

# Cipla

## Inhaled Drug Delivery Systems

every breath for you



Millions of people suffer every day from chronic respiratory diseases and these constitute a large part of a physician's practice. According to the recent WHO estimates (2007), currently 300 million people have asthma; 210 million people have chronic obstructive pulmonary disease (COPD) while millions have allergic rhinitis and other often-underdiagnosed chronic respiratory diseases.

Inhalation therapy has now become an indispensable part of the standard management plan for respiratory diseases such as asthma and COPD. By prescribing the right drug and inhalation device, a physician can successfully manage these conditions at any age and stage.

Recent years have seen a phenomenal diversity in the products and the technologies applied in this field. The spectrum of inhaler devices and drug/device combinations available today has made inhalation therapy more convenient and accessible. However, choosing the optimal device is essential to ensure the effectiveness of the therapy and the best control for the individual patient.

The intent of this booklet is to serve as a guide to help physicians appreciate the benefits of inhalation therapy and the various delivery systems available.

This is yet another expression of Cipla's continuing commitment to respiratory care.



every breath for you

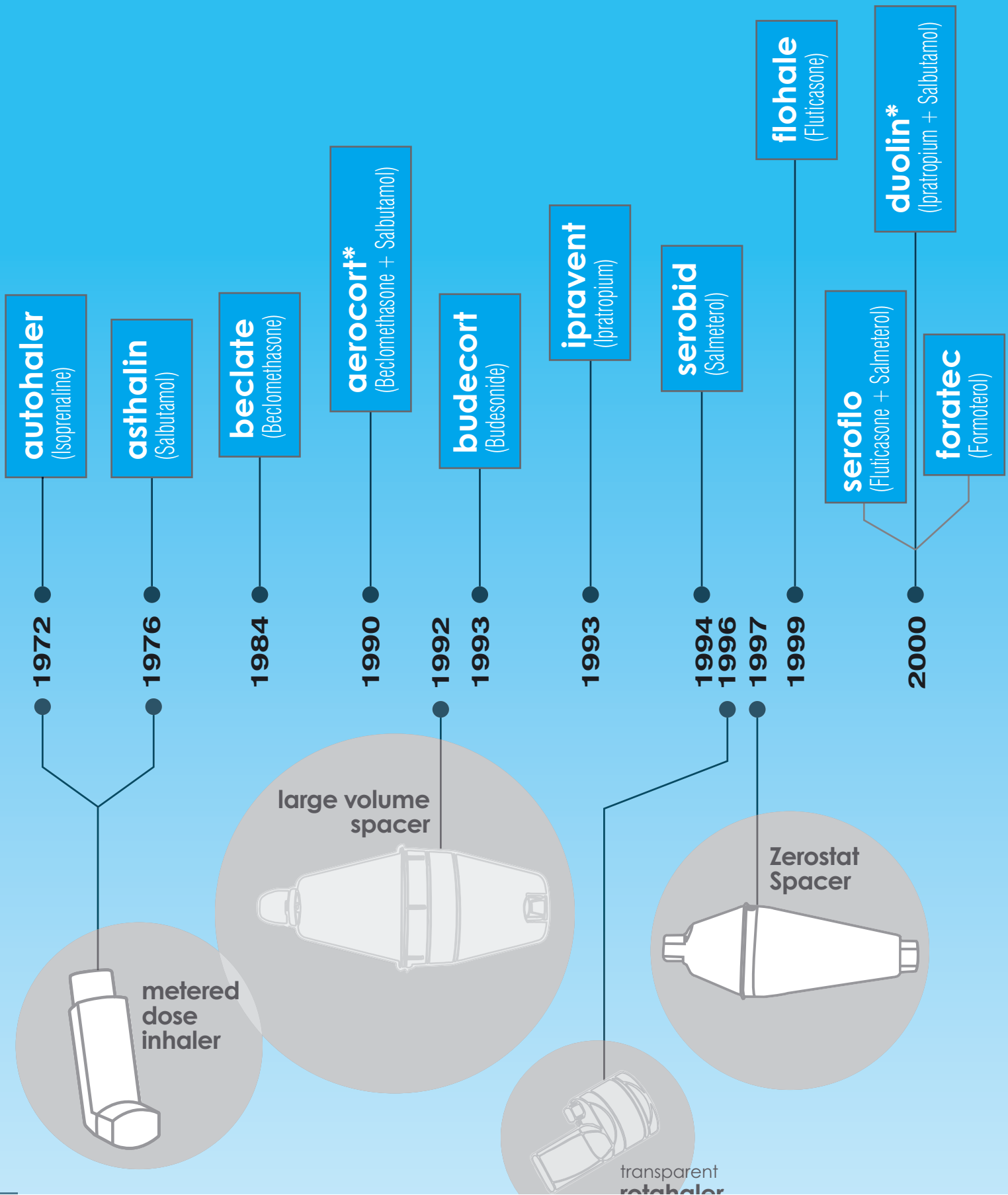


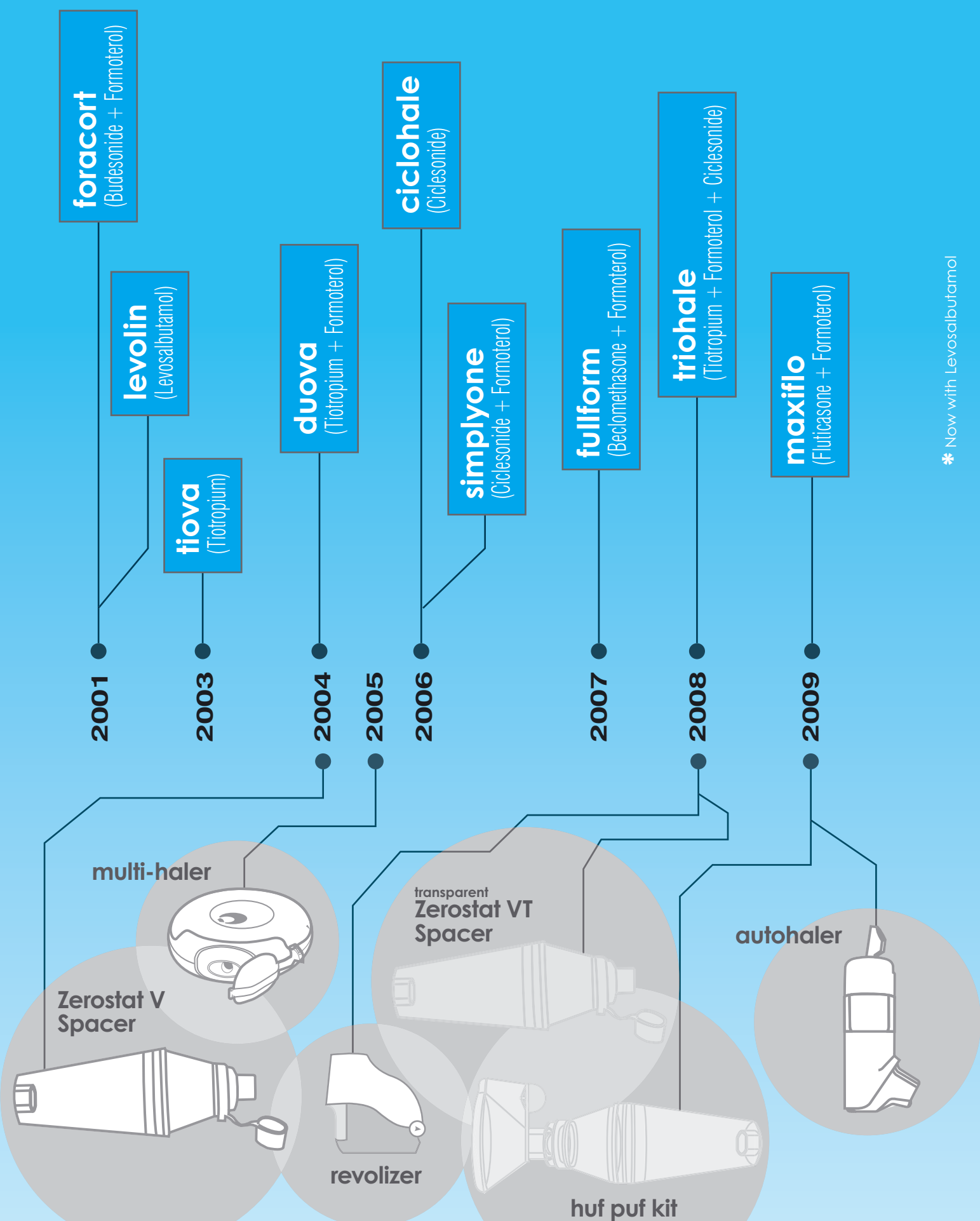
**Cipla**

Inhaled Drug Delivery Systems

