FRONT

Preclinical: Intravenous studies in rats with albuterol sulfate have demonstrated that albuterol crosses the Mixing Different Inhalation Solutions

Drug compatibility (physical and chemical) efficacy and safety of Albuterol Sulfate Inhalation Solution when **Tocolysis** mixed with other drugs in a nebulizer have not been established.

Other short-acting sympathomimetic aerosol bronchodilators or epinephrine should not be used concomitantly with albuterol sulfate inhalation solution.

Beta-Blockers

patients with asthma should not normally be treated with beta-blockers. However, under certain circumstances considered, although they should be administered with caution.

Diaoxin

recommended dose of the beta-agonist is exceeded. Although the clinical significance of these effects is not known, caution is advised in the co-administration of beta-agonists with non-potassium sparing diuretics.

Albuterol sulfate inhalation solution is indicated for the relief of bronchospasm in patients 12 years of age and Mean decreases of 16% to 22% in serum digoxin levels were demonstrated after single dose intravenous and oral administration of albuterol, respectively, to normal volunteers who had received digoxin for 10 days. The clinical significance of these findings for patients with obstructive airway disease who are receiving albuterol

Monoamine Oxidase Inhibitors or Tricvclic Antidepressants:

Albuterol sulfate inhalation solution should be administered with extreme caution to patients being treated with monoamine oxidase inhibitors or tricyclic antidepressants or within 2 weeks of discontinuation of such agents, because the action of albuterol on the vascular system may be potentiated.

incidence of benign leiomyomas of the mesovarium at and above dietary doses of 2 mg/kg (approximately 2 times the maximum recommended daily inhalation dose for adults on a mg/m² basis). In another study, this effect was blocked by the co-administration of propranolol, a non-selective beta-adrenergic antagonist.

to 500 mg/kg (approximately 200 times the maximum recommended daily inhalation dose for adults on a mg/m² basis). In a 22-month study in the Golden hamster, albuterol sulfate showed no evidence of tumorigenicity at dietary doses up to 50 mg/kg (approximately 25 times the maximum recommended daily inhalation dose for adults on a mg/m² basis).

Albuterol sulfate was not mutagenic in the Ames test with or without metabolic activation using tester strains seen in yeast strain S. cerevisiae S9 nor any mitotic gene conversion in yeast strain S. cerevisiae JD1 with or without metabolic activation. Fluctuation assays in S. typhimurium TA98 and E. coli WP2, both with metabolic activation, were negative. Albuterol sulfate was not clastogenic in a human peripheral lymphocyte assay or in an AH1 strain mouse micronucleus assav.

Teratogenic Effects

subcutaneously

and above 0.25 mg/kg (corresponding to less than the maximum recommended daily inhalation dose for adults on a mo/m² basis) induced cleft palate formation in 5 of 111 (4.5%) fetuses. At an subcutaneous dose of **OVERDOSAGE** 2.5 mg/kg (approximately equal to the maximum recommended daily inhalation dose for adults on a mg/m2

Studies in pregnant rats with titrated Albuterol demonstrated that approximately 10% of the circulating liver disposition is 1% of the maternal liver levels.

benefit justifies the potential risk to the fetus.

During worldwide marketing experience, various congenital anomalies, including cleft palate and limb defects, have been reported in the offspring of patients being treated with albuterol. Some of the mothers were taking

76.20mm

blood-brain barrier and reaches brain concentrations that are amounting to approximately 5.0% of the plasma concentrations. In structures outside the brain barrier (pineal and pituitary glands), albuterol concentrations were found to be 100 times those in the whole brain Studies in laboratory animals (minipigs, rodents, and dogs) have demonstrated the occurrence of cardiac Drug Interactions

methylxanthines were administered concurrently. The significance of these findings is unknown.

