score
- Share your score with your doctor, nurse or pharmacist

These are statements other people have made about their Blue Reliever Inhaler.

#### 1 Using my Blue Reliever Inhaler to treat symptoms is the best way to keep on top of my asthma.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

#### 2 I don't worry about asthma when I have my Blue Reliever Inhaler around.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

#### 3 My Blue Reliever Inhaler is the only asthma treatment I can really rely on.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

#### 4 The benefits of using my Blue Reliever Inhaler easily outweigh any risks.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

#### 5 I prefer to rely on my Blue Reliever Inhaler than my Steroid Preventer Inhaler.

1 Strongly disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly agree
---------------------	------------	-------------	---------	------------------

**PART 1:** See reverse to interpret your scores

**PART 1 TOTAL**

**16**

#### PART 2 Using your Blue Reliever Inhaler

- Please circle your answer below and write your score in the box
- Share your score with your doctor, nurse or pharmacist

On average, during the past 4 weeks, how often have you used your Blue Reliever Inhaler?

1 Not at all	2 Twice a week or less	3 3 times a week	4 4-5 times a week	5 More than 5 times a week
--------------	------------------------	------------------	--------------------	----------------------------

**PART 2 SCORE**

**5**

\* Contains a medicine called SABA (short-acting B-agonist), prescribed to provide quick relief from asthma symptoms if they occur

© Prof Rob Horne

This is not medical advice. DO NOT stop or change your asthma medication without consulting your healthcare professional. It is important to continue to take your Blue Reliever Inhaler as directed by your healthcare professional, including during any worsening of your asthma or prior to exercise.



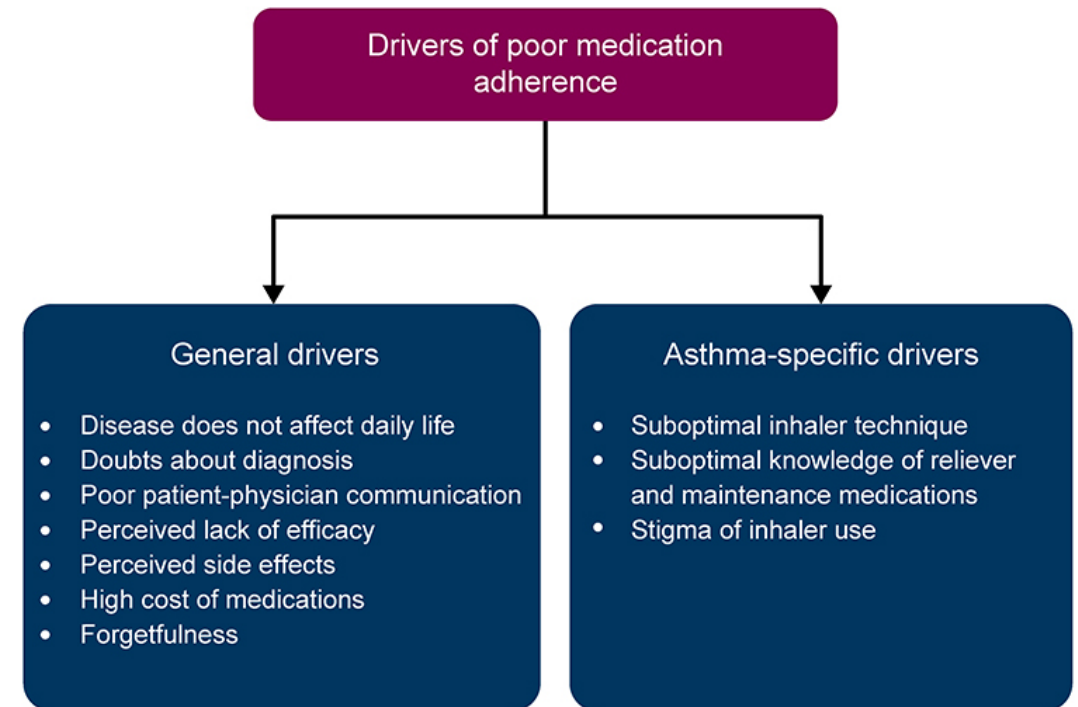
**11-17: Medium risk of over-reliance**

**≥ 3: Sign that patient is using too much reliever**

# Adherence to Pharmacotherapy

- Adherence rates in asthma patients have consistently been shown to be only 30–40% in practice
- Higher adherence with controller therapy associated with:
  - Better symptom control
  - Significantly reduced risk of exacerbation
  - Reduced oral corticosteroid use
  - Positive impact on asthma-related mortality

## MANY DRIVERS OF POOR ADHERENCE IN ASTHMA







## Device Technique

- See patients every 1–3 months after starting treatment and every 3–12 months after that
- Most patients (up to 80%) do not use their inhaler correctly
  - Contributes to poor symptom control, exacerbations and an increase in local adverse effects
  - Important to assess device technique at every opportunity
  - Consider integrating a device checklist or video to verify technique
  - Adjust devices based on the needs of the patient
- Consider integrating the “teachback method” to ensure they are using their device correctly

Global Initiative for Asthma. “Global Initiative for Asthma Management and Prevention - 2022.” Accessed December 27, 2022. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>.





