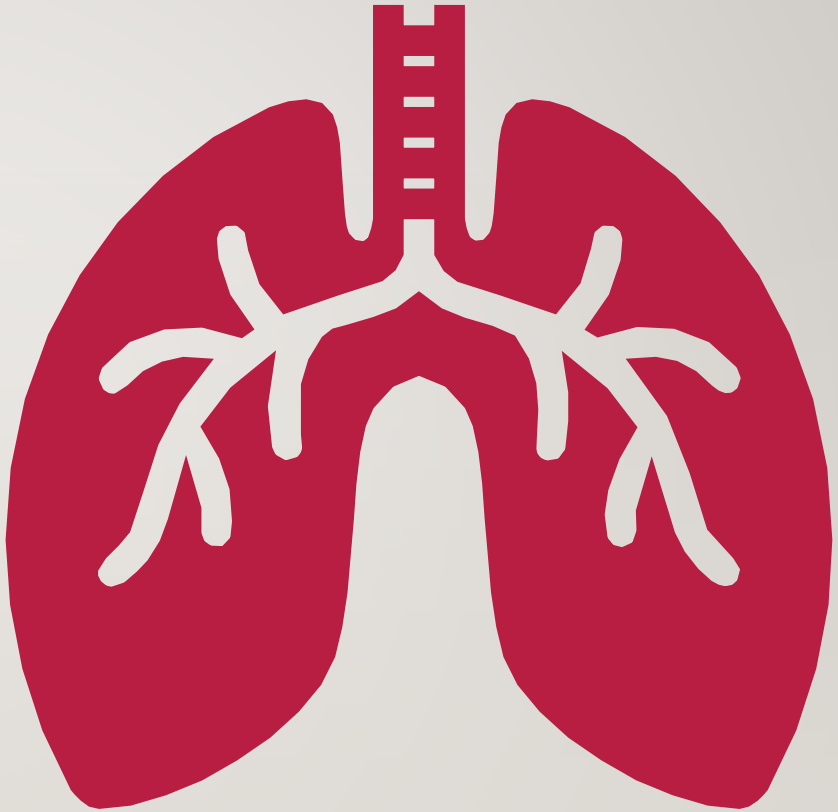
COPD AND ASTHMA AN UPDATE



DONNY WONG

RESPIRATORY PHYSICIAN

1ST FEBRUARY 2020

OUTLINE

COPD

- Definition and importance
- Ever changing guidelines, a brief sojourn
  2015➔2017➔2019➔2020

Asthma

- GINA 2019 guidelines the focus on mild asthma and SMART

GOLD (Global Initiative for Chronic Obstructive Lung Disease) COPD definition:

- 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.

Mechanisms Underlying Airflow Limitation in COPD

Small Airways Disease

- Airway inflammation
- Airway fibrosis, luminal plugs
- Increased airway resistance