Pharmacokinetics After either IPPB or nebulizer administration in asthmatic patients, less than 20% of a single albuterol dose was absorbed; the remaining amount was recovered from the nebulizer and apparatus and expired air. Most Beta-adrenergic receptor blocking agents not only block the pulmonary effect of beta-agonists, such as

arrhythmias and sudden death (with histologic evidence of myocardial necrosis) when beta-agonists and

of the absorbed dose was recovered in the urine 24 hours after drug administration. Following a 3.0 mg dose albuterol sulfate inhalation solution, but may produce severe bronchospasm in asthmatic patients. Therefore, of nebulized albuterol, the maximum albuterol plasma level at 0.5 hour was 2.1 ng/mL (range 1.4 to 3.2 ng/mL). 5 to 6 hours. Clinical Trials:

In controlled clinical trials, most patients exhibited an onset of improvement in pulmonary function within Diuretics 5 minutes as determined by FEV, FEV, measurements also showed that the maximum average improve compressor-nebulizer and remained close to peak for 2 hours. Clinically significant improvement in pulmonary function (defined as maintenance of a 15% or more increase in FEV over baseline values) continued for 3 to 4 hours in most patients and in some patients continued up to 6 hours.

INDICATIONS AND USAGE

older with reversible obstructive airway disease and acute attacks of bronchospasm. CONTRAINDICATIONS

Albuterol sulfate inhalation solution is contraindicated in patients with a history of hypersensitivity to albuterol or any of its components

WARNINGS

DETERIORATION OF ASTHMA

Asthma may deteriorate acutely over a period of hours or chronically over several days or longer. If the patient Carcinogenesis, Mutagenesis, and Impairment of Fertility needs more doses of albuterol sulfate inhalation solution than usual, this may be a marker of destabilization of asthma and requires re-evaluation of the patient and treatment regimen, giving special consideration to the In a 2-year study in Sprague-Dawley rats, albuterol sulfate caused a significant dose-related increase in the possible need for anti-inflammatory treatment, e.g., corticosteroids.

USE OF ANTI-INFLAMMATORY AGENTS

The use of beta-adrenergic agonist bronchodilators alone may not be adequate to control asthma in many In an 18-month study in CD-1 mice, albuterol sulfate showed no evidence of tumorigenicity at dietary doses up patients. Early consideration should be given to adding anti-inflammatory agents, e.g., corticosteroids.

a relatively selective beta,-adrenergic bronchodilator. Albuterol sulfate has the chemical name PARADOXICAL BRONCHOSPASM

Albuterol sulfate inhalation solution can produce paradoxical bronchospasm, which may be life threatening. If paradoxical bronchospasm occurs, albuterol sulfate inhalation solution should be discontinued immediately with inhaled formulations, frequently occurs with the first use of a new vial.

CARDIOVASCULAR EFFECTS

Albuterol sulfate inhalation solution, like all other beta-adrenergic agonists, can produce a clinically significan such effects are uncommon after administration of albuterol sulfate inhalation solution at recommended doses, to 50 mg/kg (approximately 40 times the maximum recommended daily inhalation dose for adults on a mg/m² in these studies. if they occur, the drug may need to be discontinued. In addition, beta-agonists have been reported to produce electrocardiogram (ECG) changes, such as flattening of the T wave, prolongation of the QTc interval, and ST inhalation solution, like all sympathomimetic amines, should be used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias, and hypertension,

Immediate hypersensitivity reactions may occur after administration of albuterol, as demonstrated by rare cases of urticaria, angioedema, rash, bronchospasm, anaphylaxis, and oropharyngeal edema.

PRECAUTIONS

sympathomimetic amines. Clinically significant changes in systolic and diastolic blood pressure have been inhalation dose for adults on a mg/m² basis)

ketoacidosis. As with other beta-agonist medications, albuterol may produce significant hypokalemia in some patients, possibly through intracellular shunting, which has the potential to produce adverse cardiovascular There are no adequate and well-controlled studies in pregnant women. Because animal reproduction studies

Information for Patients

Controlled clinical studies and other clinical experience have shown that inhaled albuterol, like other The action of albuterol sulfate inhalation solution may last up to 6 hours or longer. Albuterol sulfate inhalation

albuterol sulfate inhalation solution without consulting your physician. If you find that treatment with albuterol relationship between albuterol use and congenital anomalies has not been established. sulfate inhalation solution becomes less effective for symptomatic relief, your symptoms become worse. Albuterol is longer acting than isoproterenol in most patients by any route of administration because it is not a and/or you need to use the product more frequently than usual, you should seek medical attention immediately. While you are using albuterol sulfate inhalation solution, other inhaled drugs and asthma medications should be taken only as directed by your physician. Common adverse effects include palpitations,

