ATTENTION PHARMACIST: Detach "Patient's Instructions for Use" from package insert and dispense with product.

allergens.

day of therapy.

BID versus TID treatment.

INDICATIONS AND USAGE

perennial rhinitis

CONTRAINDICATIONS

the other ingredients.

WARNINGS

PRECAUTIONS

oral inhalation

Use.

Fertility

Drug Interactions

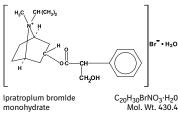
Information for Patients

# Atrovent<sup>®</sup> (ipratropium bromide) **Nasal Spray** 0.03%

## Prescribing Information

## DESCRIPTION

The active ingredient in ATROVENT® Nasal Spray is ipratropium bromide monohydrate. It is an anti cholinergic agent chemically described as 8-azoniabicyclo (3.2.1) octane,3-(3-hydroxy-1-oxo-2-phenylpropoxy)-8-methyl-8-(1-methylethyl)-, bromide, monohydrate (*endo,syn*)-, (±)- :a synthetic quaternary ammonium compound, chemically related to atropine. Its structural formula is:



nonohydrate

Ipratropium bromide is a white to off-white, crystalline substance. It is freely soluble in lower alcohols and water, existing in an ionized state in aqueous solutions, and relatively insoluble in non-polar

ATROVENT (ipratropium bromide) Nasal Spray 0.03% is a metered-dose, manual pump spray unit which delivers 21 mcg (70 $\mu$ L) ipratropium bromide per spray on an anhydrous basis in an isotonic, aqueous solution with pH adjusted to 4.7. It also contains benzalkonium chloride, edetate disodium, sodium chloride, sodium hydroxide, hydrochloric acid, and purified water. Each bottle contains 345 sprays.

## CLINICAL PHARMACOLOGY

Mechanism of Action Ipratropium bromide is an anticholinergic agent that inhibits vagally-mediated reflexes by antagonizing the action of acetylcholine at the cholinergic recep-tor. In humans, ipratropium bromide has anti-secretory properties and, when applied locally, inhibits secretions from the serous and seromucous glands lining the nasal mucosa. Ipratropium bromide is a quaternary amine that minimally crosses the nasal and gastrointestinal membrane and the blood-brain barrier, resulting in a reduction of the systemic anticholinergic effects (e.g., neurologic, ophthalmic, cardiovascular, and gastrointestinal effects) that are seen with tertiary anticholinergic amines.

## Pharmacokinetics

Absorption: Ipratropium bromide is poorly absorbed into the systemic circulation following oral administration (2-3%). Less than 20% of an 84 mcg per nos-tril dose was absorbed from the nasal mucosa of normal volunteers, induced-cold patients, or perennial rhinitis patients.

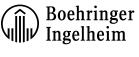
Distribution: Ipratropium bromide is minimally bound (0 to 9% *in vitro*) to plasma albumin and  $\alpha_1$  acid glycoprotein. Its blood/plasma concentration ratio was estimated to be about 0.89. Studies in rats have shown that ipratropium bromide does not pen-etrate the blood-brain barrier.

Metabolism: Ipratropium bromide is partially metabolized to ester hydrolysis products, tropic acid and tropane. These metabolites appear to be inactive based on *in vitro* receptor affinity studies using rat brain tissue homogenates.

**Elimination:** After intravenous administration of 2 mg ipratropium bromide to 10 healthy volunteers, the terminal half-life of ipratropium was approximately 1.6 hours. The total body clearance and renal clearance were estimated to be 2,505 and 1,019 mL/min, respectively. The amount of the total dose excreted unchanged in the urine (Ae) within 24 hours was approximately one-half of the administered dose.

Pediatrics: Following administration of 42 mcg of ipratropium bromide per nostril two or three times a day in perennial rhinitis patients 6-18 years old, the mean amounts of the total dose excreted unchanged in the urine (8.6 to 11.1%) were higher than those reported in adult volunteers or adult perennial rhini-tis patients (3.7 to 5.6%). Plasma ipratropium concentrations were relatively low (ranging from undetectable up to 0.49 ng/mL). No correlation of the amount of the total dose excreted unchanged in the urine (Ae) with age or gender was observed in the pediatric population.