# Cipla milestones

in inhalation therapy





\* Now with Levosalbutamol

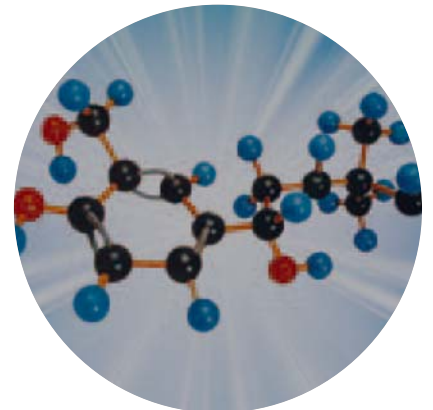
# over 30 years of dedication to respiratory care

# 30 years

It needs a commitment beyond the ordinary to provide relief and succour to a patient always gasping for breath, and struggling to cope with a crippling respiratory disease.

For over 30 years, Cipla has worked hand-in-hand with the medical profession to improve the quality of life of patients suffering from chronic respiratory diseases such as asthma and COPD.

The landmark introduction of Asthalin in 1976 ushered in a “wind of change” in bronchodilator therapy. Over the years, Cipla has introduced a wide therapeutic spectrum of drugs, delivery systems and devices to manage every facet of chronic respiratory diseases. This commitment has enabled Cipla to become a world leader in respiratory care.

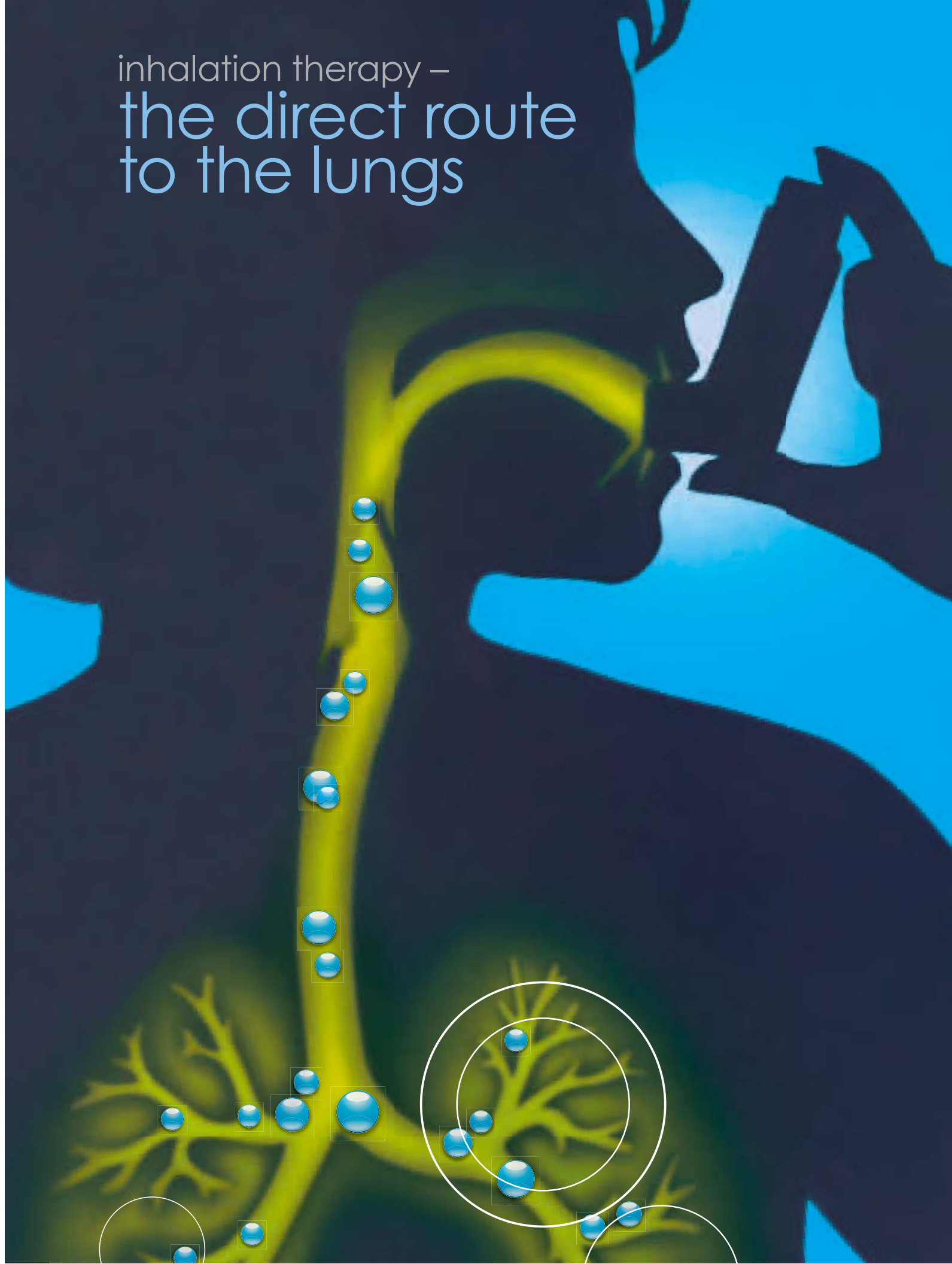




- The world's largest range of aerosol medications and devices.
- World class manufacturing facilities approved by international regulatory authorities.
- A trusted name in aerosol therapy in over 170 countries.
- The world's first transparent dry powder inhaler - the **Rotahaler** and a novel single-dose dry powder inhaler - the **Revolizer**.
- A unique single-action, multi-dose dry powder inhaler - the **Multi-haler**.
- An exclusive range of non-static spacers - **Zerostat** and **Zerostat VT**.
- First breath-actuated metered dose inhaler in India - the **Autohaler**.

