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Adherence to Guideline Recommended Treatment of COPD in Discharged Patients Following an Acute Exacerbation.

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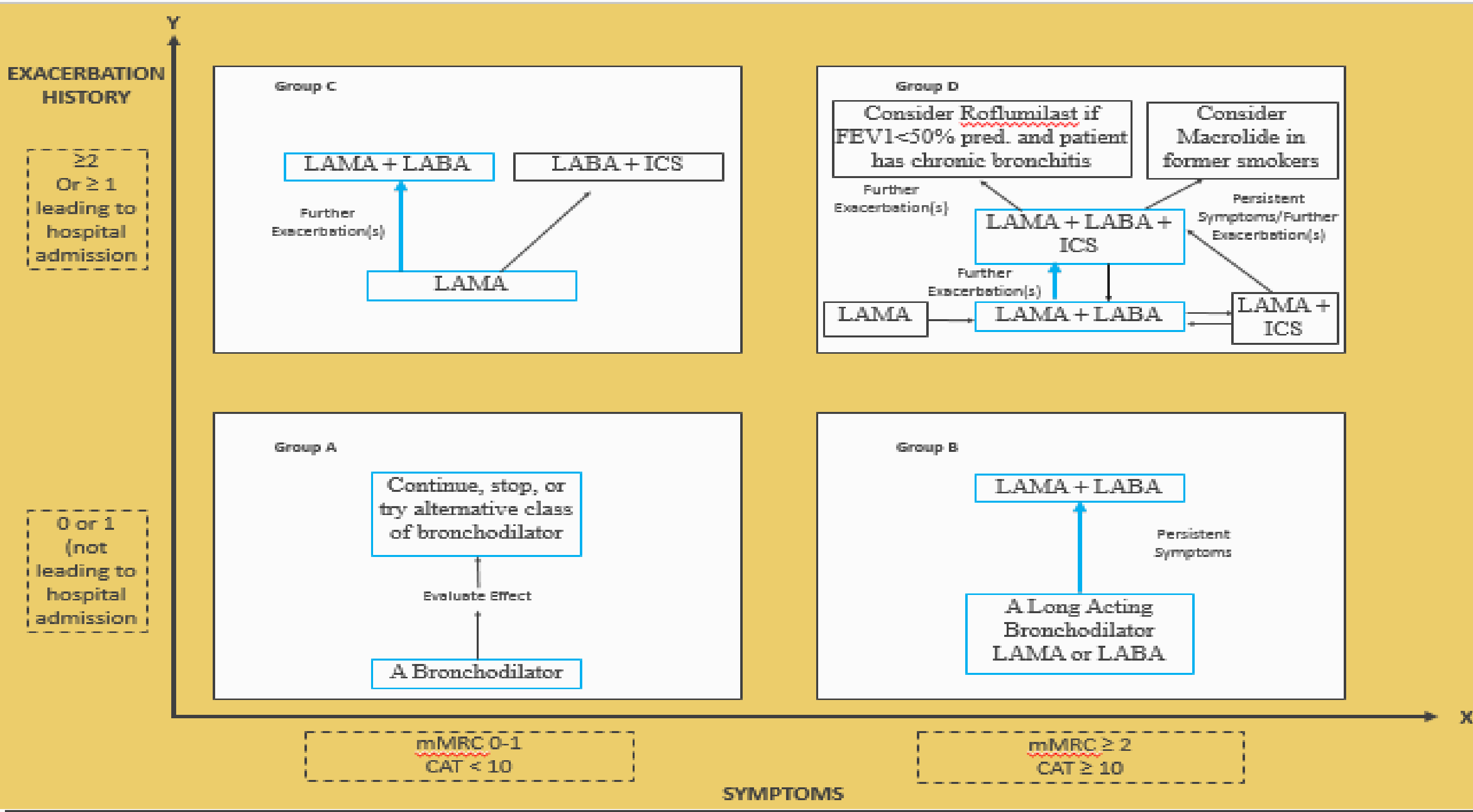


BACKGROUND AND OBJECTIVE

Chronic obstructive pulmonary disease (COPD) is the third leading cause of death in the United States, affecting more than 10 million Americans. Worldwide COPD is a disease of increasing public health importance as estimates suggest that COPD will rise from the fourth to the third most common cause of death by 2020.¹ Increased exposure to risk factors and an aging population will attribute to even more patients with COPD.² Adherence to guideline-recommended treatment regimens may decrease healthcare costs and improve patient outcomes.