Parenchymal Destruction

- Loss of alveolar attachments
- Decrease of elastic recoil

AIRFLOW LIMITATION

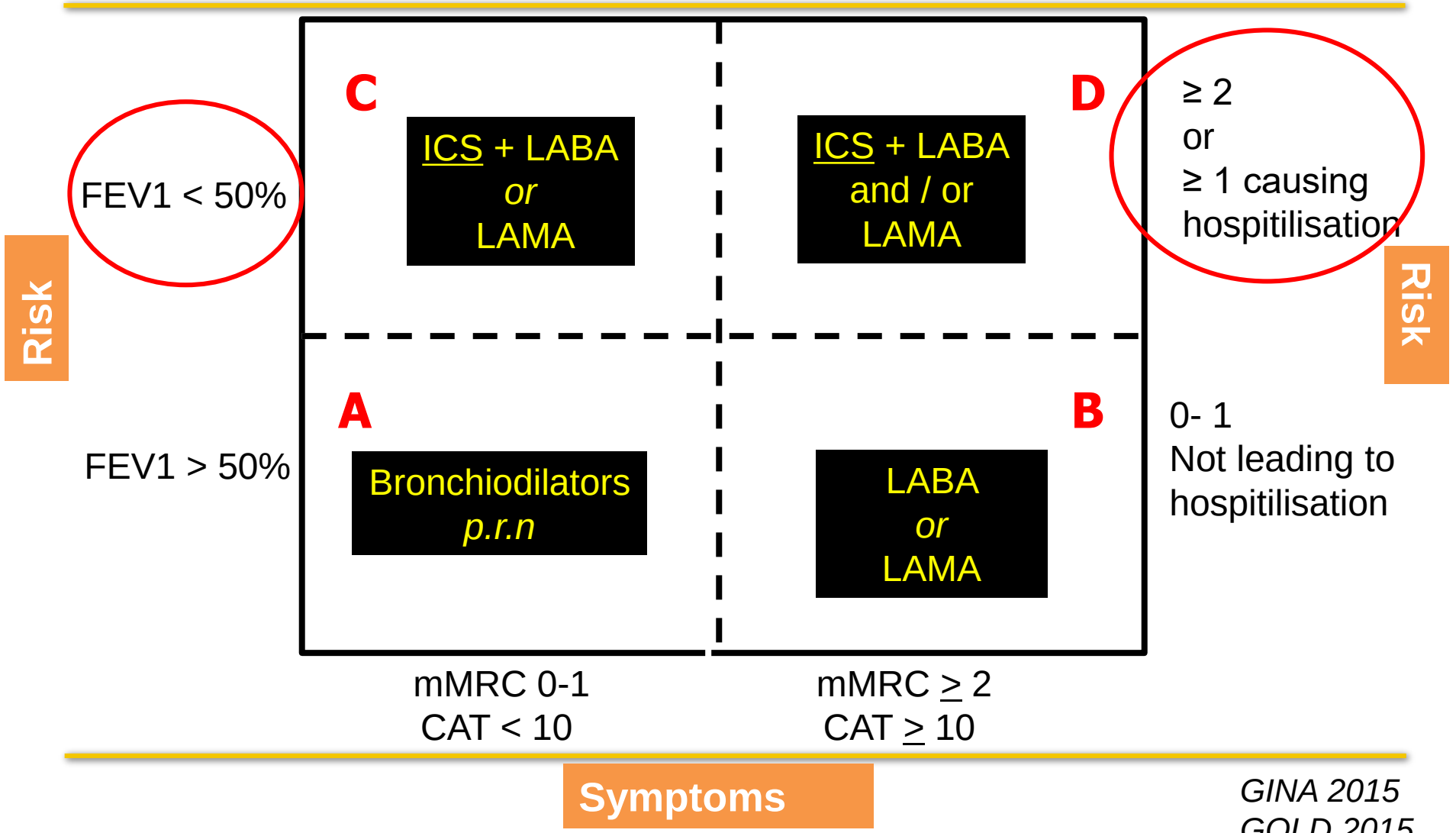
COPD: FACTS