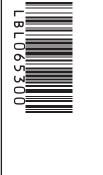
The effects of rising doses of albuterol and isoproterenol aerosols were studied in volunteers and asthmatic chest pain, rapid heart rate, tremor or nervousness. If you are pregnant or nursing, contact your physician patients. Results in normal volunteers indicated that the propensity for increase in heart rate for albuterol is about use of albuterol sulfate inhalation solution. Effective use of albuterol sulfate inhalation solution includes 1/2 to 1/4 that of isoproterenol. In asthmatic patients similar cardiovascular differentiation between the MO drugs an understanding of the way it should be administered. See illustrated Instructions for Use. was also seen

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76.20mm

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704-523-6622	ITEM DESC: RDP Albuterol Sulfate Inhalation				
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RITEDOSE Albuterol Sulfate Inhalation Solution, 0.5%

2.5 mg* / 0.5 mL (*Equivalent to 3 mg of albuterol sulfate)

*Potency expressed as albuterol

DESCRIPTION

330.2mm

 α_1 [(tert-Butylamino) methyl]-4-hydroxy-m-xylene- α , α '-diol sulfate (2:1) (salt), and the following chemical structure HOCH

- CHCH₂NHC(CH₃)₃

The molecular weight of albuterol sulfate is 576.7, and the empirical formula is $(C_{13}H_{21}NO_3)_2 \cdot H_2SO_4$. Albuterol sulfate is a white crystalline powder, soluble in water and slightly soluble in ethanol. The World Health Organization's recommended name for albuterol base is salbutamol.

Albuterol Sulfate Inhalation Solution, 0.5% contains albuterol sulfate, USP, the racemic form of albuterol and

Albuterol sulfate inhalation solution, 0.5%, is in concentrated form. Dilute 0.5 mL of the solution to 3 mL with segment depression. The clinical significance of these findings is unknown. Therefore, albuterol sulfate **Pregnancy** sterile normal saline solution prior to administration.

Each 0.5 mL Unit-Dose Vial Contains: 2.5 mg of albuterol (equivalent to 3 mg of albuterol sulfate, USP) in a sterile, aqueous solution; sulfuric acid is used to adjust the pH to between 3 and 5. Albuterol Sulfate Inhalation IMMEDIATE HYPERSENSITIVITY REACTIONS solution contains no sulfiting agents or preservatives. It is supplied in 0.5 mL sterile Unit-Dose Vials.

Albuterol sulfate inhalation solution is a clear, colorless to light yellow solution.