# Asthma Trigger Exposure

- Asthma exacerbations are commonly caused by a variety of different triggers
  - Can ↑ risk of exacerbations, independent of symptom control
- Common triggers include:
  - Viral respiratory infections
  - Allergen exposure (e.g. grass pollen, soy bean dust, fungal spores)
  - Food allergy
  - Outdoor air pollution
  - Seasonal changes and/or returning to school in fall
  - Poor adherence to controller medications

Global Initiative for Asthma. "Global Initiative for Asthma Management and Prevention - 2022." Accessed December 27, 2022. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>.

# Conversation with James on Assessing Control



## 1. Current symptoms and amount of salbutamol (SABA) use

- He says he has coughing and wheezing every day
- He uses his reliever every day

## 2. Assessment of asthma control

- ACT test – shows he is not well controlled
- Has medium risk of overreliance of SABA

## 3. Adherence to pharmacotherapy

- Patient has been adherent to his fluticasone/salmeterol

## 4. Device technique

- Pharmacist assesses his device technique and it is appropriate

## 5. Exposure to triggers

- No new exposure to common triggers

### BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

### MEDICATIONS

- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

### DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone



# Exacerbations

- Episodes characterized by a progressive increase in symptoms of shortness of breath, cough, wheezing or chest tightness and progressive decrease in lung function
- Key asthma goal is to reduce exacerbation:
  - Frequency
  - Severity
- Even in mild asthma, severe exacerbations can occur
- Controller medication adherence and appropriate adjustment of therapy can help to reduce exacerbation risk

Global Initiative for Asthma. "Global Initiative for Asthma Management and Prevention - 2022." Accessed December 27, 2022. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>.  
Yang, Connie L., Elizabeth Anne Hicks, Patrick Mitchell, Joe Reisman, Delanya Podgers, Kathleen M. Hayward, Mark Waite, and Clare D. Ramsey. "Canadian Thoracic Society 2021 Guideline Update: Diagnosis and Management of Asthma in Preschoolers, Children and Adults." *Canadian Journal of Respiratory, Critical Care, and Sleep Medicine* 5, no. 6 (November 2, 2021): 348–61. <https://doi.org/10.1080/24745332.2021.1945887>.



# Interactive Question

How would you manage James?  
(Check all that apply)

- a) Increase the dose of his fluticasone/salmeterol
- b) Change to a different ICS/LABA
- c) Add long-acting muscarinic antagonist (LAMA)
- d) Add montelukast
- e) Refer patient to physician



## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

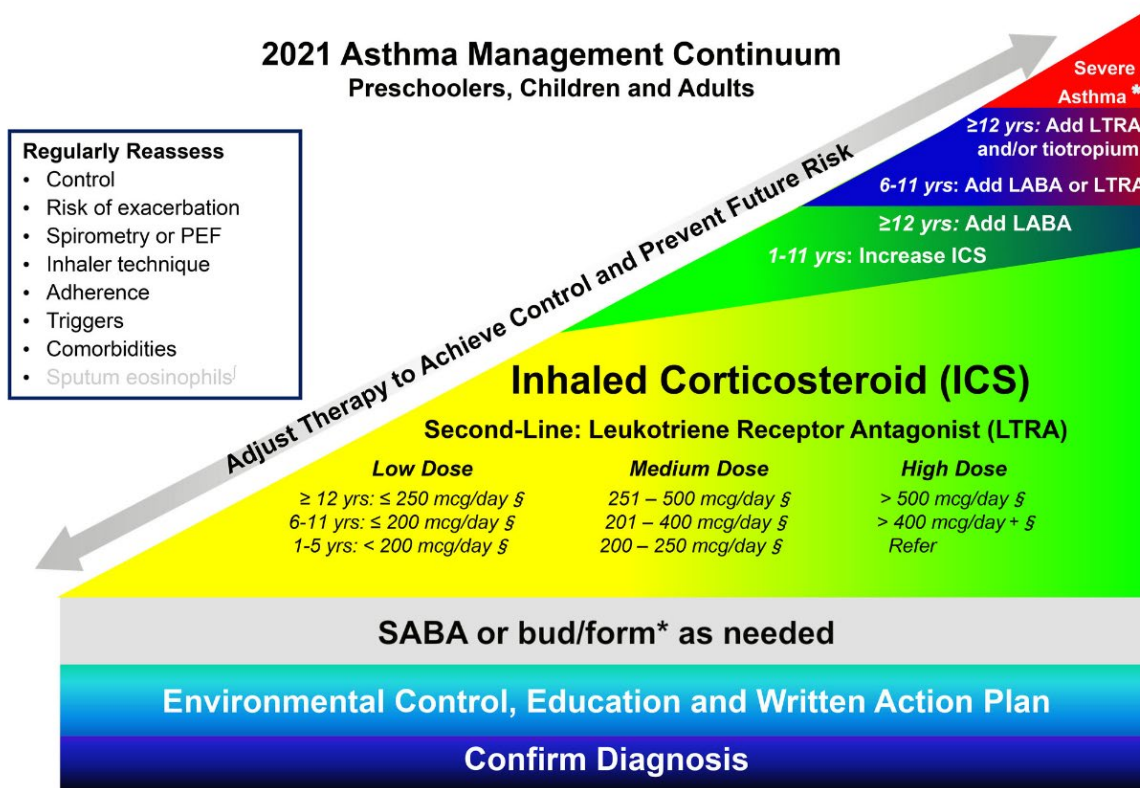
- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone

1. **Current symptoms and amount of salbutamol (SABA) use**
  - Coughing and wheezing every day
  - He uses his reliever every day
2. **Assessment of asthma control**
  - Poor asthma control
3. **Adherence to pharmacotherapy**
  - Patient is adherent
4. **Device technique**
  - Good device technique
5. **Exposure to triggers**
  - No new exposure to common triggers

# CTS Asthma Management Continuum 2021



\* Or an alternative ICS/form preparation if another is approved for use as a reliever in the future. Bud/form is approved as a reliever for ≥12 years of age and should only be used as a reliever in individuals using it as monotherapy or in conjunction with bud/form maintenance therapy

§ HFA Fluticasone propionate or equivalent

+ Not approved for use in Canada

† In adults, 18 years of age and over with moderate to severe asthma assessed in specialist centres

\*\* For severe asthma refer to CTS 2017 Recognition and Management of Severe Asthma Position Statement



# GINA 2023 Asthma Management Continuum



**CONTROLLER** and **ALTERNATIVE RELIEVER** (Track 2). Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller

## STEP 1

Take ICS whenever SABA taken

## STEP 2

Low dose maintenance ICS

## STEP 3

Low dose maintenance ICS-LABA

## STEP 4

Medium/high dose maintenance ICS-LABA

## STEP 5

Add-on LAMA  
Refer for assessment of phenotype. Consider high dose maintenance ICS-LABA, ± anti-IgE, anti-IL5/5R, anti-IL4R, anti-TSLP

RELIEVER: As-needed short-acting beta<sub>2</sub>-agonist

# Managing James



- Patient has uncontrolled asthma
- Currently taking medium dose ICS/LABA
- Good technique and adherence
- Next step would be the addition of a long-acting muscarinic antagonist (LAMA)
- Consideration:
  - Add LAMA to current regimen
  - Switch to single inhaler triple therapy

## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

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  - He uses his reliever every day
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  - Poor asthma control
3. **Adherence to pharmacotherapy**
  - Patient is adherent
4. **Device technique**
  - Good device technique
5. **Exposure to triggers**
  - No new exposure to common triggers

# Triple Therapy - Single Inhaler or Multiple Inhalers

## ADDING LAMA TO ICS/LABA

- Pros:
  - Patient is familiar with current ICS/LABA device
  - Patient can use current device
- Cons:
  - Multiple devices could worsen adherence
  - Difficult to learn multiple devices
  - Require multiple daily dosing

## CHANGING PATIENT TO SINGLE INHALER TRIPLE THERAPY

- Pros
  - Simplicity in the regimen
  - One device required once daily dosing
  - May improve adherence
  - Potentially higher clinical efficiency
- Cons
  - A new device to teach the patient

# Adjusting James' Regimen



- Pharmacist discusses:
  - Need for intensification
  - The opportunity for better control
  - Addition of LAMA as per current guidelines
  - Option of single or multiple inhalers
- Patient's perspective
  - Patient likes the idea of a single inhaler once daily
  - Would like you to discuss with his family physician regarding intensification

## BACKGROUND

- 35 years old
- Non-smoker
- Asthma X 27 years

## MEDICATIONS

- Fluticasone/Salmeterol 250/50 mcg BID
- Salbutamol 200 mcg QID PRN

## DISCUSSION

- Now using 1 Salbutamol every 1 to 3 months
- Asthma exacerbation 3 months ago requiring a course of prednisone

1. **Current symptoms and amount of salbutamol (SABA) use**
  - Coughing and wheezing every day
  - He uses his reliever every day
2. **Assessment of asthma control**
  - Poor asthma control
3. **Adherence to pharmacotherapy**
  - Patient is adherent
4. **Device technique**
  - Good device technique
5. **Exposure to triggers**
  - No new exposure to common triggers



## Key Learning Points

1. Pharmacists should regularly assess for salbutamol overuse in people with asthma.
2. In people with poorly controlled asthma it is important to check device technique, adherence, and trigger exposure.
3. Many patients with uncontrolled asthma will require an adjustment of asthma treatment plan.
4. Triple therapy (LAMA/LABA/ICS) is recommended in people with uncontrolled asthma on medium/high dose ICS/LAMA.
5. Single inhaler triple therapy offers some key benefits over using multiple inhalers for these medications.