- > 3 million people died of COPD in 2012 ➔ 6% of all deaths globally.

- Fourth leading cause of death of world in 2012

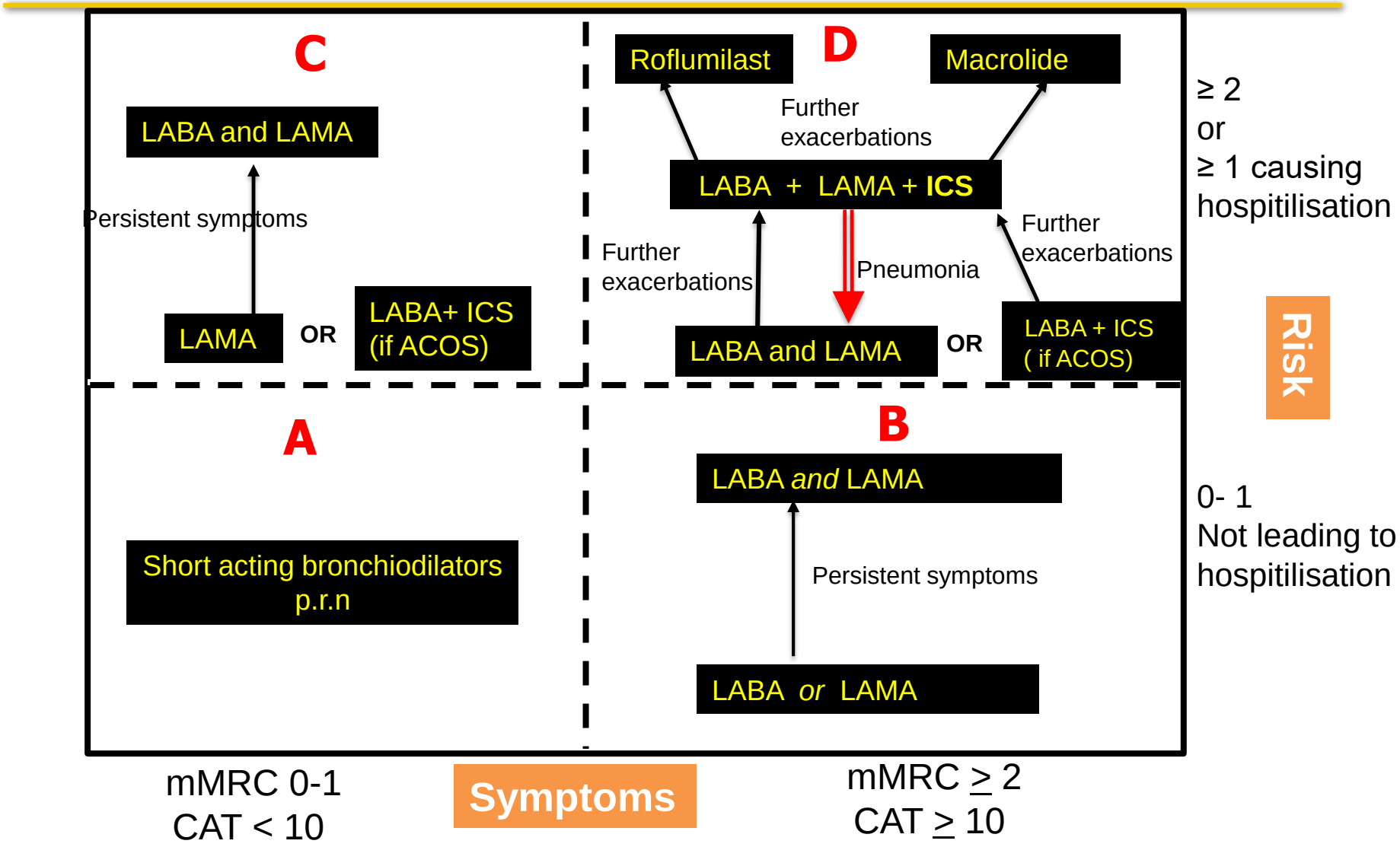
  ➔ 3rd leading cause of death by 2020.

