

# Nebula modular system

Breathing better means living well





## Just 2 minutes for complete treatment

The Nebula Modular System drastically reduces treatment duration thanks to the use of two specific nebulisers for topical treatment

## Perfecta: Topical treatment of the bronchopulmonary system

The spacer mask is ergonomically designed and made of anti-allergy material to make it easier for both children and adults to tolerate



Nebula Modular System: breathing better means living well

**Perfecta** for the lower airway

**Rinowash** for the upper airway

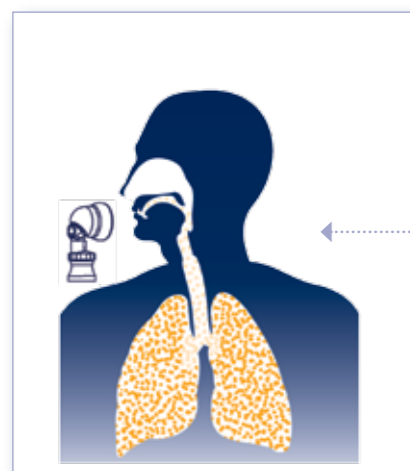
**Topical treatment** = greater efficacy, giving enhanced deposition in the target area.

### A Spacer Chamber

The large volume spacer chamber slows down the flow of atomised drug, thereby reducing oropharyngeal deposition and increasing bronchial deposition. This makes the treatment much more effective.

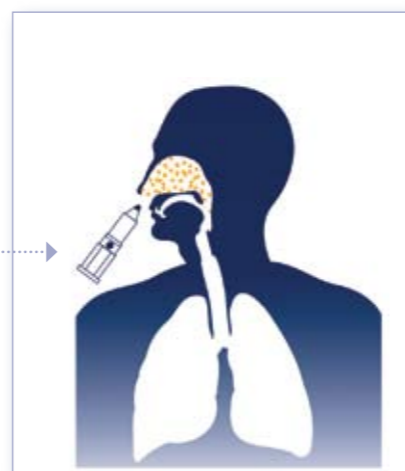


The size of the particles allows deposition in the target organ.



**Perfecta** Guarantees bronchial deposition of the atomised drug as it produces particles size 1-5 microns.

**Rinowash** Aids deposition in the upper airway as it produces particles over 10 microns in diameter.



### B One-Way Valve

The one-way valve drastically reduces drug dispersion, when breathing out through the mouth.

## Comparison of traditional treatment and brief inhalation therapy with salbutamol using a new spacer mask

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### Introduction

Brief inhalation therapy has been proposed to increase patient compliance by delivering the same therapeutic dose, but more quickly compared to the traditional method.

The new Perfecta spacer mask is ideal for use in brief inhalation therapy.

The purpose of this study was to compare traditional inhalation therapy with brief inhalation therapy with salbutamol in 30 asthmatic children using a spacer mask.

### Materials and Methods

Thirty children with bronchial asthma (18 males and 12 females, age range 4-13 years) were assessed during severe asthma attacks (FEV1 <60% of the expected value) and randomly allocated to two groups, each with a different treatment protocol.

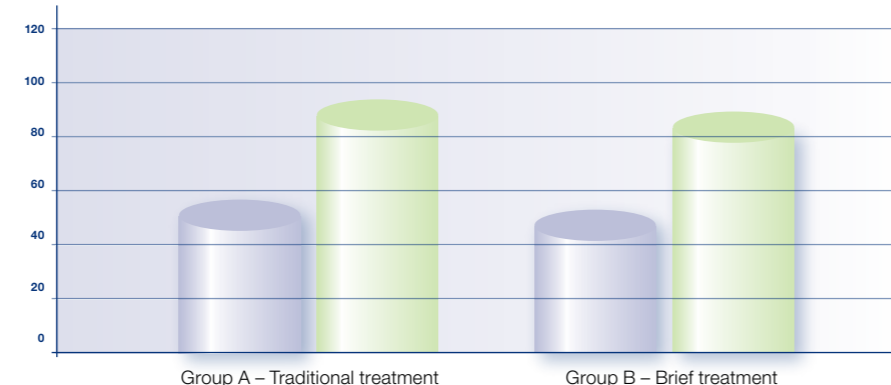
Inhalation therapy was administered to group A

using standard methods and treatment was continued until the nebuliser was empty.