and the commitment continues .....

inhalation therapy –  
the direct route  
to the lungs





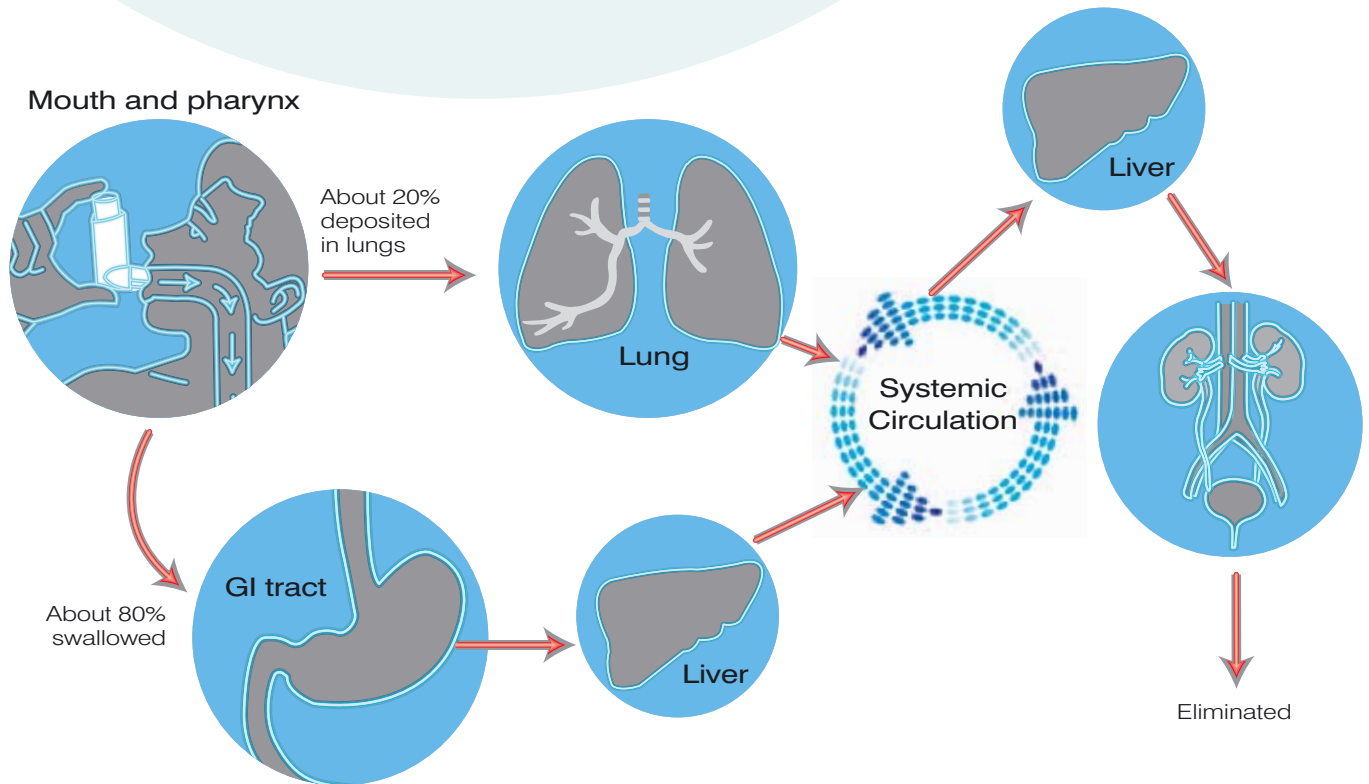
The world over, most patients with asthma and COPD are now treated with inhaled drugs. Inhaled drug delivery puts the drug where it is needed, whereas oral tablets and syrups must be absorbed in the gastrointestinal tract and need to travel through the bloodstream to various parts of the body before they reach the lungs.

- The inhaled route is the most effective method to get the medicine where it is supposed to go – directly to the airways.
- The therapeutic effect is rapidly achieved – especially symptom relief with inhaled bronchodilators.
- The dose intake is low and a fraction of the oral dose – the drug content of one tablet of 4 mg salbutamol is equivalent to 40 doses from a metered dose inhaler (MDI).
- Side effects are minimal since the rest of the body is not exposed to the drug. This is very important, especially when steroid therapy is required.
- Some drugs are therapeutically active only when inhaled (e.g., most inhaled corticosteroids, sodium cromoglycate, salmeterol).
- Exclusive steroids have been developed for inhalation therapy. They have high, localized activity in the lungs and remarkable safety since the swallowed portion is inactivated by its very first passage through the liver.
- Since chronic respiratory diseases require long-term treatment, the exceptional safety of inhaled therapy is especially valuable.

In the last few decades, a variety of inhalers have been developed to treat chronic respiratory diseases. They have helped millions of people breathe better and have transformed their lives.

Respiratory care in India has also undergone a dramatic transformation. Cipla is proud to have facilitated this change by supporting physicians with the latest medications and highly effective inhalation devices.

# dynamics of inhaled drugs



The efficacy of both bronchodilators and anti-inflammatory agents in asthma and COPD results from their local effects in the airways. Thus, achieving a high local concentration of these agents in the lung should maximize their intended effects and minimize their systemic absorption and potential adverse actions.

About 15-40% of drug released from an inhaler device is deposited in the lungs. This is more than sufficient to achieve a clinical effect. 60-80% is deposited in the throat and the remaining in the inhaler device. The amount deposited in the throat can be considerably reduced by using a spacer device.

- The portion of the drug that is deposited in the lungs has its pharmacological effect and is then absorbed from the lungs into the systemic circulation.
- Drug deposited in the throat is swallowed and subsequently absorbed from the gastrointestinal tract into the systemic circulation via the liver where it undergoes metabolism and subsequent elimination.