What was in 2015



GINA 2015
GOLD 2015

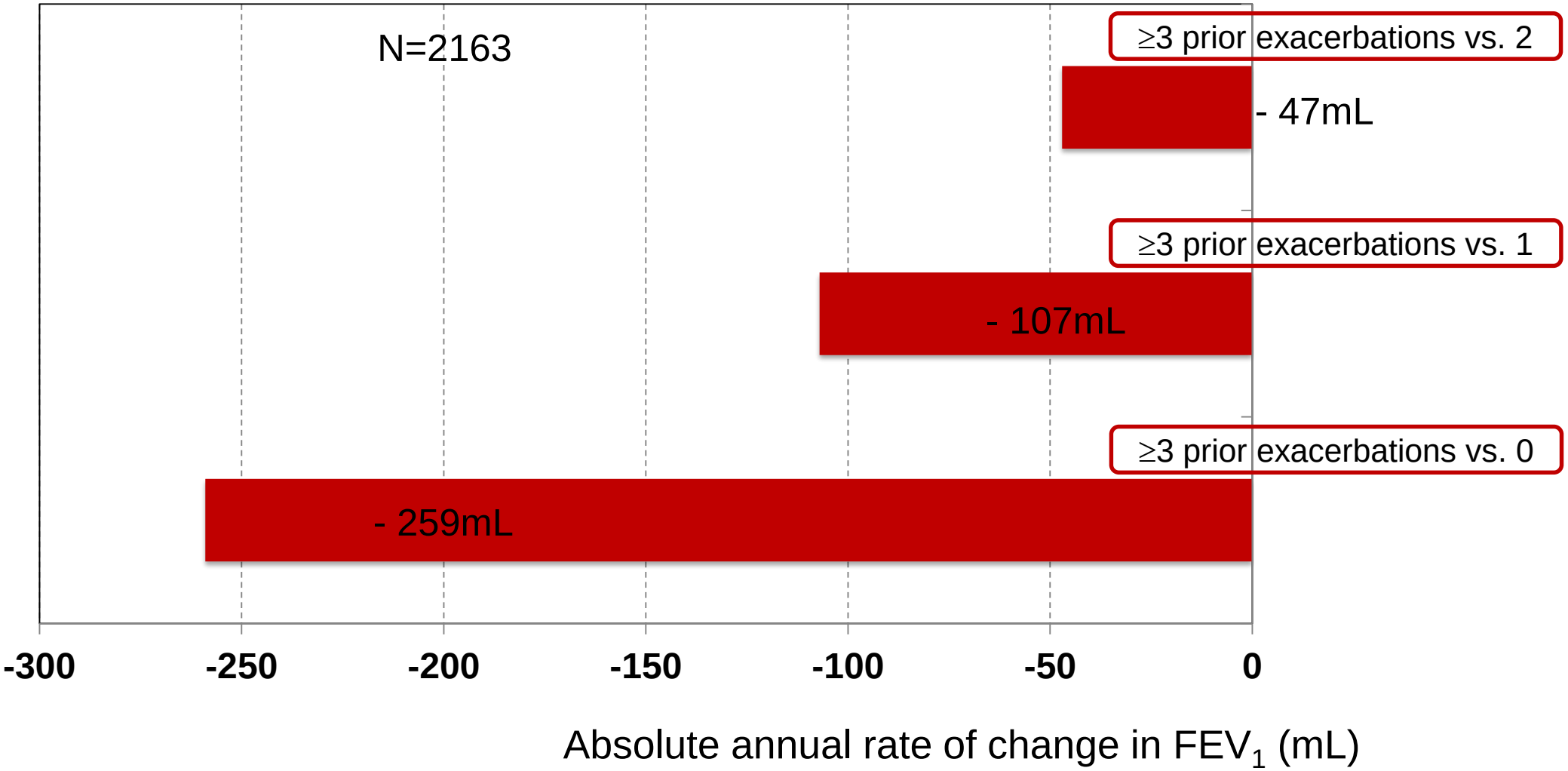
What was in 2017



ASSESSMENT OF COPD

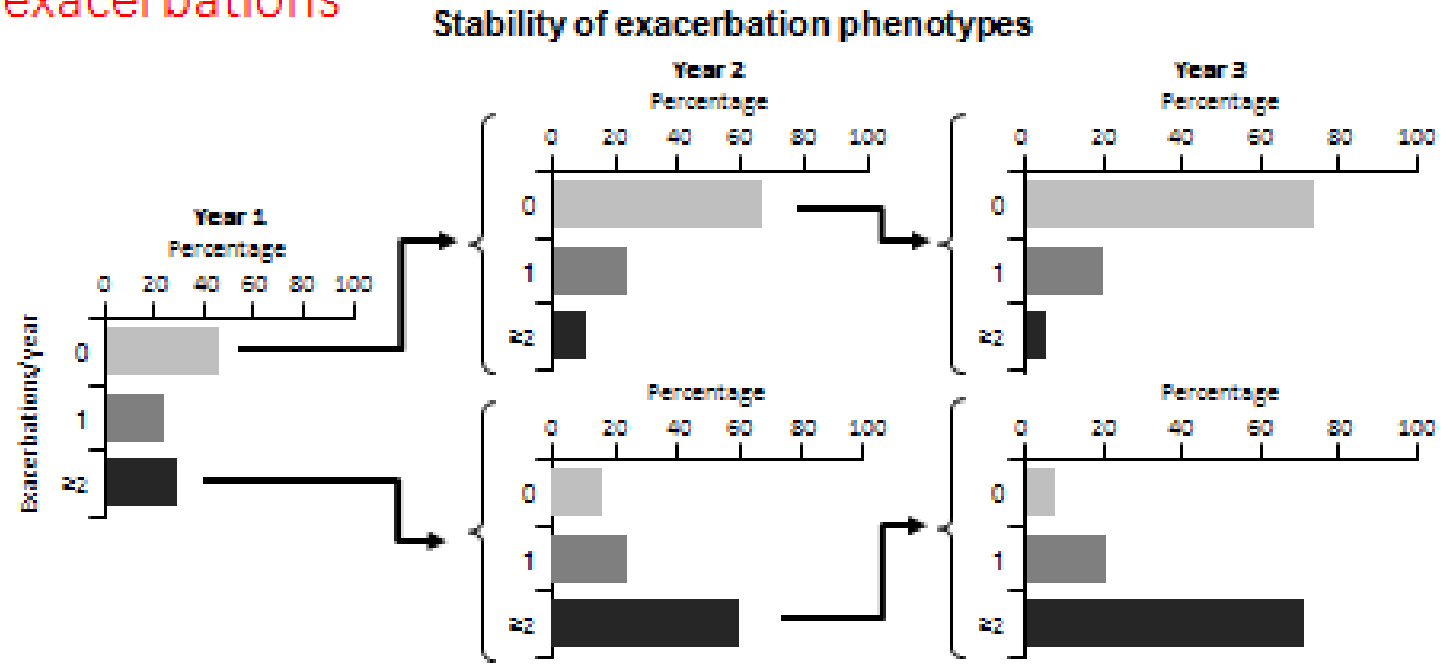
- Exacerbations
- Symptoms

Decline in FEV1 related to exacerbation frequency



Vestbo et al. Thorax 2012; 67: 957-63

There are 'frequent exacerbator' and 'non exacerbator' stable phenotypes[1], a history of frequent exacerbations is the best predictor of future exacerbations[2]