According to the GOLD guidelines, COPD pharmacotherapy recommendations are derived from the “ABCD” assessment tool, which takes into consideration a patient’s symptoms and their history of exacerbations (including prior hospitalizations). Symptom assessment is completed using either the Modified British Medical Research Council (mMRC) Questionnaire or the COPD Assessment Test (CAT). This is a change from the diagnostic criteria outlined in the 2010 NICE COPD Guidelines which recommend diagnosing stages of COPD based on stable-state forced expiratory volume in 1 second (FEV1). The 2017 GOLD Guidelines also place dual bronchodilators earlier than inhaled corticosteroids (ICS) in the stepwise progression of therapy based on symptoms (COPD assessment tool score) and rates of exacerbations. These changes were primarily made based on a few breakthrough studies including the FLAME and LANTERN trials which showed decreased exacerbations, improved quality of life measures, and decreased rates of pneumonia in patients on dual bronchodilators compared to LABA/ICS combinations.³ With these recent changes to the guidelines, it is necessary to evaluate the appropriateness of treatment regimens for patients with a diagnosis of COPD.

The purpose of this study was to determine how hospitalizations for COPD exacerbation influence changes to maintenance inhaler therapy and adherence to practice guideline recommendations.



DESIGN AND METHODS

The Parkview Health institutional review board approved this retrospective chart review study. Demographic data was collected from the electronic medical record (EMR) on patients admitted to Parkview Hospital with a primary diagnosis of COPD exacerbation from March 2017 to March 2018. Adult patients, 18 years or older, with an admission diagnosis of COPD exacerbation were included in this study. Patients were excluded if they had asthma in addition to COPD or were receiving chronic oral steroid treatment at baseline. Baseline characteristics collected included age, gender, BMI, smoking history (pack year), current smoking status, COPD medication names, COPD exacerbation history (number of exacerbation requiring hospitalization in the 12 months prior to index admission), and pneumonia diagnosis within 6 months of admission.

Baseline Characteristics	
	Total Population (n=75)
Age, median (IQR)	68.1 (58.5 – 77.8)
Female, n (%)	36 (48.0%)
Currently Smoke, n (%)	23 (30.7%)
Pack Year History, median (IQR)	36 (27.8 – 50.0)
Req. Mechanical Ventilation, n (%)	7 (9.3%)
FEV1%, mean (SD)	46% (14.6%)
Baseline Inhaler Use	
LABA/LAMA, n (%)	6 (8.0%)
LABA/ICS, n (%)	11 (14.7%)
LABA/LAMA/ICS, n (%)	10 (13.3%)
No Maintenance Inhaler Use, n (%)	43 (57.3%)