CLINICAL PHARMACOLOGY

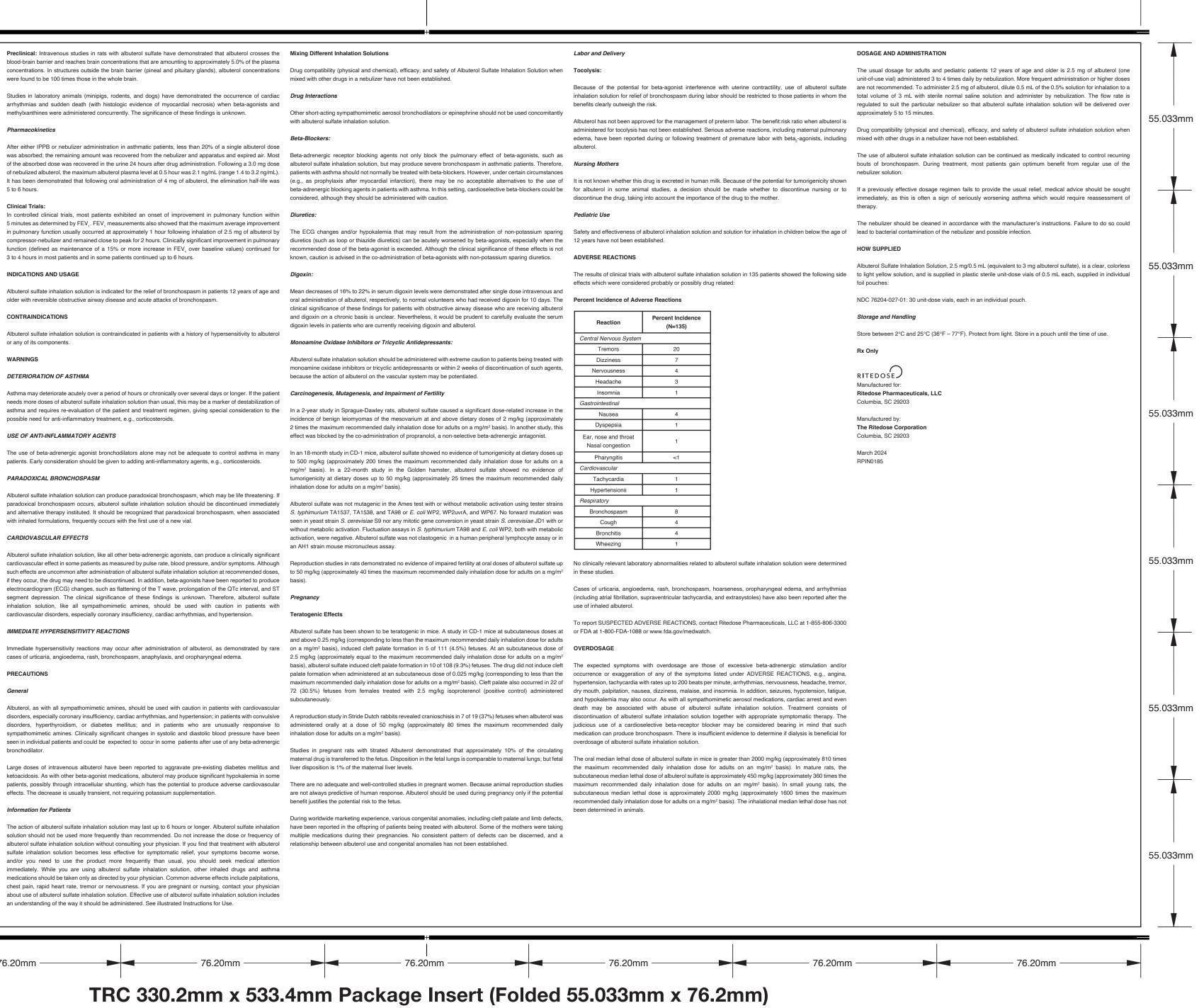
The primary action of beta-adrenergic drugs, including albuterol, is to stimulate adenyl cyclase, the General enzyme that catalyzes the formation of cyclic-3' ,5'-adenosine monophosphate (cyclic AMP) from adenosine triphosphate (ATP) in beta-adrenergic cells. The cyclic AMP thus fanned mediates the cellular Albuterol, as with all sympathomimetic amines, should be used with caution in patients with cardiovascular inhibition of release of mediators of immediate hypersensitivity from cells, especially from mast cells

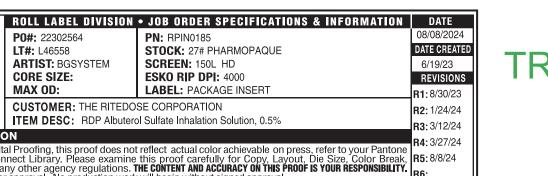
In vitro studies and in vivo pharmacologic studies have demonstrated that albuterol has a preferential effect on seen in individual patients and could be expected to occur in some patients after use of any beta-adrenergic beta₂-adrenergic receptors compared with isoproterenol. While it is recognized that beta₂-adrenergic receptors bronchodilator. are the predominant receptors in bronchial smooth muscle, data indicate that there is a population of beta₂-receptors in the human heart existing in a concentration between 10% and 50%. The precise function of Large doses of intravenous albuterol have been reported to aggravate pre-existing diabetes mellitus and these receptors has not been established.

In controlled clinical trials, albuterol has been shown to have more effect on the respiratory tract, in the form of effects. The decrease is usually transient, not requiring potassium supplementation. bronchial smooth muscle relaxation, than isoproterenol at comparable doses while producing fewe cardiovascular effects.

beta-adrenergic agonist drugs, can produce a significant cardiovascular effect in some patients, as measured solution should not be used more frequently than recommended. Do not increase the dose or frequency of multiple medications during their pregnancies. No consistent pattern of defects can be discerned, and a by pulse rate, blood pressure, symptoms, and/or ECG changes.

substrate for the cellular uptake processes for catecholamines nor for catechol-O-methyl transferase.