Group B was treated using the new spacer mask in accordance with the manufacturer's instructions. The mask was applied firmly over the mouth and the child was asked to breathe in through the mouth and out through the nose for a total of five times at the respiratory volume, keeping the mouth open.

### Comparison of methods

- Pre-treatment value
- Post-treatment value



### Results

The amount of drug available was around 768 µg for group A patients and 176 µg for group B patients. FEV1 increased in all patients and no difference in the degree of improvement was found between the groups (p<0.05).

### Conclusions

The results show equivalent bronchodilation in brief and traditional inhalation therapy, but since brief therapy is of shorter duration it allows a significant improvement in patient compliance.

*The studies cited here were conducted using the first model of the spacer mouth-mask and are considered valid for the new Perfecta model as well.*

## The new spacer mask increases the effectiveness of inhalation therapy

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### Introduction

Aerosol therapy is one of the safest and most effective methods for treating disorders of the airways, especially in children. The purpose of the study was to compare the effectiveness of a traditional mask and that of the new spacer mask used with a piston-operated device, by measuring the amount of drug depositing in the lungs, oropharynx, upper airway and gastrointestinal tract.

### Materials and Methods

Twelve children aged between 8 and 13 years

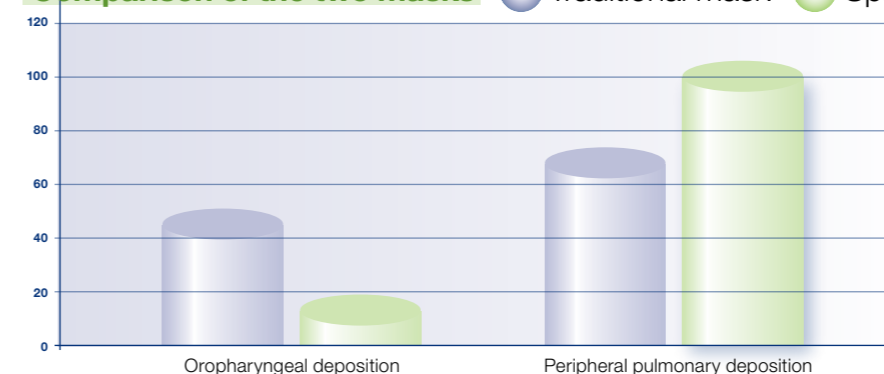
and not affected by any respiratory disorders were recruited for the study. Aerosol inhalation was administered using a spray nebuliser with 2 ml of salt solution containing 20 mCi of Tc99m-DTPA. Group A commenced with aerosol inhalation using a traditional mask and switched a week later to the new spacer mask. Group B commenced with the new spacer mask, followed a week later by the traditional mask.

Scintigraphic images were taken and drug deposition in the trachea, oropharynx, lungs and stomach was measured.

### Results

In group A, radioaerosol deposition in the peripheral pulmonary area, using the new spacer mask, was greater than 97.8 + 7.0, versus 68.5 + 7.9 (p = 0.04) using the traditional mask. Conversely, oropharyngeal deposition with radioaerosol was greater using the traditional mask: 50.2 + 5.2, versus 20.3 + 11.8 (p = 0.028). Likewise, in group B, peripheral pulmonary deposition was greater and oropharyngeal deposition was lower when using the spacer mask: 97.3 + 9.4 versus 70.2 + 11.2 and 20.7 + 8.9 versus 46.3 + 16.8, respectively (p = 0.028 and 0.046).

### Comparison of the two masks



### Conclusions

The new spacer mask allows greater drug deposition in the peripheral area of the lungs and less in the oropharynx, trachea and stomach.

*The studies cited here were conducted using the first model of the spacer mouth-mask and are considered valid for the new Perfecta model as well.*



## Rinowash: topical treatment of the upper airway

### A Internal Chamber

containing the liquid to nebulize.

### B External Chamber

to collect the return fluid.

### C Ergonomic Grip

with a control button to deliver drug on demand.



Rinowash is suitable for treating the upper airway in patients of all ages.

It comes with a special patented internal valve to prevent excess pressure in the nasal cavities and

the risk of barotrauma. Rinowash nebulizes 5 ml of solution in one minute at 1-5 microns.

## Adenoid hypertrophy: an alternative to surgery

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### Introduction

Adenoid hypertrophy (AH) is one of the most frequent causes of surgical intervention in children.