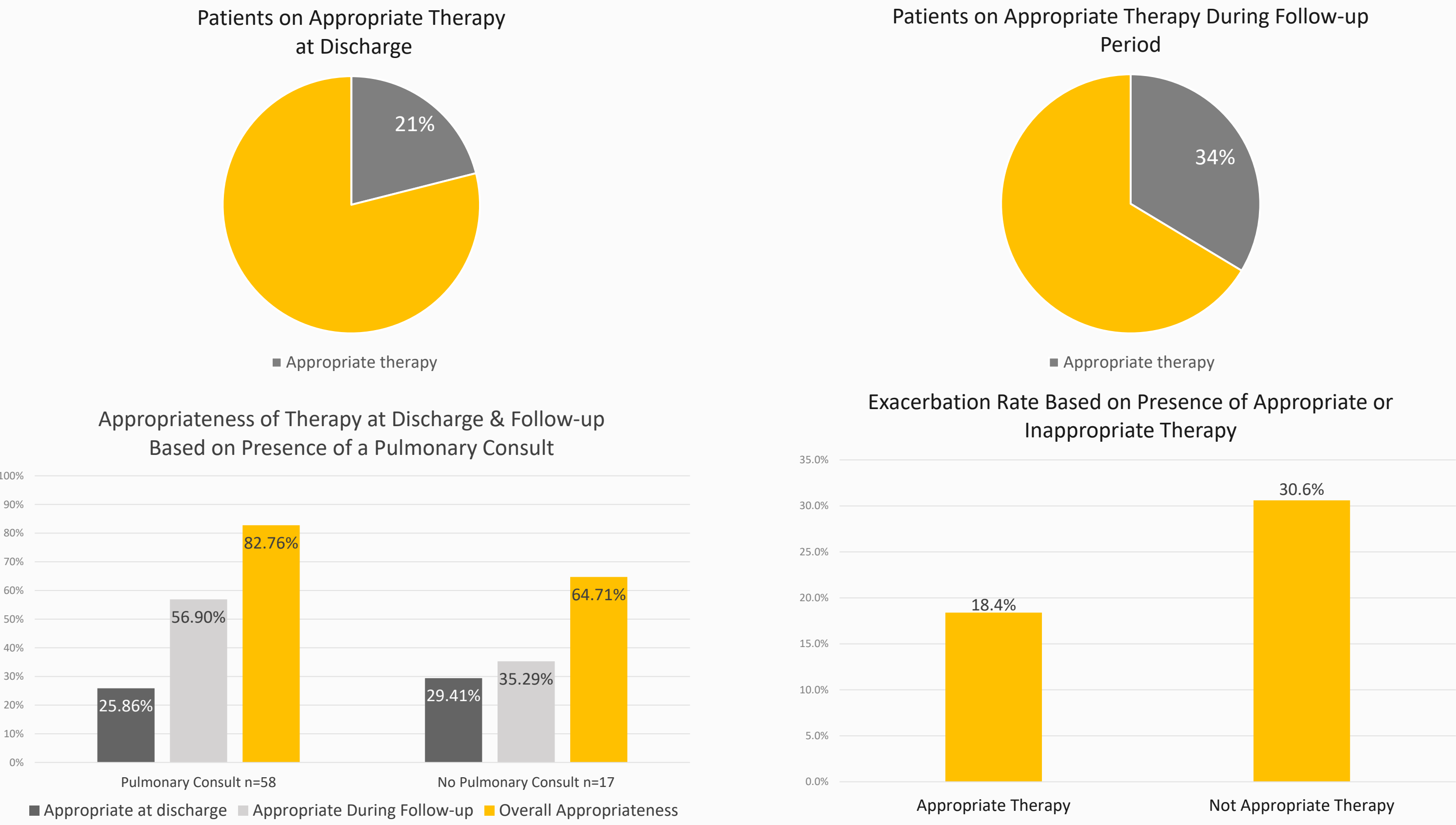
The primary outcome was the appropriateness of maintenance inhaler therapy at hospital discharge and at the first follow-up appointment considering guideline recommendations. The secondary outcome was hospital readmission rates within 6 months of the initial COPD exacerbation. The following table was used to define appropriateness:

Medication Therapy at Hospital Admission	Appropriate Medication at Discharge/Follow-Up
None	LABA, LABA+LABA
LABA	LABA+LABA
LABA+LABA	LABA+LABA+ICS
LABA+ICS	LABA+LABA+ICS
LABA+LABA+ICS	LABA+LABA+ICS (optimized dosing)

A COPD exacerbation in the 6-month follow-up period included any hospitalization in which the primary diagnosis was COPD exacerbation or any outpatient receipt of oral corticosteroid therapy for COPD exacerbation. The time to COPD exacerbation was also collected. Descriptive statistics were used to describe the appropriateness of therapy at hospital discharge and in the 6-month follow-up period.

RESULTS

We evaluated 75 hospitalized patients, of which 23 (30%) were current smokers upon admission. Maintenance inhaler therapy was deemed appropriate in 20 patients (26.7%) at hospital discharge and in 38 patients (50.7%) within a 3-month follow-up period. Therapy was appropriate within a 3-month follow-up period in 56.9% of patients with a pulmonary consult and in 37.5% of patients without a pulmonary consult. Among patients who experienced a COPD exacerbation, 7 of 18 patients (38.9%) were receiving appropriate therapy within 3 months of discharge while 32 of 56 patients (57.1%) without a COPD exacerbation were receiving appropriate therapy within 3 months.