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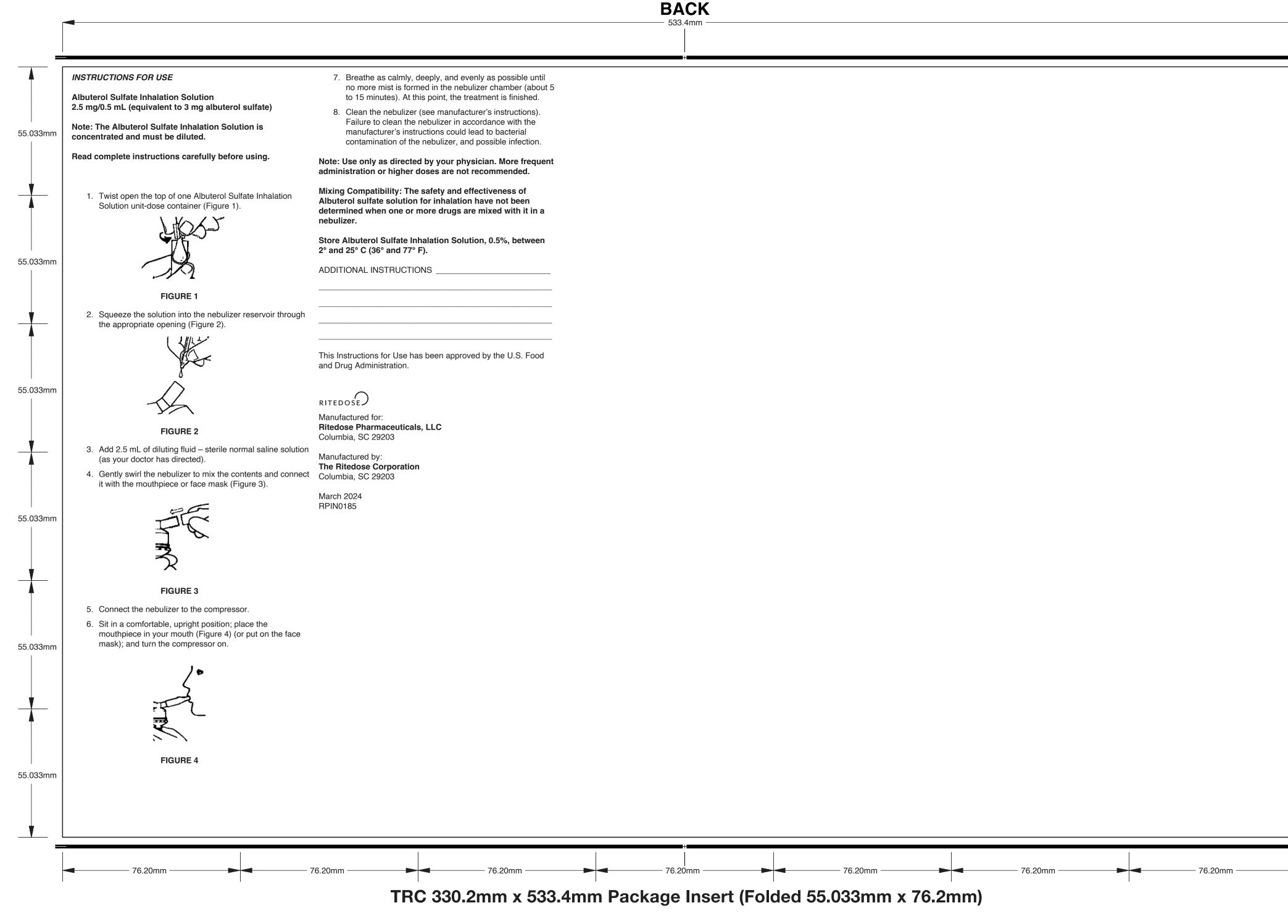
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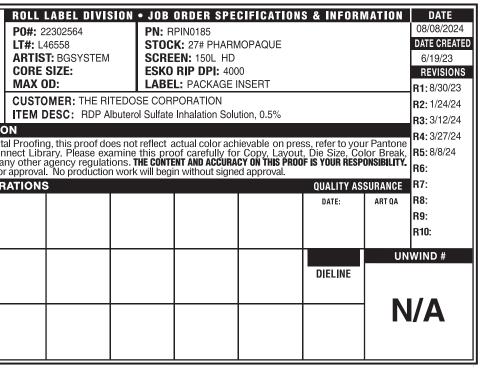
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