## Module 3

Preventing Exacerbations:  
Strategies you can use today  
to improve COPD outcomes



# Learning Objectives

After completion of this module, pharmacists will be better able to:

1. Assess a patient's COPD symptoms using validated tools
2. Apply the current Canadian Thoracic Society's and Global Initiative for Chronic Obstructive Lung Disease (GOLD) management algorithm to patients
3. Discuss the importance of exacerbation reduction in the management of people with COPD
4. Recommend the intensification of therapy in patients with COPD who are not reaching their targets and are having exacerbations



# Meet Maria

## BACKGROUND

- 63 years old
- Ex-smoker (1 pack per day – 40 pack year history)
- COPD X 20 years

## MEDICATIONS

- Tiotropium/olodaterol 5/5 mcg once daily
- Salbutamol 100-200 mcg QID PRN
- Amlodipine 5 mg daily
- L-thyroxine 0.075 mg daily
- Atorvastatin 20 mg daily

## DISCUSSION

- She presents today with a prescription for prednisone and azithromycin for COPD exacerbation
- She had a previous exacerbation 4 months ago requiring antibiotics
- She mentions this flare-up was not as bad as last time 4 months ago

# Interactive Question

If Maria was your patient, what would be your course action? (check all that apply)

- a) Assess symptom control
- b) Assess adherence
- c) Assess device technique
- d) Change to different LAMA/LABA
- e) Add ICS to current regimen
- f) Consider long-term macrolide therapy
- g) Nothing at this point



## BACKGROUND

- 63 years old
- Ex-smoker (1 pack per day – 40 pack year history)
- COPD X 20 years

## MEDICATIONS

- Tiotropium/olodaterol 5/5 mcg once daily
- Salbutamol 100-200 mcg QID PRN
- Amlodipine 5 mg daily
- L-thyroxine 0.075 mg daily
- Atorvastatin 20 mg daily

## DISCUSSION

- She presents today with a prescription for prednisone and azithromycin for COPD exacerbation
- She had a previous exacerbation 4 months ago requiring antibiotics
- She mentions this flare-up was not as bad as last time 4 months ago



# Managing Maria



Assess symptoms and control

Assess exacerbation risk

Adjust therapy, if required

Education on the importance of control

## BACKGROUND

- 63 years old
- Ex-smoker (1 pack per day – 40 pack year history)
- COPD X 20 years

## MEDICATIONS

- Tiotropium/olodaterol 5/5 mcg once daily
- Salbutamol 100-200 mcg QID PRN
- Amlodipine 5 mg daily
- L-thyroxine 0.075 mg daily
- Atorvastatin 20 mg daily

## DISCUSSION

- She presents today with a prescription for prednisone and azithromycin for COPD exacerbation
- She had a previous exacerbation 4 months ago requiring antibiotics
- She mentions this flare-up was not as bad as last time 4 months ago



# Maria's Symptoms and COPD Control – High COPD Impact



## COPD ASSESSMENT TEST (CAT)

I never cough	0	1	2	3	4	5	I cough all the time	4
I have no phlegm (mucus) in my chest at all	0	1	2	3	4	5	My chest is completely full of phlegm (mucus)	3
My chest does not feel tight at all	0	1	2	3	4	5	My chest feels very tight	4
When I walk up a hill or one flight of stairs, I am not breathless	0	1	2	3	4	5	When I walk up a hill or one flight of stairs, I am very breathless	4
I am not limited doing any activities at home	0	1	2	3	4	5	I am very limited doing activities at home	3
I am confident leaving my home despite my lung condition	0	1	2	3	4	5	I am not at all confident leaving my home because of my lung condition	1
I sleep soundly	0	1	2	3	4	5	I don't sleep soundly because of my lung condition	3
I have lots of energy	0	1	2	3	4	5	I have no energy at all	4
TOTAL SCORE								26

<https://www.catestonline.org>

High COPD impact – Based on Maria's Score

## MODIFIED MRC DYSPNEA SCALE

	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 on my own pace on the level
3	I stop for breath after walking about 100 meters 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