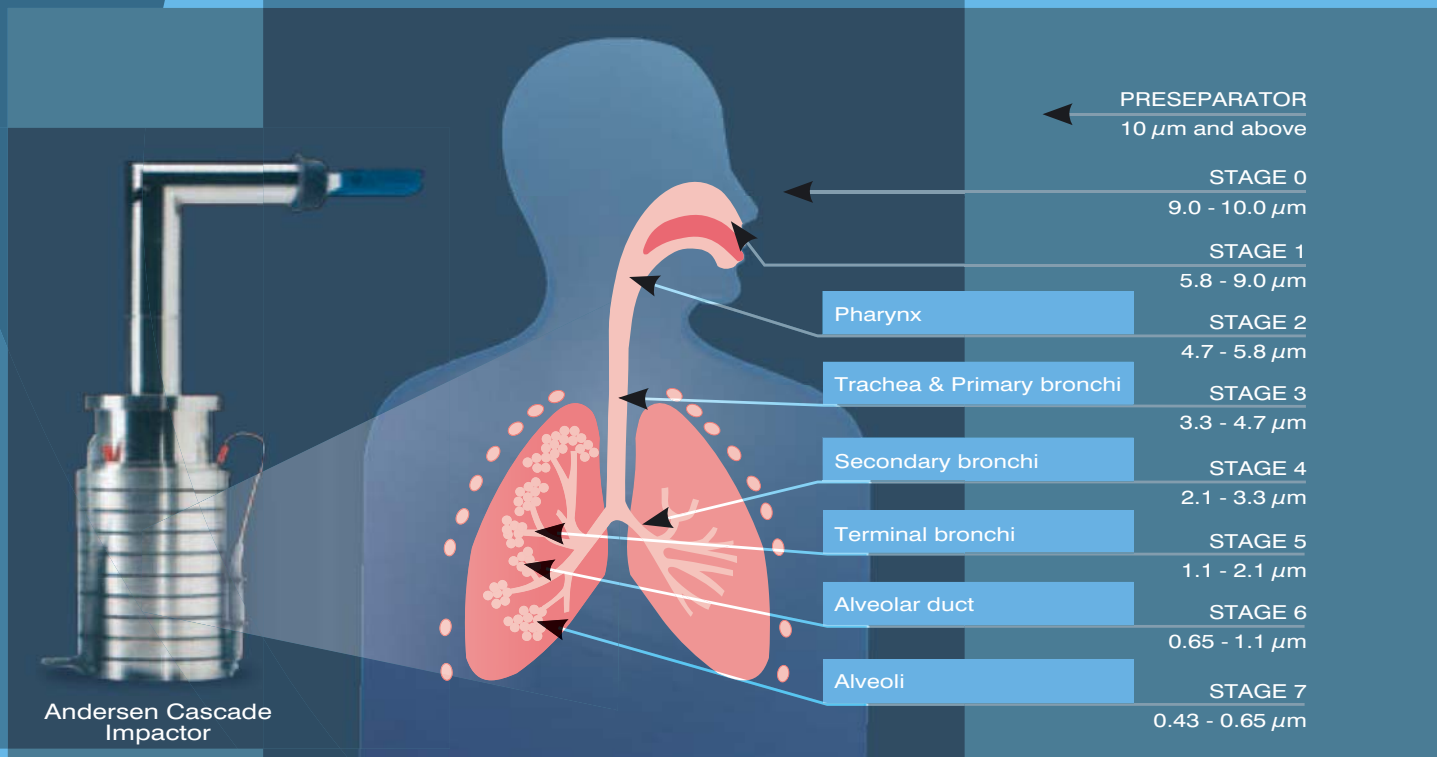
## Fine particle dose (FPD)

- FPD is the proportion of the delivered dose reaching the lungs.
- The *in vitro* FPD simulates the amount of drug that is expected to reach the lungs.

## The FPD is measured by an instrument called the Andersen Cascade Impactor

- 1–5  $\mu\text{m}$ : most efficiently deposited in the lower respiratory tract
- <0.5  $\mu\text{m}$ : unlikely to deposit in the lungs
- >5  $\mu\text{m}$ : unlikely to deposit in the lungs

FPD is the sum of the amount of drug deposited from stage 2 to stage 7 as shown in the figure below



Simulation of the Human Respiratory System

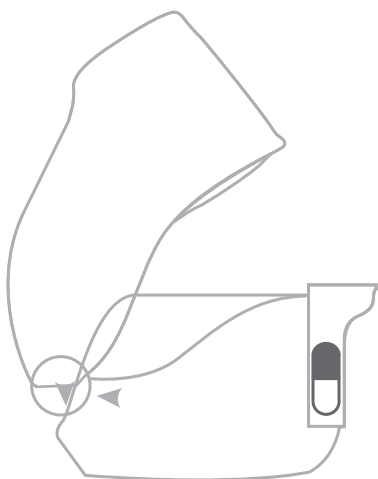
# dry powder inhalers

(DPIs)

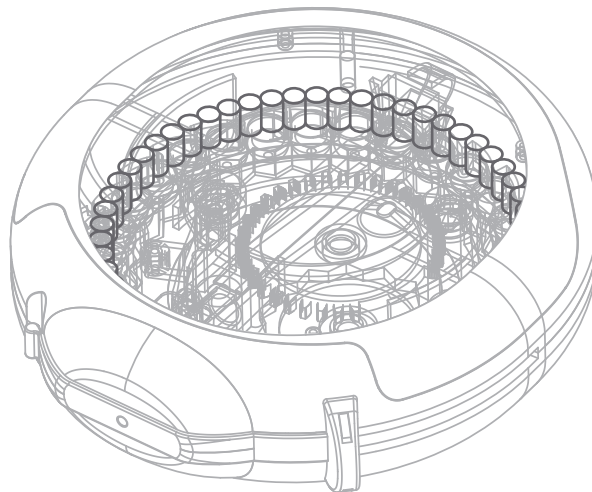
DPIs, as their name implies, dispense medication as a dry powder formulation without the use of propellants as in MDIs. The drug in a DPI is provided as a micronized powder (particle size  $2.5\text{--}5\ \mu\text{m}$ ) with an inert carrier such as lactose. DPIs are breath-activated devices and, unlike the MDIs, do not require coordination between actuation and inhalation. The patient exhales out a full breath, places his/her lips around the mouthpiece, and then quickly breathes in the powder. The technique is different from that of the MDIs. DPIs are easy to use and as effective as MDIs. Hence, DPI therapy has become increasingly popular in the last few years.

DPIs are of two types: unit-dose and multi-dose. While the Rotahaler and Revolizer are unit-dose DPIs, the Multi-haler contains pre-filled multiple doses of the medication.

