OFFICE OF MEDICAL AFFAIRS DIRECTIVE 2009-01
December 30, 2008

PHARMACEUTICAL UPDATE: IPRATROPIUM BROMIDE

1. PURPOSE

1.1 To describe the use of a new pharmaceutical agent for use within the FDNY EMS Command.

2. SCOPE

2.1 This procedure applies to all FDNY ALS providers.

3. BACKGROUND

3.1 The FDNY EMS Command will include ipratropium bromide in its pharmaceutical formulary beginning in January 2009, with the use of the medication dictated by the most recent REMSCO protocol changes.

4. PHARMACOLOGY REVIEW

4.1 Description

4.1.1 Ipratropium bromide (Atrovent) is an anticholinergic bronchodilator. It is a synthetic ammonium compound chemically related to atropine which acts by inhibiting acetylcholine release in the lung. This results in a decreased amount of smooth muscle contraction in the bronchial airways. It will be administered via a nebulizer (only using a mouthpiece attachment) with albuterol in the prehospital setting.

4.2 Onset and Duration

4.2.1 Ipratropium bromide has a rapid onset when used via nebulizer, acting within minutes and has a duration of action lasting two to four hours.

4.3 Indications

4.3.1 Ipratropium bromide is indicated for use as a bronchodilator in the treatment of bronchospasm associated with obstructive lung diseases. It is most useful for patients with chronic obstructive pulmonary disease (COPD) and emphysema. Ipratropium bromide may also be useful in patients with asthma, especially in those patients with a combination of asthma and COPD.
4.4 Contraindications

4.4.1 Use of ipratropium bromide is an absolute contraindication in patients with a known allergy to any of the following:

- Nuts
- Soy products
- Atropine

4.4.2 Use of ipratropium bromide is a relative contraindication (should only be given if patient has extreme shortness of breath) in patients with the following clinical conditions:

- Patients with a history of glaucoma.
- Pregnant patients.

4.4.3 Ipratropium bromide should be delivered by a nebulizer with a mouthpiece and not by facemask since this may precipitate glaucoma or blurred vision. The only exception is if the patient is incapable of keeping a mouthpiece in their mouth.

4.5 Adverse Reactions

4.5.1 In rare cases, ipratropium bromide may cause an immediate hypersensitivity reaction characterized by rash, oropharyngeal edema, urticaria, and worsened bronchospasm.

4.5.2 Other reactions which may result from ipratropium (and other anticholinergic medication) use include nervousness, dizziness, dry mouth, blurred vision, headache and/or urinary retention.

4.6 Drug Interactions

4.6.1 Ipratropium bromide has been demonstrated to be safe when concomitantly administering with albuterol.

4.6.2 It is also regularly administered with steroids such as methylprednisolone or dexamethasone, as well as with magnesium sulfate without sequelae.

4.7 Special Considerations

4.7.1 Unit dose vial packaging

A. After removal from its original packaging, the ipratropium unit dose vial is nearly identical to a vial of albuterol. As always, use caution when administering doses to the patient to ensure proper delivery and avoidance of overdosing. See Figures 1 and 2 which demonstrate the similarity of the two medications’ packaging.
4.7.2 Pediatric patients

A. Pediatric patients less than 14 years of age may receive ipratropium when indicated.

5. POLICY

5.1 Ipratropium bromide exists as a Standing Order in adult and pediatric REMSCO protocols. It does not exist as a Medical Control Option.

5.1.1 Ipratropium bromide will be used in conjunction with albuterol by FDNY ALS providers for patients with acute asthma/COPD and/or active wheezing.

5.1.2 Ipratropium bromide will be used alone (without albuterol) only for patients with acute asthma/COPD and/or active wheezing when such patients have either of the following:

A. The inability to tolerate albuterol in the past due to albuterol-induced arrhythmias or syncope. A history of palpitations without hemodynamic compromise, or tremors is not an absolute contraindication.

B. Cardiac disease and is currently not on inhaled or nebulized beta-agonists (ex. Albuterol, Alupent, Ventolin, Proventil, Duoneb, Servent, Foradil, Advair, Symbicort).
5.2 The following must be documented in the ePCR regarding the use of ipratropium bromide:

5.2.1 Dosage – this should be recorded in the flowchart section found on the first page of the ePCR (medication code = 64) and written in the comments associated with treatment.

5.2.2 Adverse effects – any adverse effects related to the use of ipratropium bromide must be written in the narrative section found on the second page of the ePCR.

6. PROCEDURE

6.1 For patients who present with active wheezing due to bronchospasm:

6.1.1 Administer 0.5 mg (1 unit dose vial of 0.02% solution) ipratropium bromide in a nebulizer, using an oxygen flow rate that will deliver the medication over 5 to 15 minutes.

A. Unless contraindicated, should be used in conjunction with albuterol by mixing one unit dose vial of ipratropium bromide with one unit dose vial of albuterol in the nebulizer and administer together for both the initial and subsequent doses.

B. Ipratropium bromide via nebulizer may be administered for a total of three doses according the REMSCO protocols.

6.1.2 The dose for adults and children over 6 years old and is 0.5 mg (1 unit dose of 0.02% solution) delivered via nebulizer at a flow rate that will deliver the solution over 5 to 15 minutes.

6.1.3 Pediatric patients under 6 years of age should receive a lower dose.

A. The dose for children less than 6 years old is 0.25 mg (½ unit dose of 0.02% solution) delivered via nebulizer at a flow rate that will deliver the solution over 5 to 15 minutes.

7. RELATED DOCUMENTS

7.1 REMSCO Protocol 507: Asthma

7.2 REMSCO Protocol 508: Chronic Obstructive Pulmonary Disease (COPD)

7.3 REMSCO Protocol 554: Pediatric Asthma/Wheezing

BY ORDER OF THE FIRE COMMISSIONER AND THE OFFICE OF MEDICAL AFFAIRS