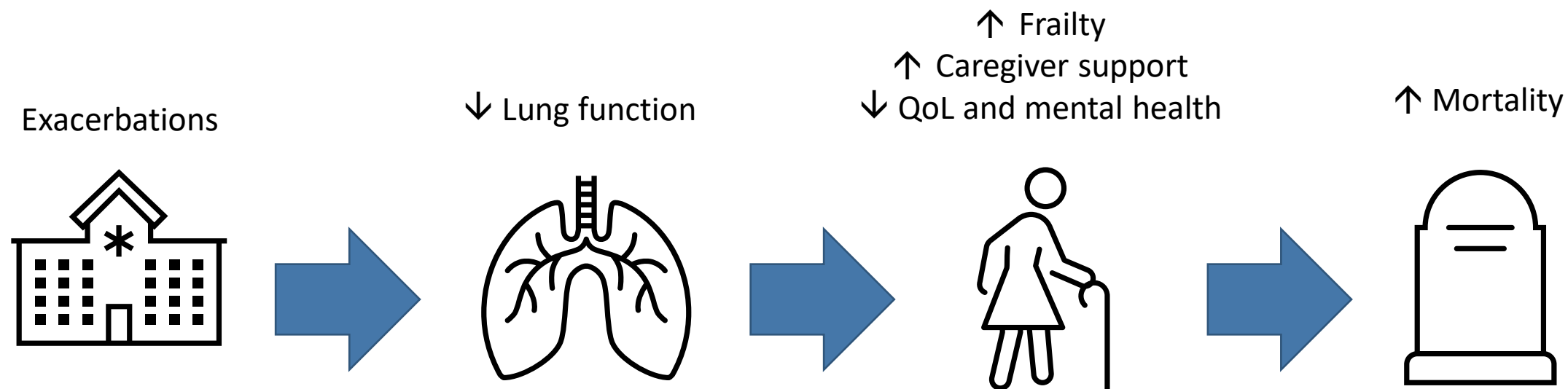


## Acute Exacerbations of COPD (AECOPD)

- Biggest reason for hospitalization in  $\geq 65$  years
- Negatively impact lung function, health status, hospitalization rates, disease progression, QoL, mortality
- Strongest predictor: Number of exacerbations in previous year
- Predictors of frequent exacerbations ( $\geq 2$ /year)
  - History of previous exacerbations
  - Deteriorating airflow limitation
  - Severe COPD
  - Chronic bronchitis
  - GERD
  - $\uparrow$  blood eosinophil count (BEC)

Global Initiative for Chronic Obstructive Lung Disease. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease. 2021 Report. <https://goldcopd.org/>. Dang-Tan T, Zhang S, Tavares RV, et al. The Burden of Illness Related to Chronic Obstructive Pulmonary Disease Exacerbations in Québec, Canada. Can Respir J. 2017;2017:8184915-8184915. The Human and Economic Burden of COPD: A Leading Cause of Hospital Admission in Canada. <https://www.lung.ca/file/309/download?token=KnAu717>. Gershon AS, Thiruchelvam D, Aaron S, et al. Socioeconomic status (SES) and 30-day hospital readmissions for chronic obstructive pulmonary (COPD) disease: A population-based cohort study. PLoS One. 2019;14(5):e0216741.5. Hospital stays in Canada. <https://www.chi.ca/en/hospital-stays-in-canada>

# Exacerbations Change the Course of COPD



**COPD exacerbations are to lung function as myocardial infarctions are to heart function**

# COPD Exacerbation Categories

## MILD

- Worsening or new respiratory symptoms without a change in prescribed medications

## MODERATE

- Prescribed antibiotic and/or corticosteroid

## SEVERE

- Requiring a hospital admission or emergency department visit





# Exacerbation Risk

## LOW EXACERBATION RISK

- $\leq 1$  moderate exacerbation in the last year
- No severe exacerbations

## High Exacerbation Risk

- $\geq 2$  moderate exacerbations in the last year
- $\geq 1$  severe exacerbation in the last year



## **PRACTICE TIP**

**Consider regularly scanning the profiles of patients with COPD. Two prescriptions for antibiotics or prednisone for COPD in the last year could warrant a change in their pharmacotherapy regimen.**