DISCUSSION

- Hospitalization for COPD exacerbation may provide opportunities for pharmacists to help ensure patients receive appropriate therapy.
- Quality transitions of care is needed in this population as they are at a high risk of readmission.
- Further studies should investigate whether patients with different disease severity are at different risks for exacerbation based on how therapy is adjusted following COPD exacerbation
- A larger cohort of patients would be needed to determine if therapy adjustment around the time of COPD exacerbation is associated with a higher number of subsequent exacerbations leading to exacerbation.

CONCLUSION

In patients admitted for a COPD exacerbation, maintenance inhaler therapy is infrequently modified upon discharge and is modified in less than half of patients within a 3-month follow-up period. Patients not on appropriate therapy are more likely to experience another COPD exacerbation within 6 months.

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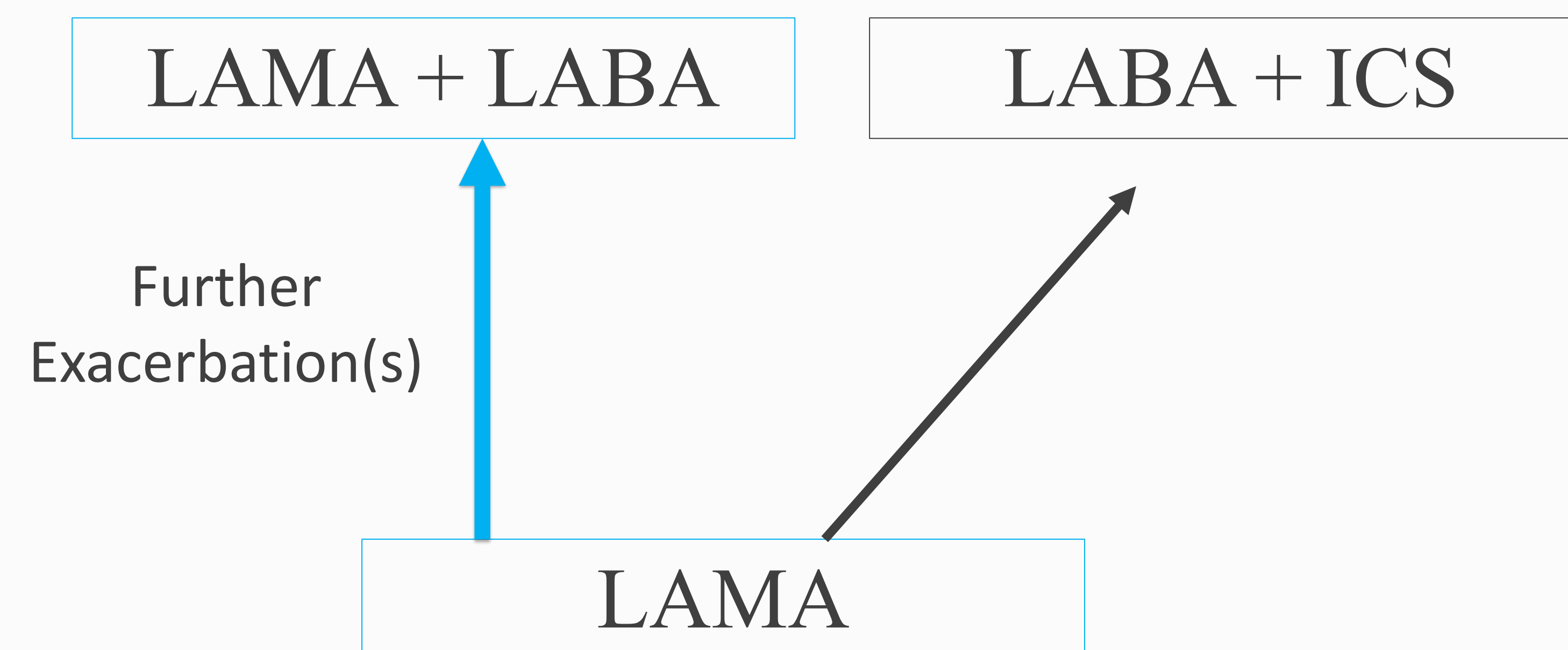
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**EXACERBATION
HISTORY**