Special Populations: Gender does not appear to influence the absorption or excretion of nasally administered ipratropium bromide. The pharmacoki netics of ipratropium bromide have not been studied in patients with hepatic or renal insufficiency or in the elderly.



nasal hypersecretion and nasal congestion or sneez ing when exposed to specific perennial allergens (e.g., dust mites, molds) and were skin test positive

to these allergens. NAPR patients were those who

but were skin test negative to common perennial

of ATROVENT (ipratropium bromide) Nasal Spray

experienced symptoms of nasal hypersecretion and nasal congestion or sneezing throughout the year,

In four controlled, four- and eight-week comparisons

0.03% (42 mcg per nostril, two or three times daily)

with its vehicle, in patients with allergic or nonaller gic perennial rhinitis, there was a statistically significant decrease in the severity and duration of rhinor-rhea in the ATROVENT group throughout the entire

study period. An effect was seen as early as the first

There was no effect of ATROVENT (ipratropium bro-

mide) Nasal Spray 0.03% on degree of nasal conges-

tion, sneezing, or postnasal drip. The response to ATROVENT (ipratropium bromide) Nasal Spray 0.03% did not appear to be affected by the type of perennial rhinitis (NARR or APR), age, or gender. No controlled clinical trials directly compared the efficacy of

ROVENT (ipratropium bromide) Nasal Spray 0.03%

is indicated for the symptomatic relief of rhinorrhea associated with allergic and nonallergic perennial rhinitis in adults and children age 6 years and older. ATROVENT (ipratropium bromide) Nasal Spray 0.03%

does not relieve nasal congestion, sneezing, or post-nasal drip associated with allergic or nonallergic

ATROVENT (ipratropium bromide) Nasal Spray 0.03%

is contraindicated in patients with a history of hyper sensitivity to atropine or its derivatives, or to any of

Immediate hypersensitivity reactions may occur after

strated by rare cases of urticaria, angioedema, rash,

General ATROVENT (ipratropium bromide) Nasal Spray 0.03%

should be used with caution in patients with narrow-

neck obstruction, particularly if they are receiving an anticholinergic by another route. Cases of precipita-

angle glaucoma, prostatic hypertrophy, or bladder

tion or worsening of narrow-angle glaucoma and

acute eve pain have been reported with direct eve contact of ipratropium bromide administered by

Patients should be advised that temporary blurring

of vision, precipitation or worsening of narrow-angle glaucoma, or eye pain may result if ATROVENT (ipra-tropium bromide) Nasal Spray 0.03% comes into

direct contact with the eyes. Patients should be instructed to avoid spraying ATROVENT (ipratropium bromide) Nasal Spray 0.03% in or around their eyes.

Patients who experience eye pain, blurred vision, excessive nasal dryness, or episodes of nasal bleed-

ing should be instructed to contact their doctor.

Patients should be reminded to carefully read and follow the accompanying Patient's Instructions for

No controlled clinical trials were conducted to investi-

gate drug-drug interactions. ATROVENT (ipratropium bromide) Nasal Spray 0.03% is minimally absorbed

into the systemic circulation; nonetheless, there is

Carcinogenesis, Mutagenesis, Impairment of

mum recommended daily intranasal dose in

studies (Ames test, mouse dominant lethal test,

Fertility of male or female rats was unaffected by

(approximately 1.600 times the maximum recor mended daily intranasal dose in adults on a mg/m<sup>2</sup>

asis) At an oral dose of 500 mg/kg (appro

ipratropium bromide at oral doses up to 50 mg/kg

some potential for an additive interaction with other concomitantly administered anticholinergic medica-tions, including ATROVENT for oral inhalation.