# CTS Pharmacotherapy Algorithm



## MARIA

### COPD symptom control

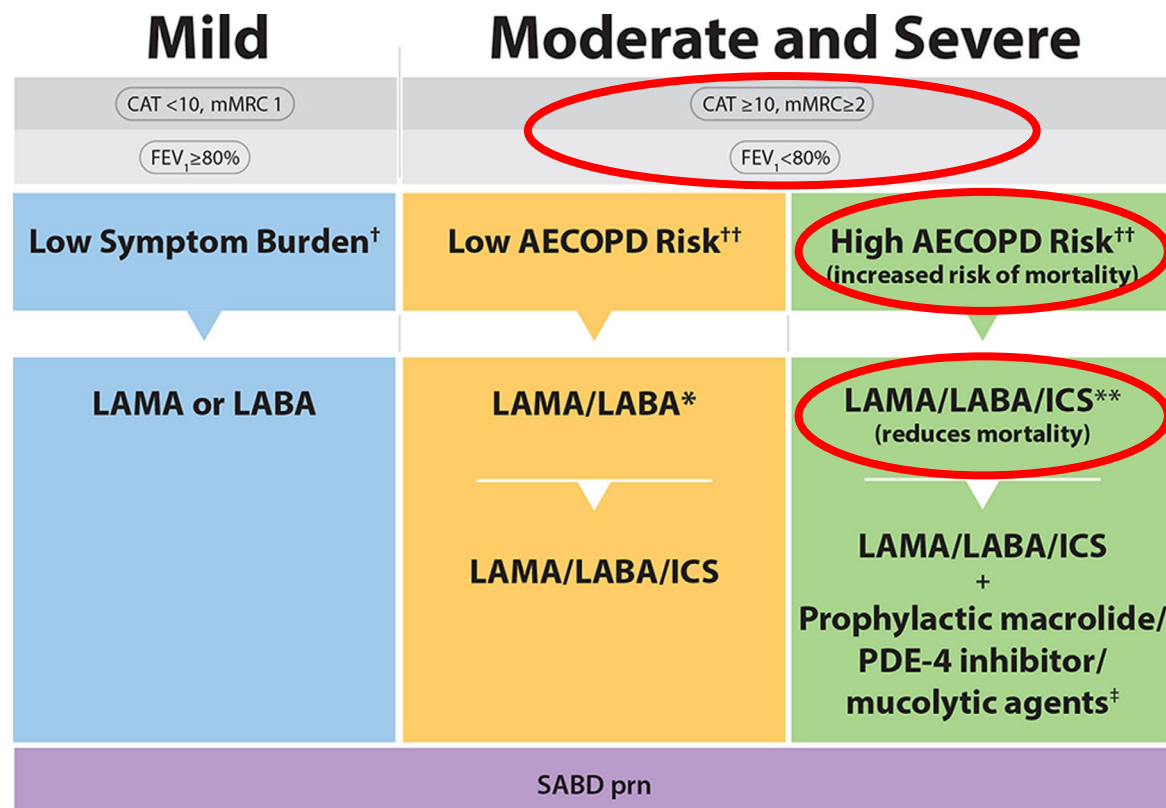
- CAT = 26
- mMRC = 3

### Exacerbation

- 2 moderate exacerbations requiring antibiotics and/or steroid

### Possible intensification

- LAMA/LABA/ICS



Guidelines would recommend LAMA/LABA/ICS to reduce exacerbation and all-cause mortality risk

# Interactive Question

If Maria was your patient, what would be your course action? (check all that apply)

- a) Add ICS inhaler to her current regimen
- b) Change to LAMA and ICS/LABA
- c) Change to single inhaler ICS/LABA/LAMA
- d) Hold adding ICS due to increase in pneumonia risk



## BACKGROUND

- 63 years old
- Ex-smoker (1 pack per day – 40 pack year history)
- COPD X 20 years

## MEDICATIONS

- Tiotropium/olodaterol 5/5 mcg once daily
- Salbutamol 100-200 mcg QID PRN
- Amlodipine 5 mg daily
- L-thyroxine 0.075 mg daily
- Atorvastatin 20 mg daily

## DISCUSSION

- She presents today with a prescription for prednisone and azithromycin for COPD exacerbation
- She had a previous exacerbation 4 months ago requiring antibiotics
- She mentions this flare-up was not as bad as last time 4 months ago

