

# SHORT ACTING BETA AGONISTS

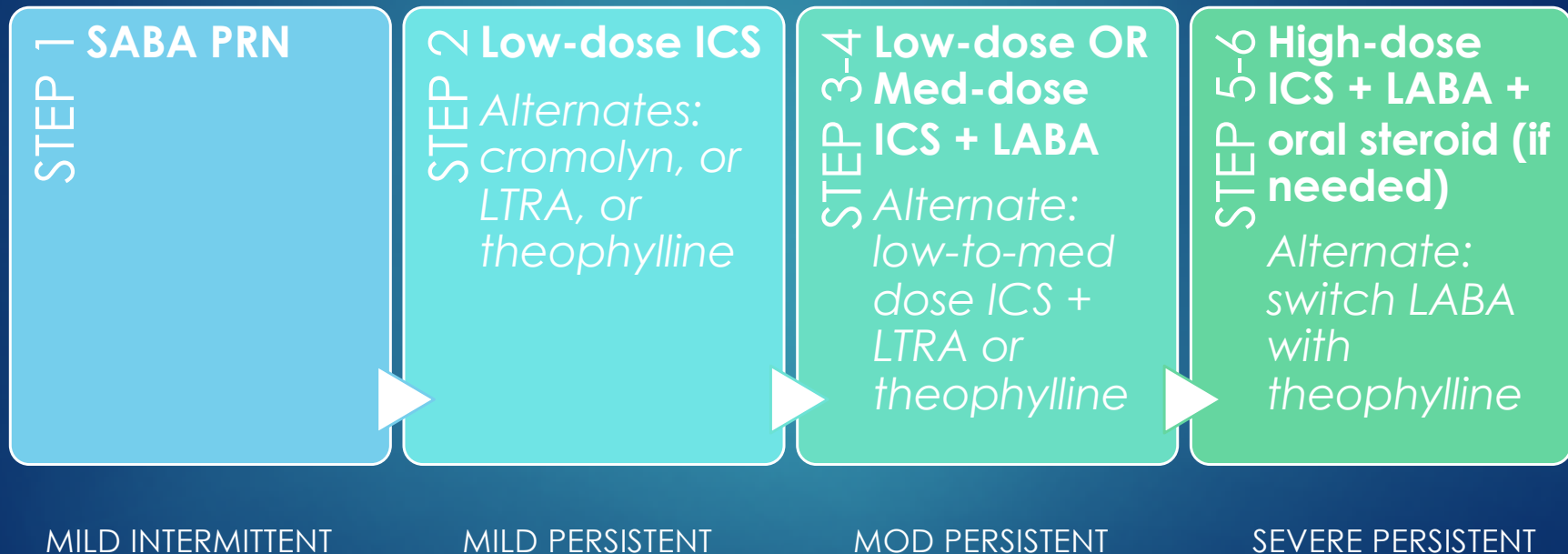
FLAME LECTURE: 27

GIANG 8.17.19

# LEARNING OBJECTIVES

- ▶ To describe the mechanism of action of Short Acting Beta 2 Agonists (“SABAs”)
- ▶ To counsel the patient regarding the benefits, risks, and uses for SABAs
- ▶ Prerequisites:
  - ▶ FLAME 26: Overview of Asthma Treatment
- ▶ See also – for closely related topics
  - ▶ FLAME 18: SABAs in COPD

# REVIEW OF MAINTENANCE MGMT

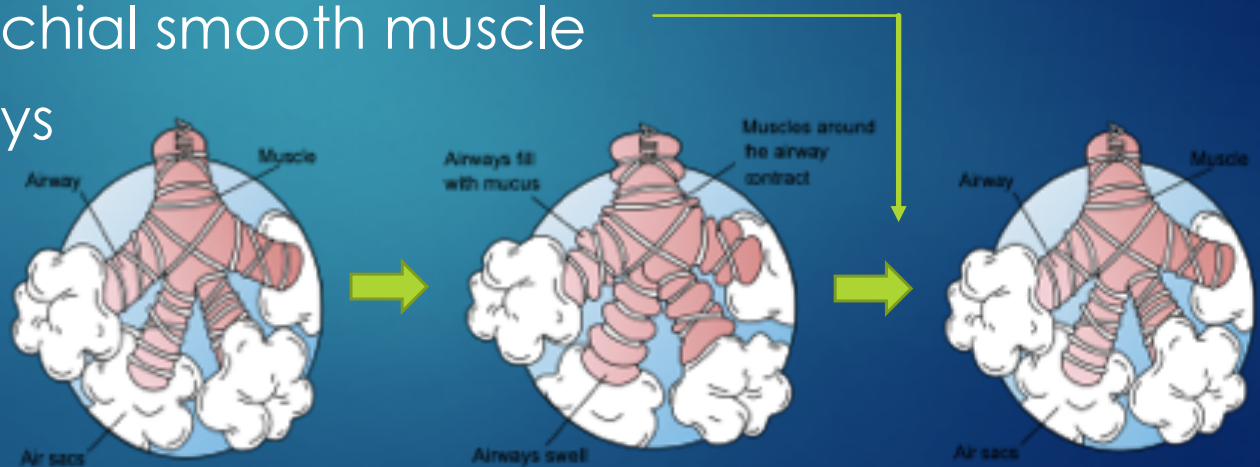


# OVERVIEW

- ▶ We are going to review STEP 1 in this FLAME
- ▶ Common agents include: Albuterol (AccuNeb, Proair HFA, Proventil HFA, Ventolin HFA), Levalbuterol (Xopenex HFA), Metaproterenol, Pirbuterol (Maxair)
- ▶ Can act within minutes to relieve symptoms
- ▶ Action can persist for ~3–4 hours
- ▶ Preferred route is through inhalation
- ▶ If needed more than occasionally, long acting medications may be indicated (See treatment overview)

# MECHANISM OF ACTION

- ▶ Stimulates Beta<sub>2</sub> Adrenergic Receptors by stimulation of adenylyl cyclase → catalyzes cyclic AMP from ATP with cAMP mediating the cellular response
  - ▶ Relaxes bronchial smooth muscle
  - ▶ Dilates airways



# INDICATION / BENEFITS

- ▶ Approved for use for patients with:
  - ▶ Acute asthma exacerbation
  - ▶ Mild intermittent asthma
  - ▶ And for prevention of exercise induced asthma
- ▶ Fast onset
- ▶ Generally tolerable - relatively mild side effect profile, especially when inhaled

# ADVERSE EFFECTS

- ▶ Most common = cardiac effects (through  $B_1$  receptor)
  - ▶ Increases heart rate, nervousness, trembling
  - ▶ Side effects are reduced when medication is inhaled versus other delivery
  - ▶ Side effects usually decrease with repeated use
- ▶ Hypokalemia
- ▶ Hypotension or Hypertension

# PRECAUTIONS

- ▶ Contraindicated in with history of albuterol hypersensitivity
- ▶ Important interactions:
  - ▶ Use caution with concomitant use of MAOs or Tricyclic antidepressants due to increased vascular effects
  - ▶ Avoid use with epinephrine or other sympathomimetic bronchodilators or stimulants due to increased cardiac effects
  - ▶ Use with loop diuretics will increase likelihood of hypokalemia



## REFERENCES

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2. Pollart MD, Susan M. Management of Acute Asthma Exacerbations. Am Fam Physician. 2011 Jul 1;84(1):40-47.
3. Krafczyk MD, Michael A. Exercise-Induced Bronchoconstriction: Diagnosis and Management. Am Fam Physician. 2011 Aug 15;84(4):427-434.