In two-year carcinogenicity studies in rats and mice. ipratropium bromide at oral doses up to 6 mg/kg (approximately 190 and 95 times the maximum rec-

ommended daily intranasal dose in adults, respec-tively, and approximately 110 and 60 times the maxi-

children, respectively, on a mg/m<sup>2</sup> basis) showed no carcinogenic activity. Results of various mutagenicity

mouse micronucleus test, and chromosome aberration of bone marrow in Chinese hamsters) were neg-

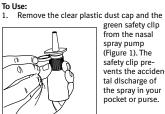
administration of ipratropium bromide, as demor

bronchospasm, and oropharvngeal edema



#### PATIENT'S INSTRUCTIONS FOR USE

ATROVENT® (ipratropium bromide) Nasal Spray 0.03% is indicated for the symptomatic relief of rhinorrhea (runny nose) associated with allergic and nonallergic perennial rhinitis in adults and children age 6 years and older. ATROVENT (ipra-tropium bromide) Nasal Spray 0.03% does not relieve nasal congestion, sneezing, or postnasal drip associated with allergic or nonallergic perennial rhinitis. Read complete instructions carefully and use only as directed.



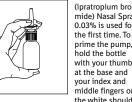


Figure 2 area. Make sure the bottle points upright and away from

your eyes. Press your thumb firmly and quickly against the bottle seven times (Figure 2). The pump is now primed and can be used. Your pump should not have to be reprimed unless you have not used the medication for more than 24 hours: repriming the pump will only require two sprays. If you have not used your nasal spray for more than seven days, repriming the pump will require seven sprays

3. Before using ATROVENT (ipratropium bromide) Nasal Spray 0.03%, blow your nose gently to clear your nostrils if necessary.



- Press firmly and quickly upwards with the thumb at the base while holding the white shoulder portion of the pump between your index and middle fingers. Following each spray, sniff deeply and breathe out through your mouth.
- After spraying the nostril and removing the unit, tilt your head backwards for a few sec onds to let the spray spread over the back
- Repeat steps 4 through 6 in the same nos-
- Repeat steps 4 through 7 in the other nos-tril (i.e., two sprays per nostril). 8.
- Replace the clear plastic dust cap and safe-ty clip. 9.
- 10. At some time before the medication is completely used up, you should consult your physician or pharmacist to determine whether a refill is needed. You should not take extra doses or stop using ATROVENT (ipratropium bromide) Nasal Spray 0.03%

Product + component:	Atrovent Nasal Spray, 0.03% / leaflet		
Art. No.:	10001900/US/1		
Country:	United States		
Dimension:	6.25" x 15"		
Scale:	1:1 (inches)		
Date:	25. November 2002		
Colours:	Black		
No. of Films:	2 (Side 1)		
Manufacturer:	Roxane Laboratories, Inc.		
No. of Code:	Interleaved 2of5 Barcode		
Sales / Samples:	Sales		

Notes:

Barcode = For position only; Interleaved 2of5; barcode prints 100% Black; Encodation: 10001900 ; Magnification: 53.5%

Perforation does not get printed.

Approvals		
Signature(s):	Department:	Date: m/d/y
	Graphics	
	Engineer	
	DRA	
	Marketing	
	Legal	
	DSI	
	Medical	

at the base and your index and middle fingers on the white shoulder

Figure 1 2. The nasal spray pump must be primed before ATROVENT (ipratropium bronide) Nasal Spray 0.03% is used fo

Drug-Drug Interaction: No specific pharmacokinetic studies were conducted to evaluate potential drugdrug interactions.

Pharmacodynamics: In two single-dose trials (n=17), doses up to 336 mcg of ipratropium bromide did not significantly affect pupillary diameter, heart rate, or systolic/diastolic blood pressure. Similarly, i Similarly, in patients with induced-colds, ATROVENT (ipratropium bromide) Nasal Spray 0.06% (84 mcg/nostril four times a day), had no significant effects on pupillary diameter, heart rate or systolic/diastolic blood pressure

Two nasal provocation trials in perennial rhinitis patients (n=44) using ipratropium bromide nasal spray showed a dose dependent increase in inhibi tion of methacholine induced nasal secretion with an onset of action within 15 minutes (time of first observation).

Controlled clinical trials demonstrated that intranasal fluorocarbon-propelled ipratropium bromide does not alter physiologic nasal functions (e.g., sense of smell, ciliary beat frequency, mucociliary clearance, or the air conditioning capacity of the nose).

#### Clinical Trials

The clinical trials for ATROVENT (ipratropium bromide) Nasal Spray 0.03% were conducted in patients with nonallergic perennial rhinitis (NAPR) and in patients with allergic perennial rhinitis (APR). APR patients were those who experienced symptoms of

16.000 times the maximum recommended daily intranasal dose in adults on a mg/m<sup>2</sup> basis), ipratropium bromide produced a decrease in the conception rate.