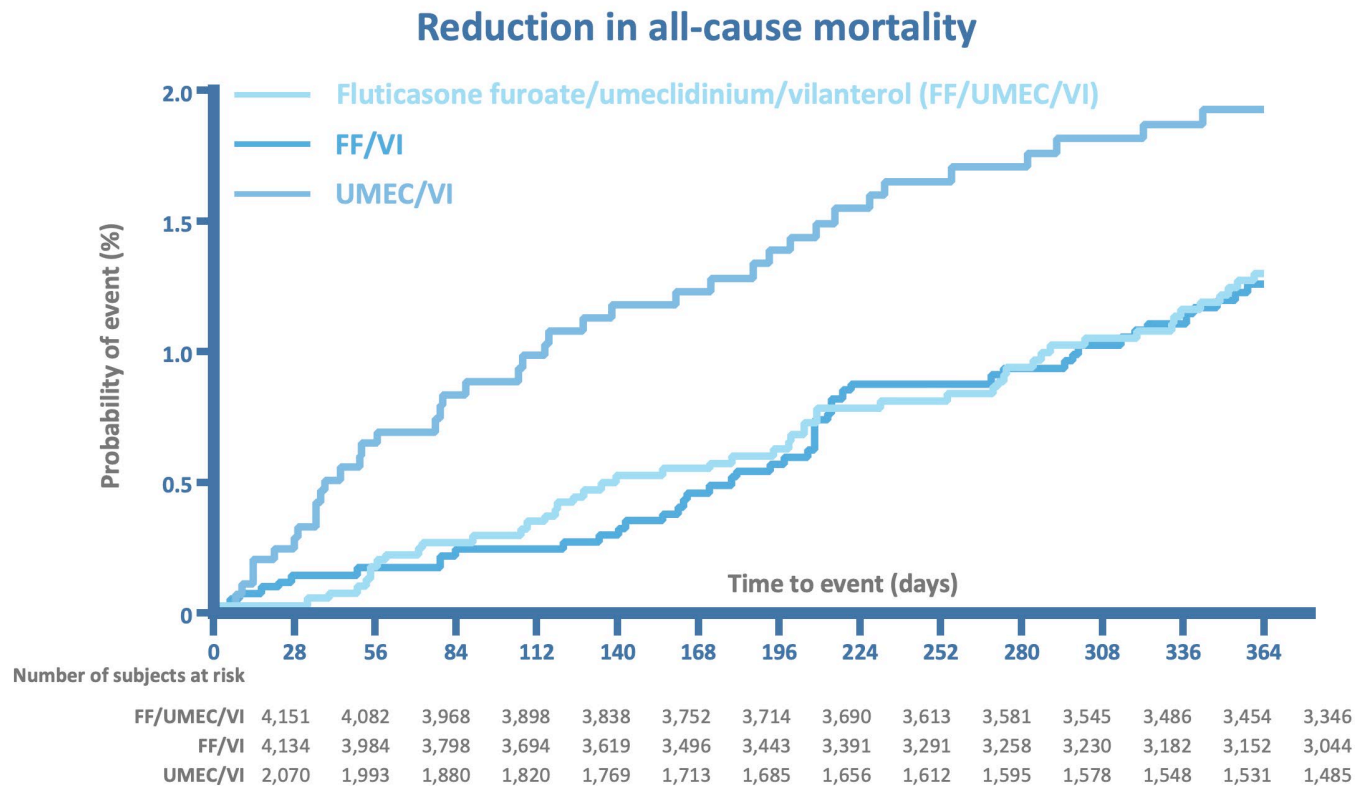


# Guidelines are Very Clear on Role of Triple Therapy

Mild	Moderate and Severe	
CAT <10, mMRC 1	CAT ≥10, mMRC ≥2	
FEV <sub>1</sub> ≥80%	FEV <sub>1</sub> <80%	
Low Symptom Burden <sup>†</sup>	Low AECOPD Risk <sup>††</sup>	High AECOPD Risk <sup>††</sup> (increased risk of mortality)
LAMA or LABA	LAMA/LABA*	LAMA/LABA/ICS** (reduces mortality)
	LAMA/LABA/ICS	LAMA/LABA/ICS + Prophylactic macrolide/ PDE-4 inhibitor/ mucolytic agents <sup>‡</sup>
SABD prn		

- All patients at high risk of COPD exacerbations (≥ 1 severe or ≥ 2 moderate exacerbations in the last year) should have a triple LAMA/LABA/ICS
- Single inhaler triple therapy (SITT), is favoured over multiple inhalers, because of potential increased benefits, increased adherence and reduced chance of errors in inhaler technique