[1]Hurst JR et al. N Engl J Med 2010;363:1128-1138;
[2]Wedzicha JA et al. Eur Respir J 2012;40:1545–1554

THE REFINED ABCD ASSESSMENT TOOL

Spirometrically Confirmed Diagnosis

Post-bronchodilator $FEV_1/FVC < 0.7$

Assessment of airflow limitation

Grade	FEV_1 (% predicted)
GOLD 1	≥ 80
GOLD 2	50-79
GOLD 3	30-49
GOLD 4	< 30

Assessment of symptoms/risk of exacerbations

Moderate or Severe Exacerbation History

≥2 or ≥ 1 leading to hospital admission

0 or 1 (not leading to hospital admission)

C	D
A	B

mMRC 0-1 CAT < 10 | mMRC ≥ 2 CAT ≥ 10

Symptoms

FIGURE 2.4

INITIAL PHARMACOLOGICAL TREATMENT

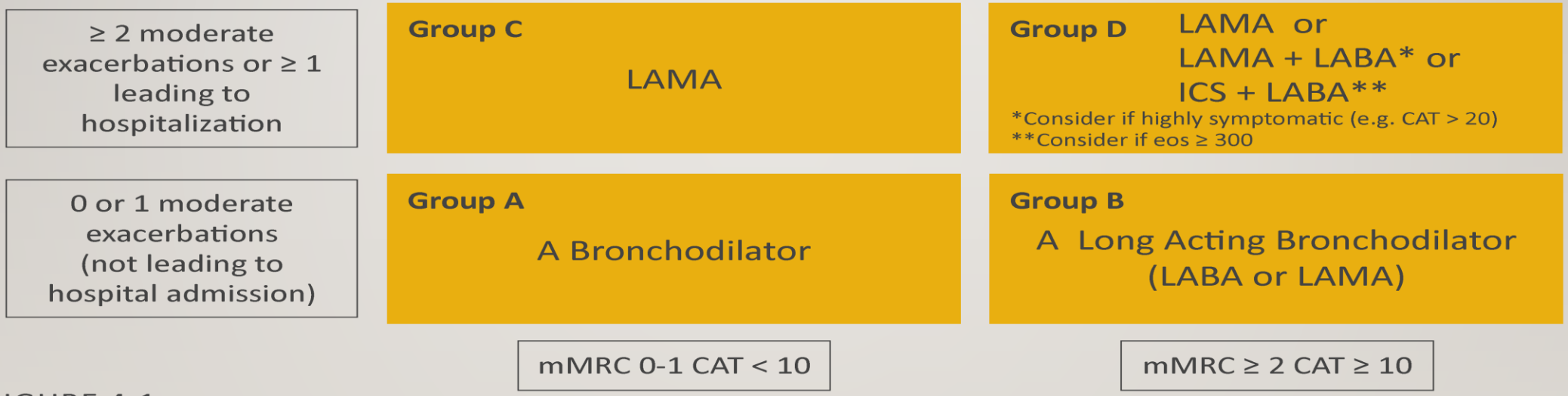


FIGURE 4.1

Definition of abbreviations: eos: blood eosinophil count in cells per microliter; mMRC: modified Medical Research Council dyspnea questionnaire; CAT™: COPD Assessment Test™.

- Following implementation of therapy, patients should be reassessed for attainment of treatment goals and identification of any barriers for successful treatment (**Figure 4.2**).
- Following review of the patient response to treatment initiation, adjustments in pharmacological treatment may be needed.