It has been hypothesized that endonasal treatment with corticosteroids may reduce adenoid size.

The purpose of this study was to assess the effectiveness of using flunisolide administered endonasally with a nasal nebuliser specifically designed for children with adenoiditis.

### Materials and Methods

This study assessed 178 children affected by grade III or IV adenoid hypertrophy revealed by initial endoscopic examination.

The children were treated for 8 weeks with flunisolide administered endonasally or with a salt solution.

Both treatments were administered using Rinowash, a nebuliser that is particularly effective in treating the upper airways.

After treatment, endoscopic examination was performed to re-assess the degree of adenoid hypertrophy.

### Results

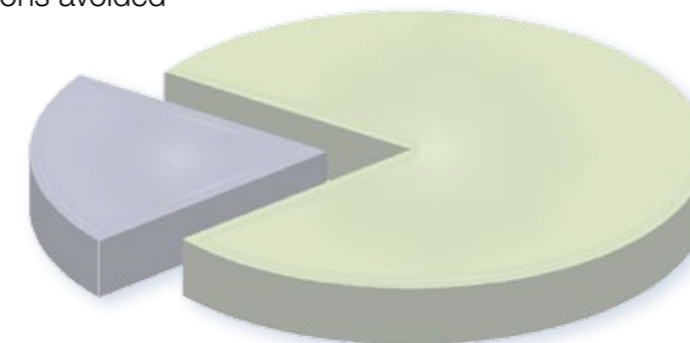
Flunisolide treatment using Rinowash was associated with a considerable reduction ( $p < 0.04$ ) in the degree of adenoid hypertrophy.

There was also a sharp reduction in the number of children candidates for adenoidectomy (46 out of 58). No significant adverse events were recorded.

### Conclusions

This preliminary study demonstrates that 8-week treatment with flunisolide administered endonasally using a Rinowash nebuliser is associated with a significant reduction in adenoid hypertrophy.

- Operations confirmed
- Operations avoided





## Topical treatment: specific solution for treating respiratory disorders

### Rinowash

- particle size >10 microns
- removes secretions, mucus and catarrh
- reactivates mucociliary movement in the nasal cavities
- can be used with natural and drug solutions

### Perfecta

- particle size 1-5 microns
- specific for brief treatment
- increases peripheral deposition of the drug
- enhances patient compliance, increasing the treatment's effectiveness