#### Pregnancy

TERATOGENIC EFFECTS Preanancy Category B. Oral reproduction studies were performed at doses of 10 mg/kg in mice, 1000 mg/kg in rats and 125 mg/kg in rabbits. These doses correspond, in each species respectively, to approximately 160, 32,000, and 8,000 times the maximum recommended daily intranasal dose in adults on a mg/m<sup>2</sup> basis. Inhalation reproduction studies were conducted in rats and rabbits at doses of 1.5 and 1.8 mg/kg, respectively, (approximately 50 and 120 times, respectively, the maximum recommended daily intranasal dose in adults on a mg/m<sup>2</sup> basis). These studies demonstrated no evidence of teratogenic effects as a result of ipratropium bromide. At oral doses above 90 mg/kg in rats (approximately 2,900 times the maximum recommended daily intranasal dose in adults on a mg/m<sup>2</sup> basis) embryotoxicity was observed as increased resorption. This effect is not considered relevant to human use due to the large doses at which it was observed and the difference in route of administration. However, no adequate or well controlled studies have been conducted in pregnant women. Because animal reproduction studies are not always predictive of human response, ATROVENT (ipratropium bromide) Nasal Spray 0.03% should be used during preg nancy only if clearly needed.

without consulting your physician

If the nasal tip

becomes clogged,

remove the clear

nlastic dust cap

and safety clip.

under running, warm tap water

about a minute

Dry the nasal tip,

(Figure 4) for

reprime the

Hold the nasal tip

To Clean:



Figure 4

nasal spray pump (step 2 above), and replace the plastic dust cap and safety clip.

## Caution

Perforation

ATROVENT (ipratropium bromide) Nasal Spray 0.03% is intended to relieve your rhinorrhea (runny nose) with regular use. It is therefore important that you use ATROVENT (ipratropium bromide) Nasal Spray 0.03% as prescribed by your physician. For most patients, some improvement in runny nose is usually apparent during the first full day of treatment with ATROVENT (ipratropium bromide) Nasal Spray 0.03%. Some patients may require up to two weeks of treatment to obtain maximum benefit.

## Do not spray ATROVENT® (ipratropium bromide) Nasal Spray 0.03% in your eyes. Should this occur, immediately flush your eye with cool tap water for several minutes. If you accidentally spray ATROVENT (ipratropium bromide Nasal Spray 0.03% in your eyes, you may experience a temporary blurring of vision and increased sensitivity to light, which may last a few hours. Should eye pain or blurred vision occur, contact your doctor.

Should you experience excessive nasal dryness or episodes of nasal bleeding contact your

You should not use this drug if you have glaucoma or difficult urination due to an enlarge ment of the prostate, unless directed by a physician. ATROVENT (ipratropium bromide) Nasal Spray 0.03% should not be used during pregnancy or breast feeding unless directed by a physician. It is not known whether ipratropium bromide is excreted in human milk; how-ever, many drugs are excreted in human milk.

Storage: Store tightly closed between 59°F (15°C) and of children

10001900/01

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U.S. Patent No. 4,385,048

Rev. Nov 14, 2002 10001900/US/1

Nursing Mothers

It is known that some ipratropium bromide is system ically absorbed following nasal administration; however the portion which may be excreted in human milk is unknown. Although lipid-insoluble quaternary bases pass into breast milk, the minimal systemic absorption makes it unlikely that inratronium bromide would reach the infant in an amount sufficient to cause a clinical effect. However, because many drugs are excreted in human milk, caution should be exercised when ATROVENT® (ipratropium bromide) Nasal Spray 0.03% is administered to a nursing