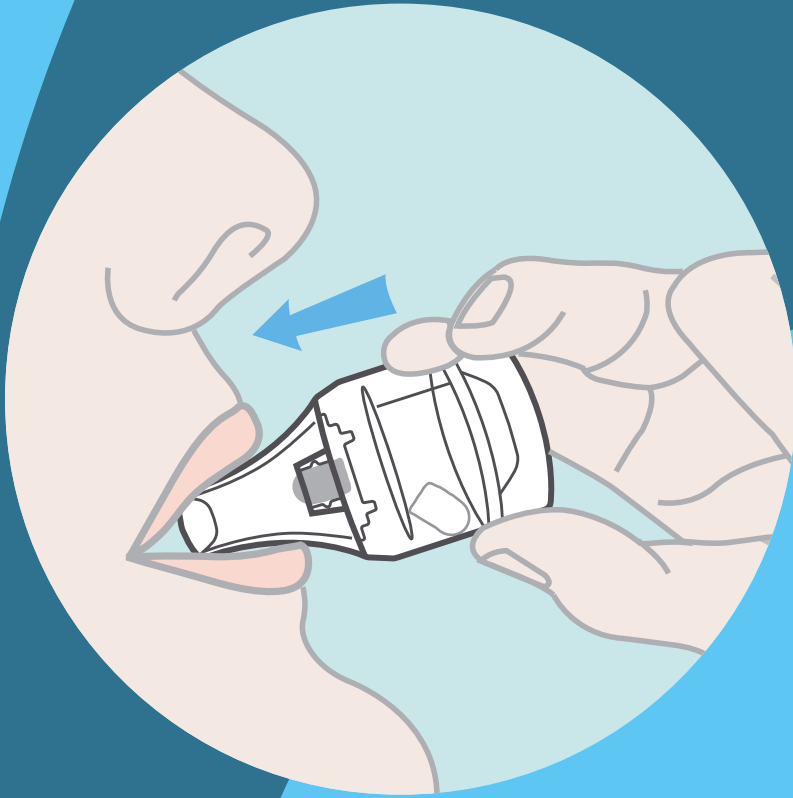
Cipla DPIs have been exclusively developed to ensure consistent dose delivery through patient-friendly devices and the right dry powder formulations - Rotacaps and Multihalers - comprising the actives and a high grade excipient.



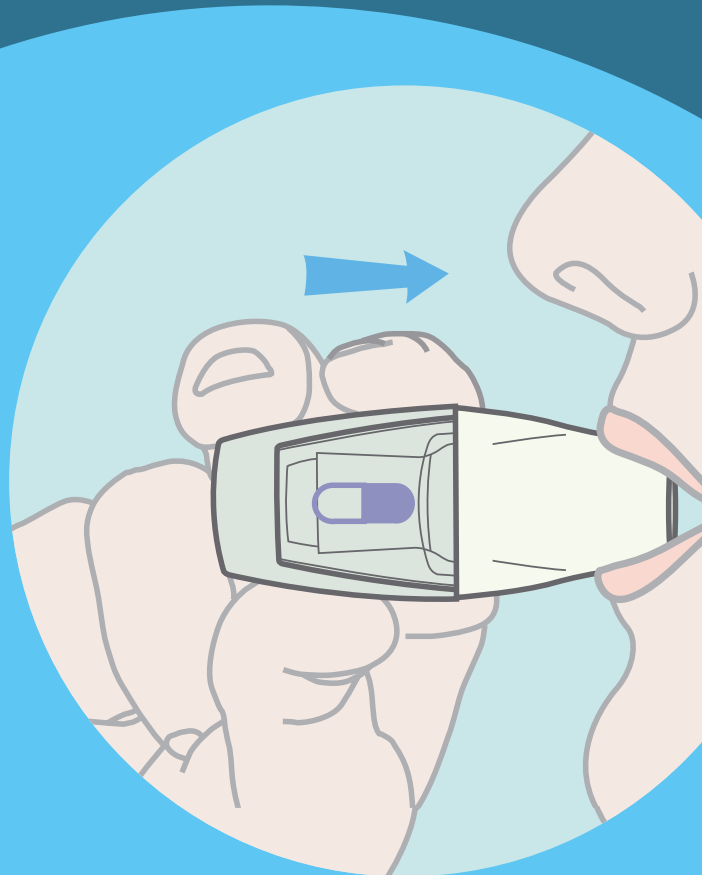
unit-dose



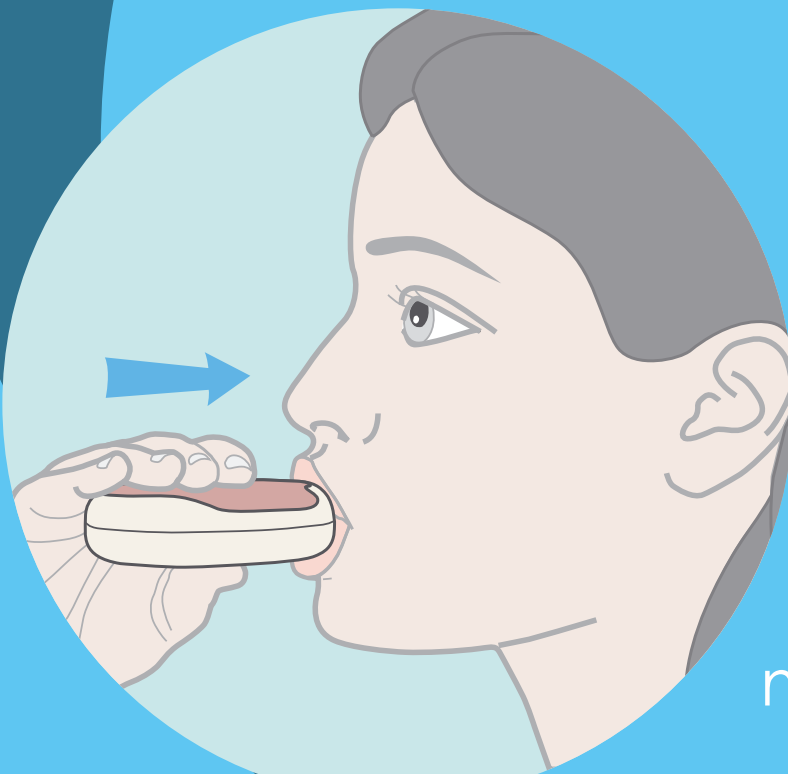
multi-dose



transparent  
rotahaler<sup>®</sup>  
in use



revolizer<sup>®</sup>  
in use



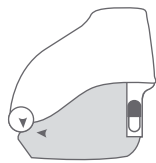
multi-haler<sup>®</sup>  
in use

# revolizer<sup>®</sup>

for use with **Cipla rotacaps** only

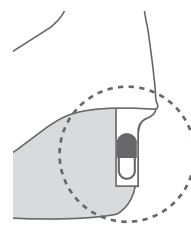


The Revolizer is a new generation patient-friendly dry powder inhaler exclusively developed by Cipla. It is probably the easiest device to use. The patient simply opens the Revolizer, inserts the rotacap, shuts the device and inhales.



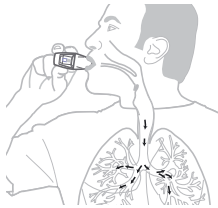
## Sleek Design

Ergonomically created to ensure high lung deposition with ease of use.