### For the treatment of:

- rhinitis
- rhino-sinusitis
- nasal polyposis
- adenoiditis
- tubotympanitis

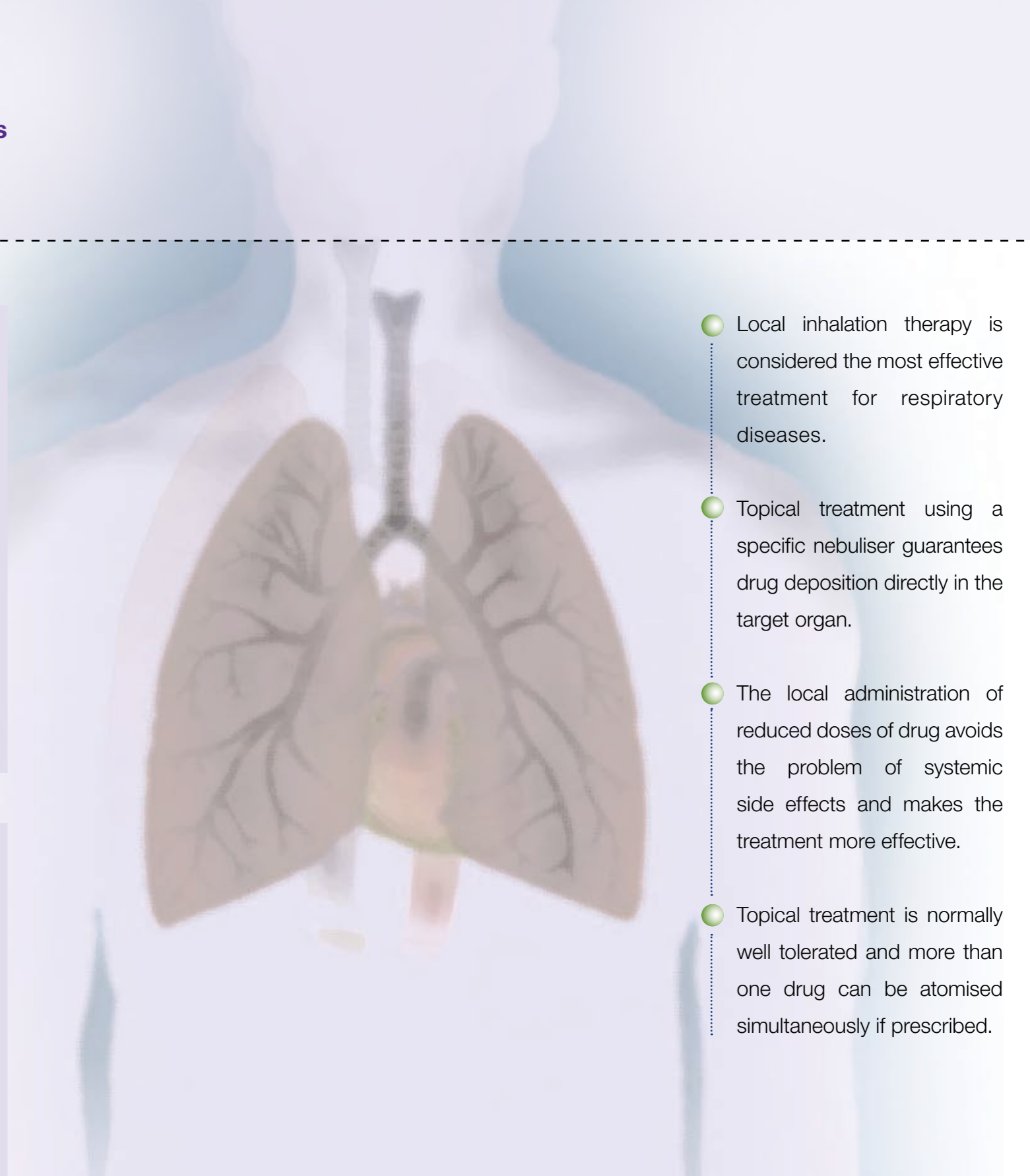


### For the treatment of:

- bacterial or viral respiratory infections
- asthma
- bronchitis
- pneumonia
- cystic fibrosis



- Local inhalation therapy is considered the most effective treatment for respiratory diseases.
- Topical treatment using a specific nebuliser guarantees drug deposition directly in the target organ.
- The local administration of reduced doses of drug avoids the problem of systemic side effects and makes the treatment more effective.
- Topical treatment is normally well tolerated and more than one drug can be atomised simultaneously if prescribed.





**Air Liquide Medical Systems, Markos Mefar's new name**, is the Air Liquide Group's Medical Equipment Business Unit. The **strong tradition of this Italian leader in inhalation therapy** combines with the specialisation and innovation capability of an

important international group.

**By reinforcing our Research & Development team's collaboration with healthcare operators** we can step up our respiratory research to drive innovation and achieve our main aim, **patient satisfaction, namely a guarantee of good health and quality of life, thanks to new, efficient, simple and safe solutions.**

**Nebula** a modular aerosol therapy system with:

**Rinowash**

A specific nebuliser for the upper airway. Rinowash atomizes particles of an ideal size for treating the nasal passages with salt and drug solutions.



**Perfecta**

An innovative spacer mask for treating the lower airways, allowing greater bronchial deposition of the drug.

**Effective treatment in less time.**

Perfecta and Rinowash are compatible with any piston-operated aerosol therapy device.



**Rinowash solution**

Hypertonic salt solution, ideal for flushing out the nasal cavities.



**L'espace** Spacer chamber for metered dose inhalers (MDIs)

Designed to improve drug distribution and increase treatment effectiveness

Made in Italy

- Sterilizable
- Antistatic
- Handy and manageable
- Can be used with any MDI
- Clinically tested
- Made of durable, highly resistant material



with infant mask



with paediatric mask



with adult mask



with adult mouthpiece





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**As from 1st June 2009 Markos Mefar has become  
Air Liquide Medical Systems S.p.A.**



Air Liquide's Healthcare business supplies medical gases & equipment to hospitals, medical services to patients at home and is active in the fight against nosocomial infections. Its 7,800 employees serve 5,000 hospitals and 300,000 patients, on five continents. Air Liquide is the world leader in gases for industry, health and the environment.