

SHORT ACTING β_2 AGONISTS (SABAs)

FLAME LECTURE: 18

HICKEY. 11.1.18

LEARNING OBJECTIVES

- ▶ To understand the mechanism of action of β_2 Agonists
- ▶ To counsel the patient regarding the benefits, risks, and uses for β_2 Agonists
- ▶ Prerequisites:
 - ▶ NONE
- ▶ See also – for closely related topics
 - ▶ FLAMEs on COPD/ Medications for treatment of COPD

APPROVED MEDICATIONS

- ▶ Albuterol, levalbuterol (Xopenex), and pirbuterol (Maxair) are the most commonly used short-acting β_2 Agonists in the United States and come in many forms
 - ▶ Aerosol metered-dose inhaler (90 mcg (base) / actuation (equivalent to 108 mcg albuterol sulfate)
 - ▶ Powder meter-dose inhaler (90 mcg (base) / actuation-proAir, RespiClick)
 - ▶ Nebulizer solution: 0.083%, 0.5%, 1.25 mg/3mL, 0.63/3mL
 - ▶ Syrup: 2mg/5 mL
 - ▶ Tablet: 2-4 mg (extended release: 4-8 mg)
 - ▶ Oral forms are less potent, take longer to act, and have more side effects compared with inhaled short-acting β_2 Agonists, thus their use is strongly discouraged

PHARMACOLOGY

- ▶ β_2 agonists relax bronchial smooth muscle and also slightly increase HR (given some β_1 activity)
- ▶ Short-acting β_2 agonists are the most effective therapy for rapid reversal of airflow obstruction and prompt relief of asthmatic symptoms
- ▶ Metabolized in the liver
- ▶ Onset: 5 min (albuterol HFA); ½ hour-2hr nebulized solution, 2-3 hours PO
- ▶ Duration: 4-6 hour (PO and aerosol)
- ▶ Elimination: Half life is 3-8 hours (inhalation); 3.5-5 hour (PO)
- ▶ Excreted: urine

INDICATIONS & BENEFITS

- ▶ Bronchospasm-associated with obstructive airway disease
- ▶ Exercise-induced bronchospasm prevention
- ▶ Using short-acting β_2 agonists >2 days/week >2 nights/month generally indicates inadequate control and the need to initiate or intensify controller therapy

ADVERSE EFFECTS

- ▶ Hypokalemia
- ▶ Paradoxical bronchospasm
- ▶ Use face mask children <4 years
- ▶ Excessive use may be fatal
- ▶ May exacerbate heart failure in patients with reduced EF
- ▶ Tachycardia

REFERENCES

- ▶ <https://reference.medscape.com/drug/proventil-hfa-ventolin-hfa-albuterol-343426>
- ▶ <https://www.aafp.org/afp/2017/0501/p551.html>