## Transparent Medication Chamber

Enables the patient to see that the dose has been inhaled.



## High Efficacy

Higher drug deposition in the lung compared to earlier DPI devices.

Functional even at low inspiratory flow rates.

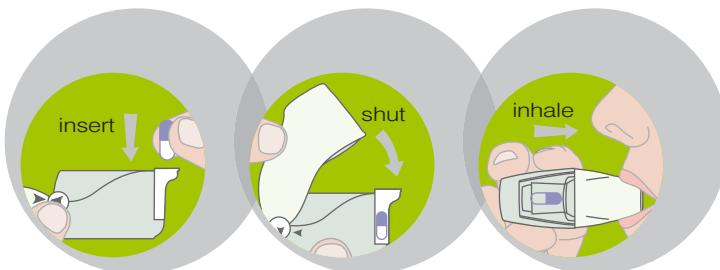


## Ease of Use

Can be used by all age groups including patients with severe airway limitation.

The Revolizer incorporates all the features of an ideal inhaler device.

## revolizer<sup>®</sup> in action



mouthpiece

open the  
mouthpiece  
fully till both  
arrows meet

transparent  
rotacap  
chamber

revolizer  
Cipla

base

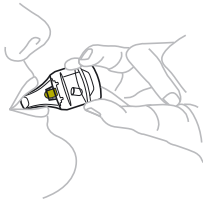


special grade  
stainless steel pins



# transparent rotahaler®

for use with **Cipla rotacaps** only



## Transparent Design

Enables the patient to see that the dose has been inhaled.



## Simplicity

Can be used by patients of all age groups.



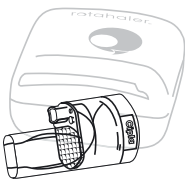
## High efficacy

Ease of use ensures high lung deposition.



## Versatility

Single inhalation device for multiple medications.

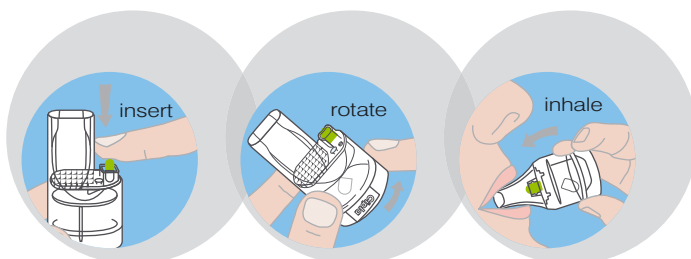


## Convenience

Easy to carry.

The Rotahaler heralded the era of patient-friendly inhalation therapy and has led to wider acceptance of the benefits of inhalation therapy. Since its introduction in 1996, millions of asthmatics have used the Rotahaler with dramatic results.

transparent **rotahaler®** in action









# multi-haler™

single-action use



Multi-dose DPIs fall into two main categories:

- Those which disperse the dose directly from a powder reservoir
- Those which disperse individual, pre-metered doses from a blister

The Multi-haler is an example of the second type and it needs just a single step for use. A simple action of sliding the mouthpiece cover punctures a blister to release the drug powder, which is then inhaled through the mouthpiece. The reproducibility of the pre-measured dose is assured during the formulation, dose filling and device assembly process.



### Ready to use

Avoids loading of doses unlike unit dose devices.



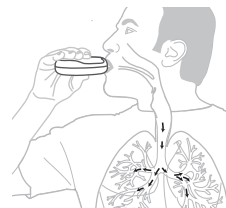
### Dose Counter

Confirms dose taken and also indicates number of doses left.



### Compact and Convenient

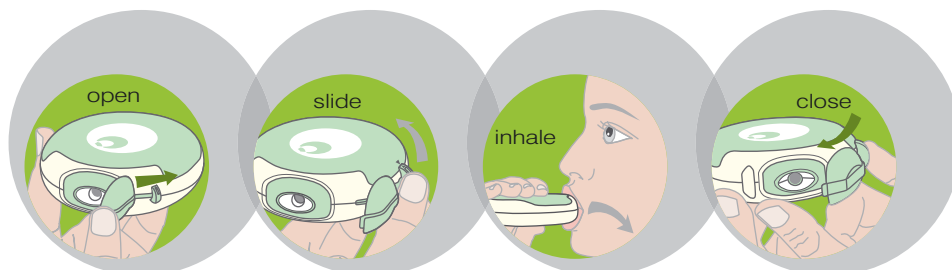
Easy to carry.



### High lung deposition

High lung deposition due to precision formulation and ease of use.

## multi-haler™ in action





base

mouthpiece

mouthpiece cover

slider



dose counter



# metered dose inhalers (MDIs)



The MDI is a device that delivers a specific and pre-metered amount of medication to the lungs, in the form of an aerosol spray that is inhaled by the patient. It consists of a canister of pressurized medication that fits into a plastic actuator sleeve and connects to a mouthpiece. The formulation in an MDI is made up of the drug and a liquified gas propellant.

Cipla MDIs are designed to deliver accurate dosing by employing the right formulation technology and using the most sophisticated metered dose valves, canisters and actuators.

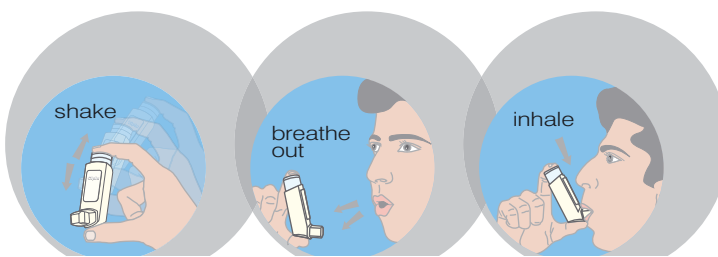
## Advantages of MDIs

- **Most widely used inhalation device.**
- **Compact and portable.**
- **Quick dose delivery – requires no preparation except shaking.**
- **Suitable for all age groups.**

Proper use of the MDI requires some practice. Unless the MDI is used correctly, the patient will not get the full dose of the drug and, hence, will not derive the full benefits. Many patients, including children, find it difficult to co-ordinate the actuation and inhalation of the drug released from the MDI. Such patients can benefit immensely by using a spacer attached to the mouthpiece. An MDI + spacer is generally as effective as a nebulizer.

In accordance with the Montreal Protocol (1987), the chlorofluorocarbon (CFC) propellants currently used in aerosol inhalers are being phased out and being replaced with hydrofluoroalkane (HFA).

## MDI in action







# autohaler™

breath-actuated MDI



The Autohaler is a new advance in MDI therapy. It is a unique breath actuated inhaler (BAI) and overcomes the key problem of the MDI which is coordination of actuation with inhalation. It is activated at low inspiratory flow rates of 22–30 l/sec.



## Breath Actuated

Overcomes the coordination problem of MDIs.