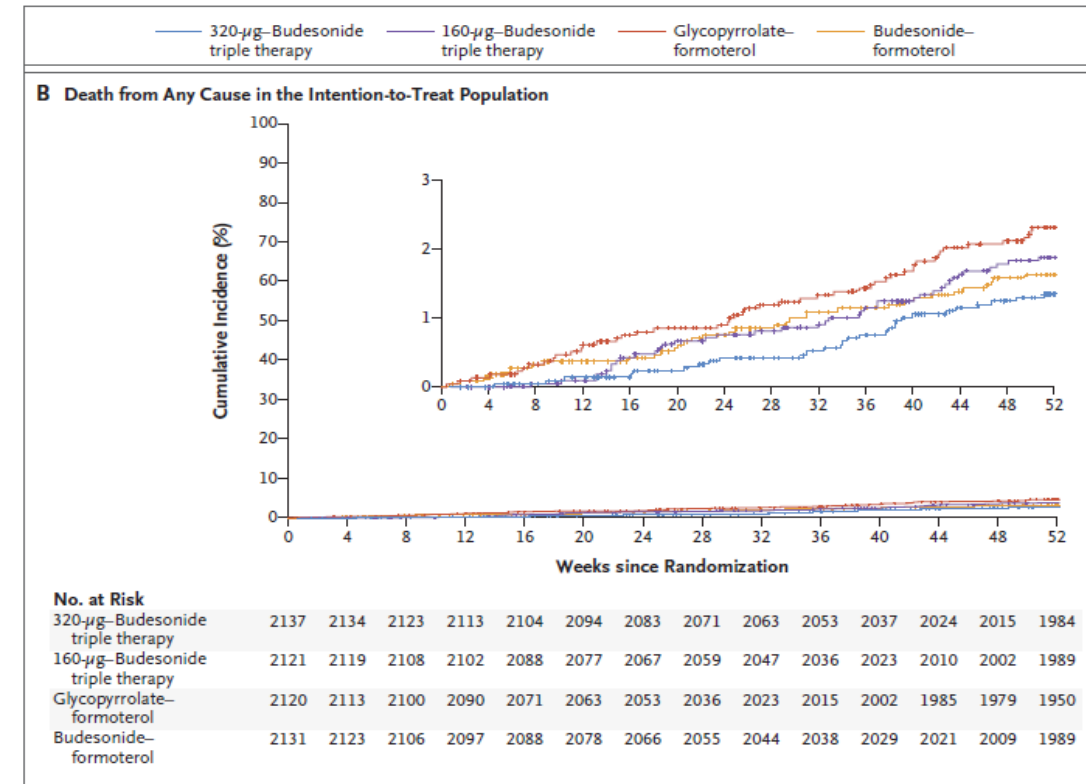
# Triple Therapy Reduces Mortality Risk



- Phase III trial (n=10,355)
- Compared LAMA/LABA/ICS, ICS/LABA, and LAMA/LABA
- Results
  - ↓ Moderate/severe exacerbations, better lung function and QoL vs. both dual therapies
  - ↓ all-cause mortality vs. LAMA/LABA
  - ↑ pneumonia in ICS groups than LAMA/LABA

# Triple Therapy Reduced the Rates of Exacerbation and Deaths

- 52 week phase 3 trial in people with COPD with high exacerbation risk (n=8509)
- Triple therapy(LAMA/LABA/ICS) versus dual therapies
  - LAMA/LABA/ICS – Two doses of budesonide (320 µg and 160 µg) with glycopyrrolate, formoterol
  - LAMA/LABA - glycopyrrolate and formoterol
  - ICS/LABA - 320 µg of budesonide plus formoterol
- Results
  - 24% ↓ of moderate/severe exacerbations with higher dose triple therapy
  - Reduction all cause mortality risk
  - Pneumonia risk 3.5 to 4.5% in the groups that ICS and was 2.3% in LAMA/LABA.



# Benefit-Risk Considerations of LAMA/LABA/ICS

**NNT=4**

With  
LAMA/LABA/ICS  
for 1 year to  
prevent 1  
moderate to  
severe AECOPD  
compared to  
LAMA/LABA

## BENEFIT

Reduction in  
exacerbation risk

Reduction in all-  
cause mortality

## RISK

Increase in  
pneumonia risk

**NNH=33**

With  
LAMA/LABA/ICS  
for 1 year to cause  
1 case of  
pneumonia  
compared to  
LAMA/LABA



# Triple Therapy – Single versus Multiple Inhalers

- INTREPID Study
- Open-label (n=3092)
  - Real-world setting
  - Evaluation of single versus multiple inhalers for triple therapy
  - Triple therapy
- Treatment period: 24 weeks

**Improvement in FEV<sub>1</sub> was significantly greater with single inhaler vs. multiple inhalers (77 mL versus 28 mL; treatment difference 50 mL, 95% CI 26–73 mL; p<0.001)**

**The proportion of patients with a decrease in CAT score of  $\geq 2$  units from baseline was significantly greater in patients receiving the single inhaler (odds ratio [OR] 1.31, 95% CI 1.13–1.51; p < 0.001)**

# Managing Maria

## Patient is at high exacerbation risk:

- Could benefit with LAMA/LABA/ICS
- This could further lower exacerbation risk and improve mortality risk

## Education:

- Let her know exacerbation risk
- Suggest move to triple therapy, ideally with single inhaler
- Pharmacist contacts MD for change to LAMA/LABA/ICS



## BACKGROUND

- 63 years old
- Ex-smoker (1 pack per day – 40 pack year history)
- COPD X 20 years

## MEDICATIONS

- Tiotropium/olodaterol 5/5 mcg once daily
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## DISCUSSION

- She presents today with a prescription for prednisone and azithromycin for COPD exacerbation
- She had a previous exacerbation 4 months ago requiring antibiotics
- She mentions this flare-up was not as bad as last time 4 months ago



# Key Learning Points

1. Reducing the risk of exacerbations is a fundamental goal to COPD management.
2. Any patient with 2 or more moderate exacerbations or 1 or more severe exacerbations in the last year may require adjustment to reduce exacerbation risk.
3. LAMA/LABA/ICS can lower the risk of exacerbations and mortality in patients with high risk of COPD exacerbations.
4. Triple therapy, preferably as a single inhaler, can further reduced exacerbation risk in patients who are still having exacerbations with LAMA/LABA.