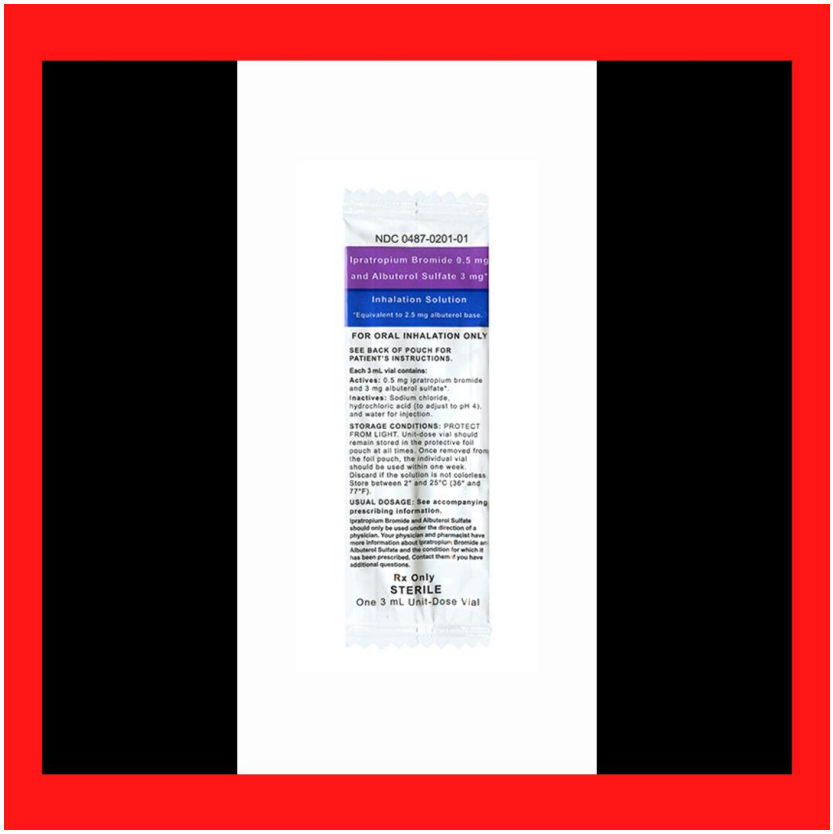
University Hospitals
EMS Training & Disaster Preparedness Institute

Pharmacy PHRiday

Week 26 | June 26, 2026 | Albuterol and Ipratropium Aerosol



Welcome to UH EMS-I's Pharmacy Phriday. In this installment, we review a common medication administered in cases of respiratory distress, the albuterol and ipratropium aerosol, also referred to as a DuoNeb. This is another medication provided in both the main drug box and the "EMT" drug box.

It is no surprise that albuterol and ipratropium aerosol is one of the most often administered medications in EMS. It is a treatment indicated for many of the respiratory complaints listed in the UH protocols.

The albuterol and ipratropium aerosol is a medication that includes both albuterol (2.5 mg) and ipratropium (0.5 mg) in a single unit dose. The combination is often referred to as a one-two punch or premixed cocktail treatment for many patients in respiratory distress that reduces bronchospasm through two distinctly different mechanisms.

The first component of the combined treatment is albuterol, a selective Beta 2 adrenergic agonist that initiates a sympathetic response in the body, causing a rapid onset of bronchodilation. Though albuterol is "selective," it can still have some effect on Beta 1 receptors, such as the cardiovascular system, so care should be used with elderly patients, those with a cardiac history, cardiac arrhythmias, and hypertension. The other component of the combination is ipratropium, a parasympatholytic agent. Ipratropium blocks the parasympathetic effect of bronchoconstriction, as well as decreasing bronchial secretions.

The albuterol and ipratropium aerosol treatment is the preferred aerosol in cases such as asthma, COPD, CHF, and respiratory distress for adult patients and pediatric patients in moderate to severe distress. It is the second line treatment for pediatric patients in mild distress if repeat treatments are needed (the first line treatment being albuterol alone). Treatments may be repeated as needed. Note that for the pediatric patient, the maximum dose is limited to three treatments in the field.

Remember that the effectiveness of a nebulized treatment is only as effective as the administration! The amount of medication delivered to the lungs will depend on many factors, including:

- the ability to move adequate air (if they can't move air, they can't move medication)
- the ability to hold their breath for a short time
- their ability to hold the nebulizer

These factors may require coaching by the provider or adapting the nebulizer to a face mask or CPAP device.

Other factors can include the effectiveness of the nebulizer setup. To generate the optimal mist of medication, the flow of oxygen should be at least 6 lpm. Too low a flow of oxygen can create a mist with particles too large to reach the respiratory tract. Too high a flow can create a mist with smaller particles, decrease the length of the treatment, and result in less medication being delivered. Therefore, the recommended flow of air or oxygen is 6-8 lpm.

Many of the side effects of an albuterol and ipratropium aerosol are related to the sympathetic activation. Be sure complete vital signs and lung sounds are obtained and documented before and after each treatment.

Basic EMT providers can administer aerosols in certain circumstances based on protocols or offline medical direction. The UH EMS Protocols have a warning or caution (stop sign) associated with the albuterol/ipratropium aerosol order that explains further: "EMT may administer only with proper training or online Medical Control". The administration of an

aerosol in cases of hyperkalemia is not included in the scope for the Basic EMT, as such treatments require the interpretation of an ECG.

Till our next edition, stay safe!