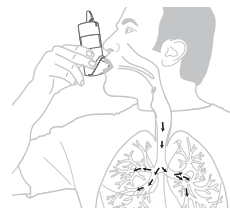
## Easy for All

Can be used by all including children, older patients, patients with severe airflow obstruction and those with arthritis.



## Single Step Usage

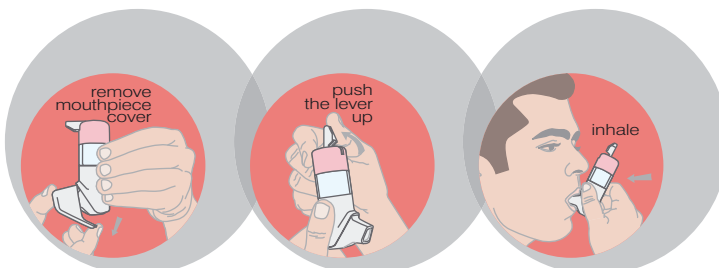
Easy to teach.  
Easy to use.



## High Efficacy

High lung deposition even in patients with low inspiratory flow rates.

## autohaler™ in action



lever

canister

mouthpiece cover

mouthpiece



# spacers and related devices

Spacers (sometimes also called holding chambers) are devices that hold the medication for a few seconds after it has been released from the MDI. They serve two main purposes:

- They overcome the “co-ordination” problem – the need for synchronization between firing the aerosol and inhalation. This allows the user to obtain the full benefit of the MDI.
- They slow down the aerosol spray before it reaches the mouth, thus allowing the propellants to evaporate and larger particles to settle in the spacer. This leads to less deposition in the oropharynx and greater deposition in the lungs. Decreased oropharyngeal deposition is particularly important for inhaled steroids since this reduces the incidence of oral thrush and also the amount of drug that is swallowed, thereby reducing any systemic side effects that may occur.

Plastic spacers have an inherent electrostatic charge. This causes the aerosol to stick to the inside of the spacer and, therefore, reduces the amount of medication that is inhaled into the lungs. Highly charged spacers have been shown *in vitro* and *in vivo* to reduce the output of medications released from the MDIs, thereby compromising the quantity of drug available for inhalation. Static-free spacers resolve this problem and result in a much higher drug deposition and enhance the effectiveness of MDI therapy.

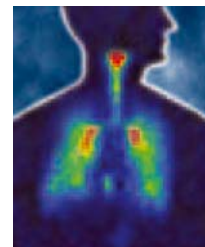
## zerostat<sup>®</sup> spacer

It is a static-free, non-transparent spacer without a valve mechanism.

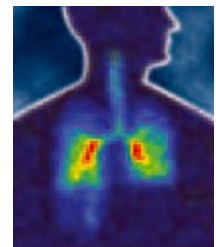


## Pulmonary delivery through the Zerostat Spacer

Aerosol deposition in the lungs assessed by gamma scintigraphy



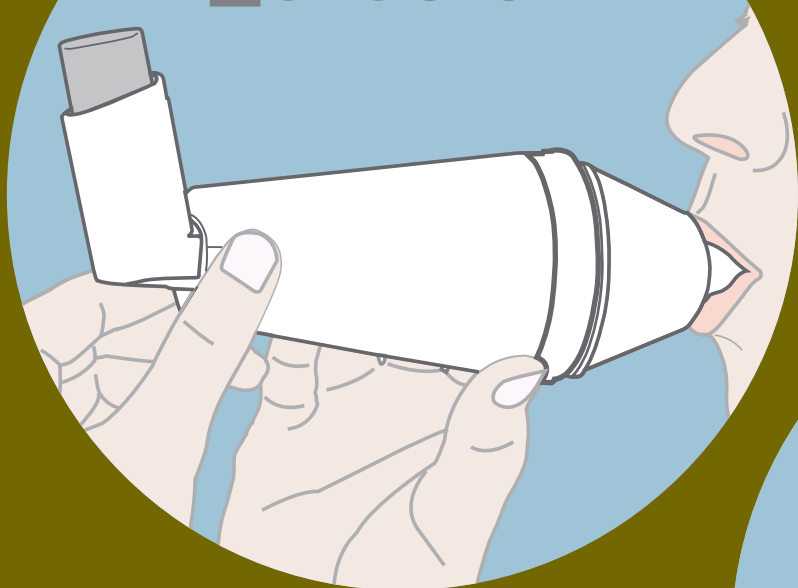
Asthalin Inhaler



Asthalin Inhaler + Zerostat Spacer



Zerostat<sup>®</sup>



Transparent  
zerostatVT<sup>®</sup>



babymask<sup>®</sup>



huf puf kit<sup>™</sup>





Transparent  
**zerostatVT**® spacer  
for use with **Cipla inhalers** only

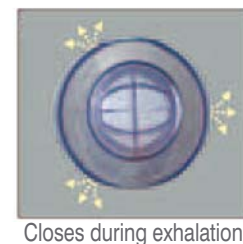
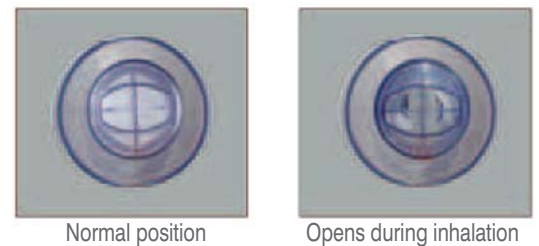


The Zerostat VT spacer is a unique transparent, static-free spacer with a valve mechanism. Because the Zerostat VT is non-static, hardly any drug sticks to its walls. Thus, more quantity of the drug reaches the lungs following inhalation. There is an increasing preference worldwide for spacers that are of small volume and made of non-static material.

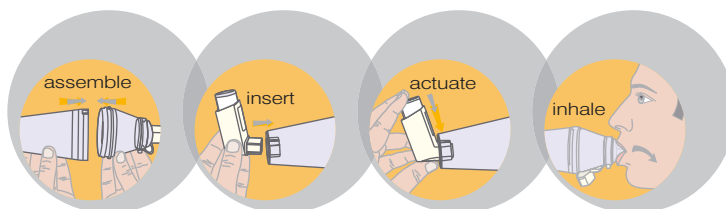
### FlowGate Valve Technology in the Zerostat VT spacer