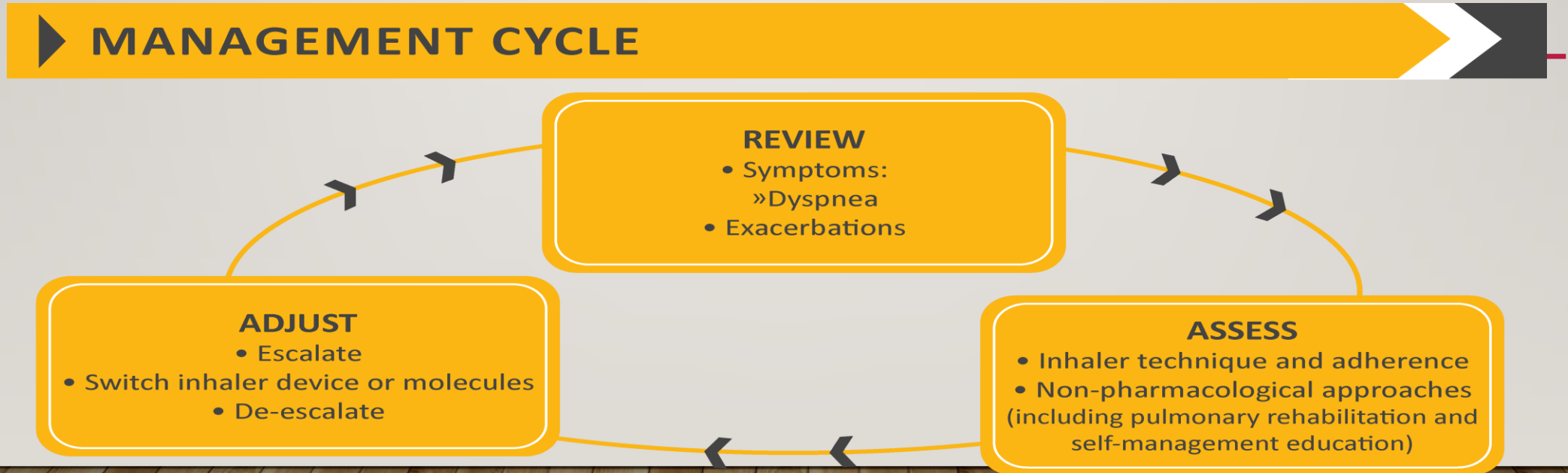
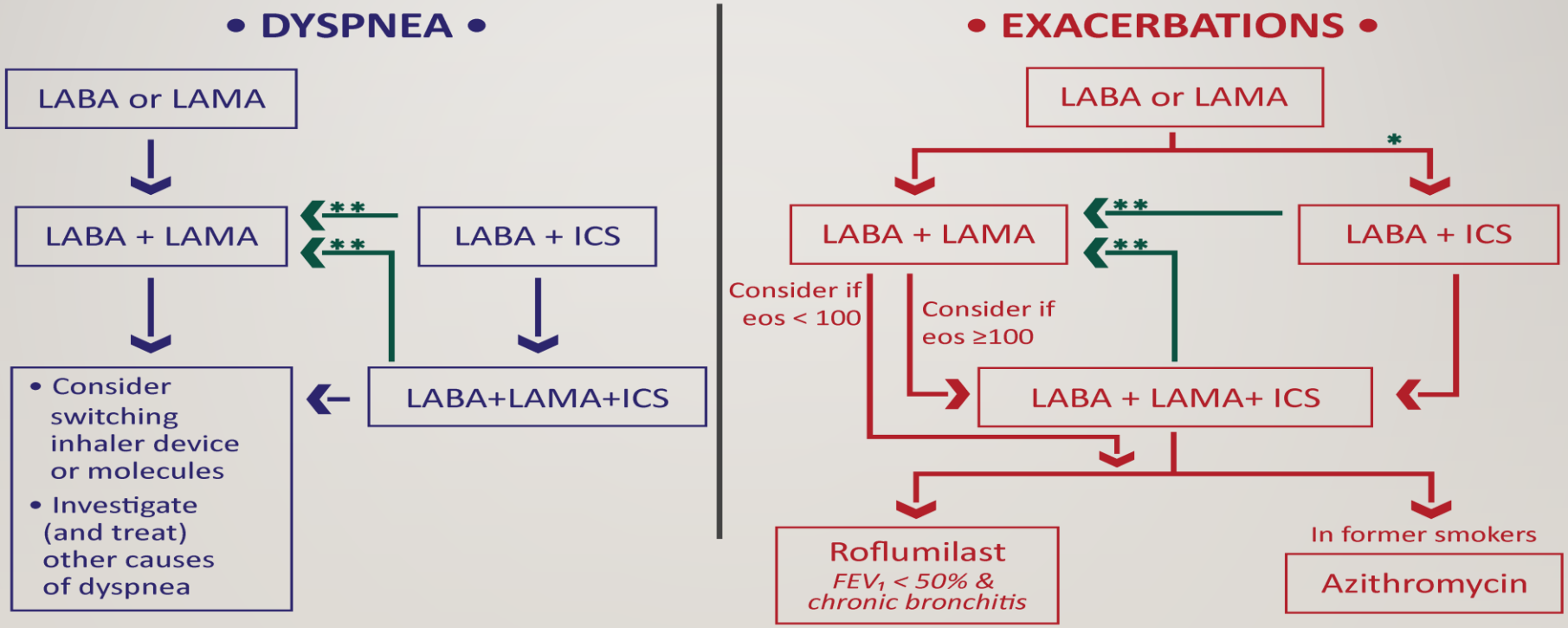