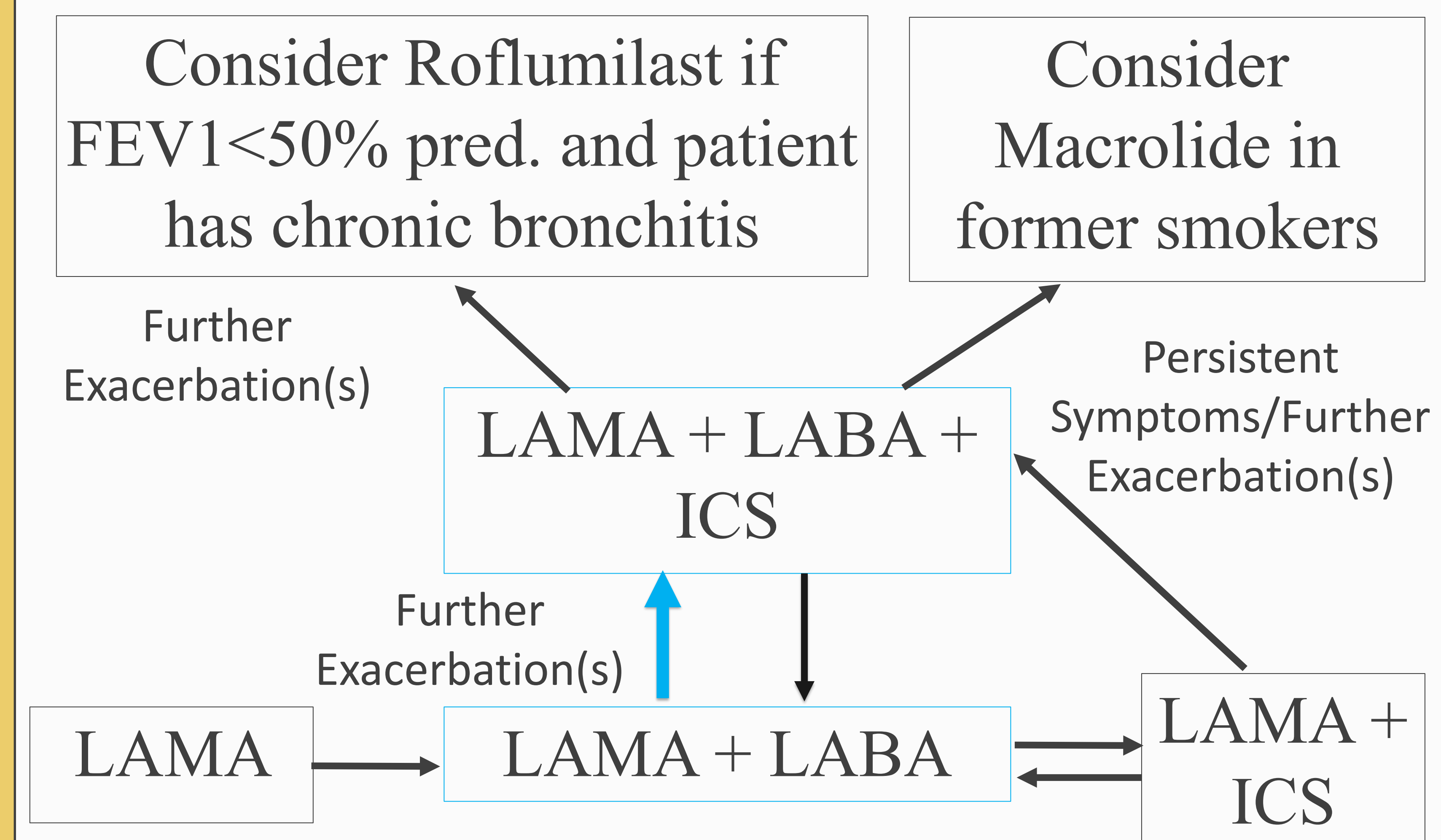
≥2
Or ≥ 1
leading to
hospital
admission

0 or 1
(not
leading to
hospital
admission)