#### Pediatric Use

The safety of ATROVENT (ipratropium bromide) Nasal Spray 0.03% at a dose of two sprays (42 mcg) per nostril two or three times daily (total dose 168 to 252 mcg/day) has been demonstrated in 77 pediatric patients 6-12 years of age in placebo-controlled, 4week trials and in 55 pediatric patients in active-con-trolled, 6 month trials. The effectiveness of ATROVENT (ipratropium bromide) Nasal Spray 0.03% for the treatment of rhinorrhea associated with allergic and nonallergic perennial rhinitis in this pediatric age group is based on an extrapolation of the demonstrated efficacy of ATROVENT (ipratropium bromide) Nasal Spray 0.03% in adults with these conditions and the likelihood that the disease course, pathophysiology, and the drug's effects are substantially similar to that of the adults. The recommended dose for the pediatric population is based on within and cross-study comparisons of the efficacv of ATROVENT (ipratropium bromide) Nasal Spray 0.03% in adults and pediatric patients and on its safety profile in both adults and pediatric patients. The safety and effectiveness of ATROVENT (ipratropium bromide) Nasal Spray 0.03% in patients under 6 years of age have not been established.

## ADVERSE REACTIONS

Adverse reaction information on ATROVENT (ipratropium bromide) Nasal Spray 0.03% in patients with perennial rhinitis was derived from four multi center, vehicle-controlled clinical trials involving 703 patients (356 patients on ATROVENT and 347 patients on vehicle), and a one-year, open-label, follow-up trial. In three of the trials, patients received ATROVENT (ipratropium bromide) Nasal Spray 0.03% three times daily, for eight weeks. In the other trial, ATROVENT (ipratropium bromide) Nasal Spray 0.03% was given to patients two times daily for four weeks Of the 285 patients who entered the open-label, follow-up trial, 232 were treated for 3 months, 200 for 6 months, and 159 up to one year. The majority (>86%) of patients treated for one year were maintained on 42 mcg per nostril, two or three times daily, of ATROVENT (ipratropium bromide) Nasal Spray 0.03%.

The following table shows adverse events, and the frequency that these adverse events led to the discontinuation of treatment, reported for patients who received ATROVENT (ipratropium bromide) Nasal Spray 0.03% at the recommended dose of 42 mcg per nostril, or vehicle two or three times daily for four or eight weeks. Only adverse events reported with an incidence of at least 2.0% in the ATROVENT group and higher in the ATROVENT group than in the vehicle group are shown

## % of Patients Reporting Events+

	ATROVENT Nasal spray 0.03%		Vehicle Control	
	(n=356)	Discontinued %	(n=347) Incidence %	Discontinued %
Headache	9.8	0.6	9.2	0
Upper respiratory	5.0	0.0	5.2	0
tract infection	9.8	1.4	7.2	1.4
Epistaxis <sup>1</sup>	9.0	0.3	4.6	0.3
Rhinitis*	5.0	0.0		0.0
Nasal dryness	5.1	0	0.9	0.3
Nasal irritation <sup>2</sup>	2.0	0	1.7	0.6
Other nasal	2.0	0	1.7	0.0
symptoms <sup>3</sup>	3.1	1.1	1.7	0.3
Pharyngitis	8.1	0.3	4.6	0
Nausea	2.2	0.3	0.9	0
<ul> <li><sup>2</sup> Nasal irritation ing, nasal irrita</li> <li><sup>3</sup> Other nasal sy increased rhin sneezing, nasa</li> <li>* All events are sented by deso</li> </ul>	ation, and u mptoms in orrhea, inc Il polyps, au listed by th	licerative rhin clude reports reased rhiniti nd nasal eden eir WHO term	itis. of nasal co s, posterior na. ı; rhinitis ha	ngestion, nasal drip,
	oratropiur			

of ATROVENT Nasal Spray 0.03%) to 10 male volunteers, no change in heart rate or blood pressure was noted. Following a 2 mg intravenous infusion over 15 minutes to the same 10 male volunteers, plasma ipratropium concentrations of 22-45 ng/mL were observed (>100 times the concentrations observed following intranasal administration). Following intravenous infusion these 10 volunteers had a mean increase of heart rate of 50 bpm and less than 20 mHg change in systolic or diastolic blood pressure at the time of peak ipratropium levels.

Oral median lethal doses of ipratropium bromide were greater than 1,000 mg/kg in mice (approximate ly 16,000 and 9,500 times the maximum recommended daily intranasal dose in adults and children. respectively, on a mg/m<sup>2</sup> basis), 1,700 mg/kg in rats (approximately 55,000 and 32,000 times the maximum recommended daily intranasal dose in adults and children, respectively, on a mg/m<sup>2</sup> basis), and 400 mg/kg in dogs (approximately 43,000 and 25,000 times the maximum recommended daily intranasal dose in adults and children, respectively, on a mg/m<sup>2</sup> basis).