FIGURE 4.2

FOLLOW-UP PHARMACOLOGICAL TREATMENT

1. **IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.**
2. **IF NOT:**
   - ✓ Consider the predominant treatable trait to target (dyspnea or exacerbations)
     - Use exacerbation pathway if both exacerbations and dyspnea need to be targeted
   - ✓ Place patient in box corresponding to current treatment & follow indications
   - ✓ Assess response, adjust and review
   - ✓ These recommendations do not depend on the ABCD assessment at diagnosis



eos = blood eosinophil count (cells/µL)
** Consider if eos ≥ 300 or eos ≥ 100 AND ≥2 moderate exacerbations / 1 hospitalization*
*** Consider de-escalation of ICS or switch if pneumonia, inappropriate original indication or lack of response to ICS*

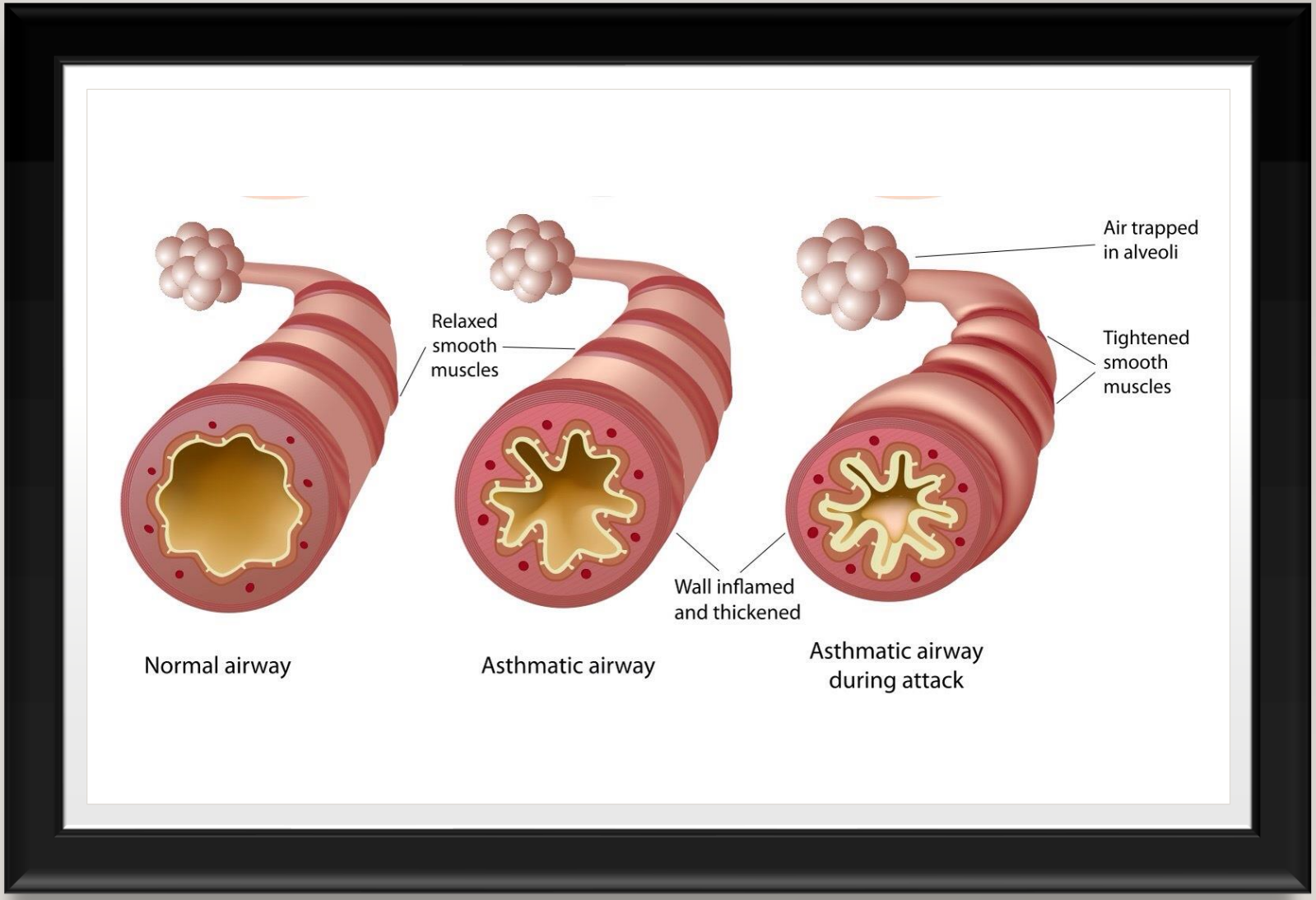
FIGURE 4.3

GINA (GLOBAL INITIATIVE FOR ASTHMA) DEFINITION

Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.