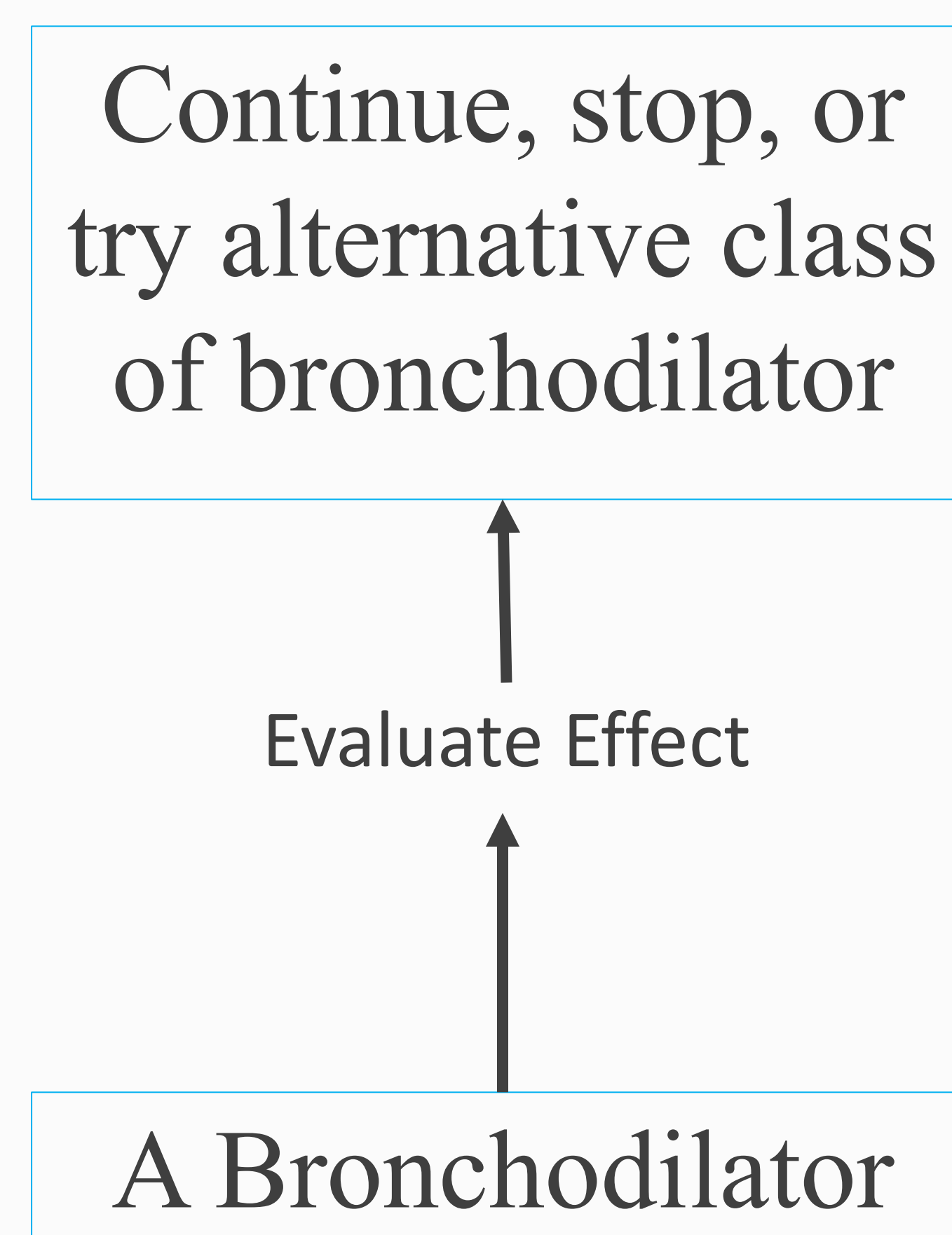
Group C



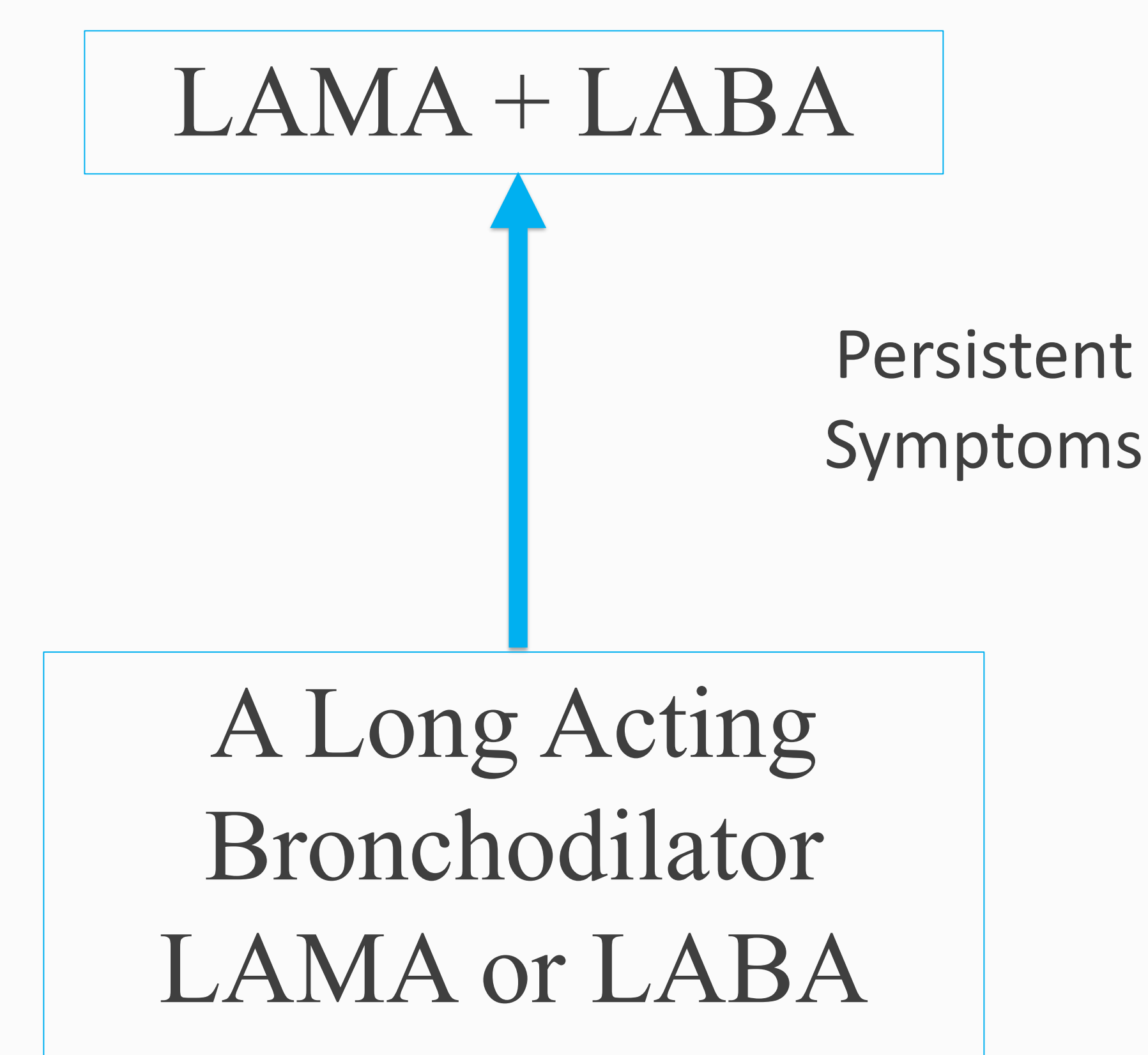
Group D



Group A



Group B



mMRC 0-1
CAT < 10

mMRC ≥ 2
CAT ≥ 10

SYMPTOMS