## DOSAGE AND ADMINISTRATION

bromide) Nasal Spray 0.03% is two sprays (42 mcg) per nostril two or three times daily (total dose 168 to 252 mcg/day) for the symptomatic relief of rhinorrhea associated with allergic and nonallergic perenni-al rhinitis in adults and children age 6 years and older. Optimum dosage varies with the response of the individual patient. Initial pump priming requires seven sprays of the pump. If used regularly as recommended, no further priming is required. If not used for more than 24 hours, the pump will require two sprays, or if not used for more than seven days, the pump will require seven sprays to reprime

## HOW SUPPLIED

ATROVENT (ipratropium bromide) Nasal Spray 0.03% is supplied in a white high density polyethylene (HDPE) bottle fitted with a white and clear metered nasal spray pump, a green safety clip to prevent accihasai spray pump, a green safety clip to prevent acci-dental discharge of the spray, and a clear plastic dust cap. It contains 31.1g of product formulation, 345 sprays, each delivering 21 mcg (70µL) of ipratropium per spray, or 28 days of therapy at the maximum rec-ommended dose (two sprays per nostril three times a day).

Store tightly closed between  $59^{\circ}F(15^{\circ}C)$  and  $86^{\circ}F(30^{\circ}C)$ . Avoid freezing. Keep out of reach of children. Do not spray in the eyes.

Patients should be reminded to read and follow the accompanying Patient's Instructions for Use, which should be dispensed with the product.

#### $R_{\chi}$ only

Boehringer Ingelheim Pharmaceuticals, Inc. Ridgefield, CT 06877

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U.S. Patent No. 4,385,048

Rev. Nov 14, 2002 10001900/US/1

Product + component:	Atrovent Nasal Spray, 0.03% / leaflet		
Art. No.:	10001900/US/1		
Country:	United States		
Dimension:	6.25" x 15"		
Scale:	1:1 (inches)		
Date:	25. November 2002		
Colours:	Black		
No. of Films:	2 (Side 2)		
Manufacturer:	Roxane Laboratories, Inc.		
No. of Code:	Interleaved 2of5 Barcode		
Sales / Samples:	Sales		

Notes:

Barcode = For position only; Interleaved 2of5; barcode prints 100% Black; Encodation: 10001900 ; Magnification: 53.5%

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Approvals		
Signature(s):	Department:	Date: m/d/y
	Graphics	
	Engineer	
	DRA	
	Marketing	
	Legal	
	DSI	
	Medical	
	Medical	

10001900/01

therapy in these trials.

Adverse events reported by less than 2% of the patients receiving ATROVENT (ipratropium bromide) Nasal Spray 0.03% during the controlled clinical trials or during the open-label follow-up trial, which are potentially related to ATROVENT's local effects or systemic anticholinergic effects include: dry mouth/throat, dizziness, ocular irritation, blurred vision, conjunctivitis, hoarseness, cough, and taste perversion.

and one-year, open-label (2% or less) trials. There was no evidence of nasal rebound (i.e., a clinically significant increase in rhinorrhea, posterior nasal drip, sneezing or nasal congestion severity compared to baseline) upon discontinuation of double-blind

Additional anticholinergic effects noted with other ATROVENT dosage forms (ATROVENT Inhalation Solution, ATROVENT Inhalation Aerosol, and ATROVENT Nasal Spray 0.06%) include: precipitation or worsening of narrow angle glaucoma, urinary retention, prostatic disorders, tachycardia, constipa-tion, and bowel obstruction.

There were infrequent reports of skin rash in both the controlled and uncontrolled clinical studies. Allergic-) type reactions such as skin rash, angioedema of the been reported with ATROVENT Nasal Spray 0.03% and other ipratropium bromide products

#### OVERDOSAGE

Acute overdosage by intranasal administration is unlikely since ipratropium bromide is not well absorbed systemically after intranasal or oral administration. Following administration of a 20 mg oral dose (equivalent to ingesting more than four bottles

Perforation