ASTHMA


Relaxed smooth muscles
Air trapped in alveoli
Tightened smooth muscles
Wall inflamed and thickened
Normal airway
Asthmatic airway
Asthmatic airway during attack

ASTHMA CONTROL

- Daytime asthma symptoms more than twice a week?
- Any night waking due to asthma?
- Reliever needed for symptoms more than twice a week?
- Any activity limitation due to asthma?

WHY CHANGES IN 2019 - THE RISKS OF 'MILD' ASTHMA

- Even mild asthma are at risk of serious adverse events
  - 30–37% of adults with acute asthma
  - 16% of patients with near-fatal asthma
  - 15–20% of adults dying of asthma

} had symptoms less than weekly in previous 3 months *(Dusser, Allergy 2007)*

- Exacerbation triggers (viruses, pollens, pollution, poor adherence)

- Inhaled SABA has been first-line treatment for asthma for 50 years

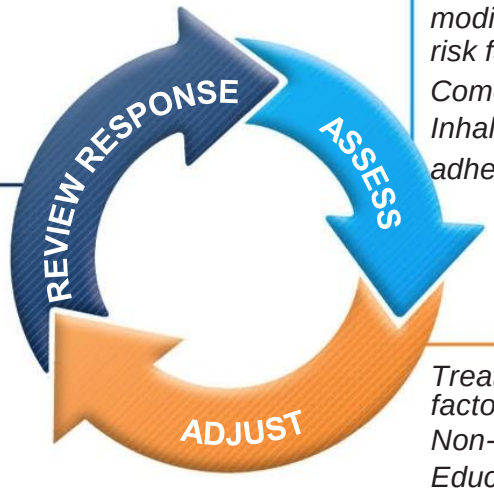
THE RISKS OF SABA-ONLY TREATMENT

- Regular or frequent use of SABA is associated with adverse effects
  - β-receptor downregulation, decreased bronchoprotection, rebound hyperresponsiveness, decreased bronchodilator response *(Hancox, Respir Med 2000)*
  - Increased allergic response, and increased eosinophilic airway inflammation *(Aldridge, AJRCCM 2000)*
- Higher use of SABA is associated with adverse clinical outcomes
  - Dispensing of ≥3 canisters per year (average 1.7 puffs/day) is associated with higher risk of emergency department presentations *(Stanford, AAAI 2012)*
  - Dispensing of ≥12 canisters per year is associated with higher risk of death *(Suissa, AJRCCM 1994)*

Box 3-5A

Adults & adolescents 12+ years

Personalized asthma management:
Assess, Adjust, Review response



Confirmation of diagnosis if necessary Symptom control & modifiable risk factors (including lung function) Comorbidities Inhaler technique & adherence Patient goals

Symptoms Exacerbations Side-effects Lung function Patient satisfaction

Treatment of modifiable risk factors & comorbidities Non-pharmacological strategies Education & skills training Asthma medications

Asthma medication options:
Adjust treatment up and down for individual patient needs

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
PREFERRED CONTROLLER to prevent exacerbations and control symptoms	As-needed low dose ICS-formoterol *	Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol *	Low dose ICS-LABA	Medium dose ICS-LABA	High dose ICS-LABA Refer for phenotypic assessment ± add-on therapy, e.g.tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R
Other controller options	*Low dose ICS taken whenever SABA is taken †*	*Leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken †*	*Medium dose ICS, or low dose ICS+LTRA #*	*High dose ICS, add-on tiotropium, or add-on LTRA #*	*Add low dose OCS, but consider side-effects*
PREFERRED RELIEVER	As-needed low dose ICS-formoterol *		As-needed low dose ICS-formoterol ‡		
Other reliever option	*As-needed short-acting β_2 -agonist (SABA)*				

* Off-label; data only with budesonide-formoterol (bud-form)
† Off-label; separate or combination ICS and SABA inhalers
‡ Low-dose ICS-form is the reliever for patients prescribed bud-form or BDP-form maintenance and reliever therapy
# Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV >70% predicted

KEY MESSAGES

COPD

- Spirometry only for diagnosis
- LAMA is best
- ICS for esonophlis and avoid in pneumonia

ASTHMA

- Even mild asthma deserves ICS can use SMART

Questions?

GINA Global Strategy for Asthma Management and Prevention

GOLD Global Strategy for Diagnosis, Management and Prevention of COPD