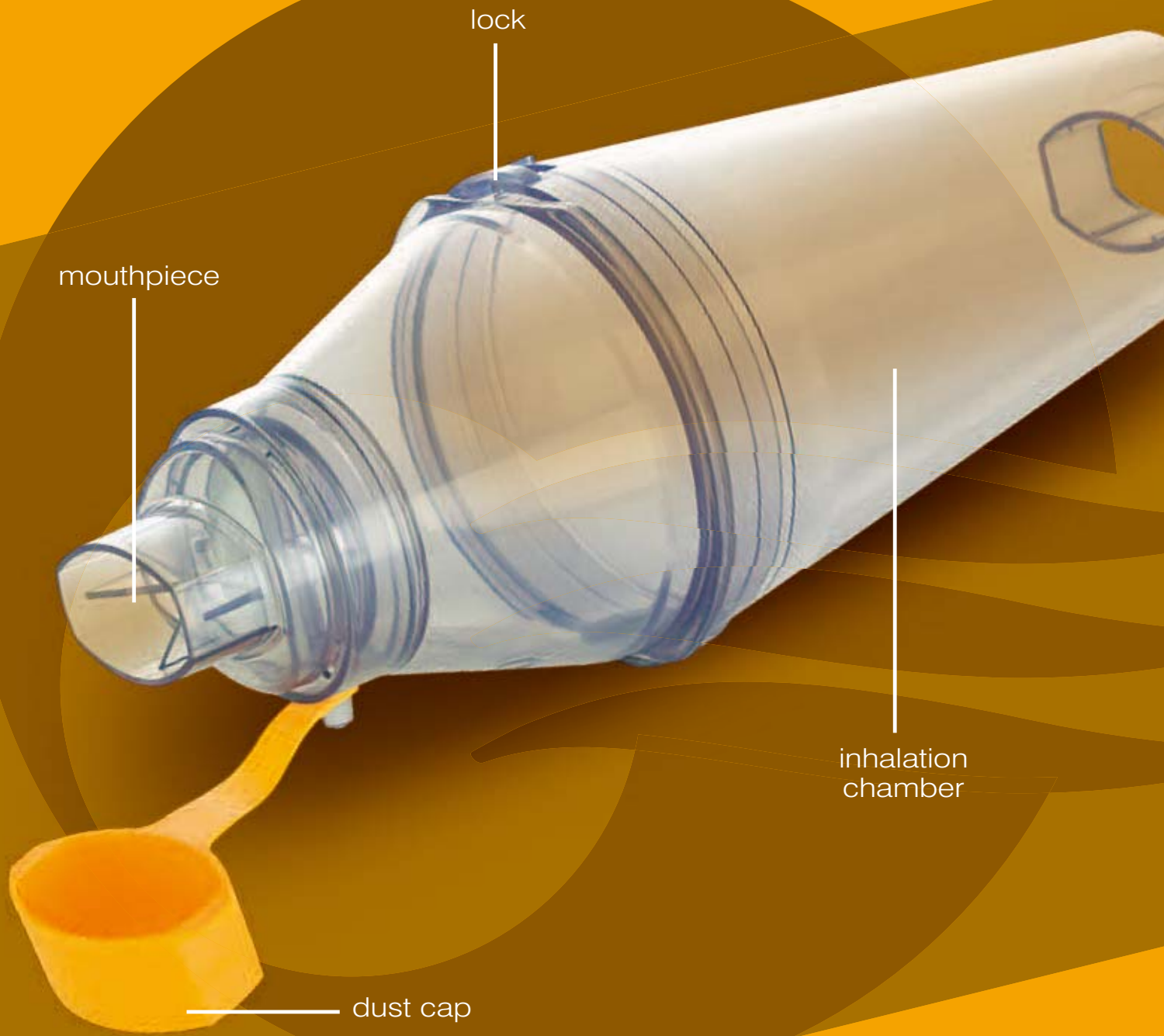
- The valve shuts when the patient exhales into the chamber. This ensures that the residual dose is retained in the spacer for subsequent inhalation.
- Functional even at low inspiratory or expiratory flow rates.
- Robust and durable.
- Easy to clean.

The Zerostat VT spacer ensures that patients receive a high and consistent quantity of medication, dose after dose.



### how to use the **zerostatVT**® spacer







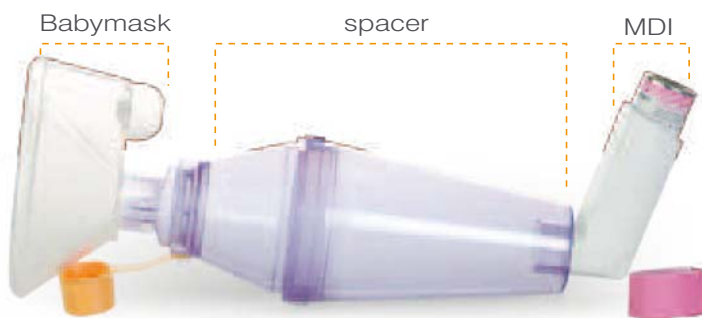
# babymask<sup>®</sup>

for use with **Cipla spacers / inhalers** only



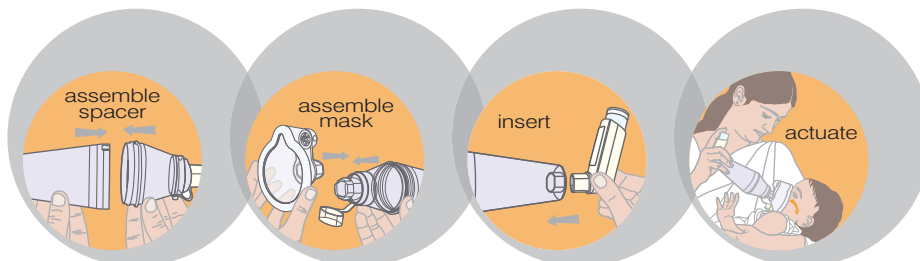
The Babymask makes it easy to deliver inhaled medicines to young children using an inhaler and a spacer device. It is made of comfortable, soft, clear silicon and is reusable. It fits snugly and is also equipped with an exhalation vent for easy breathing.

The Babymask is particularly helpful for young children up to 3 years of age. It is also useful for those who have difficulty in maintaining a good lip seal on the mouthpiece of the MDI.



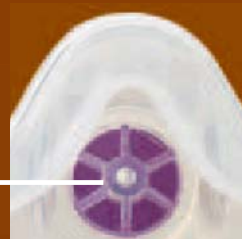
Assembled unit

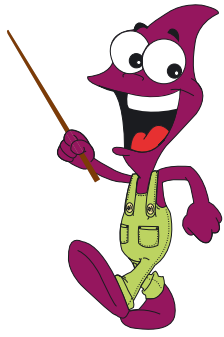
## how to use the **babymask**<sup>®</sup>



comfortable  
snug-fit shape

exhalation  
vent





# huf puf kit™

for use with **Cipla inhalers** only



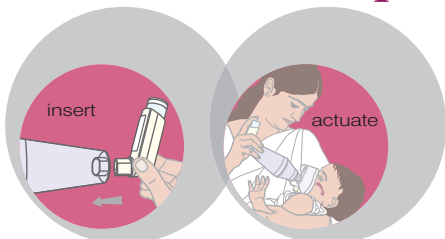
The Huf Puf Kit consists of a Zerostat VT Spacer attached to a Babymask and can be used with any Cipla MDI.

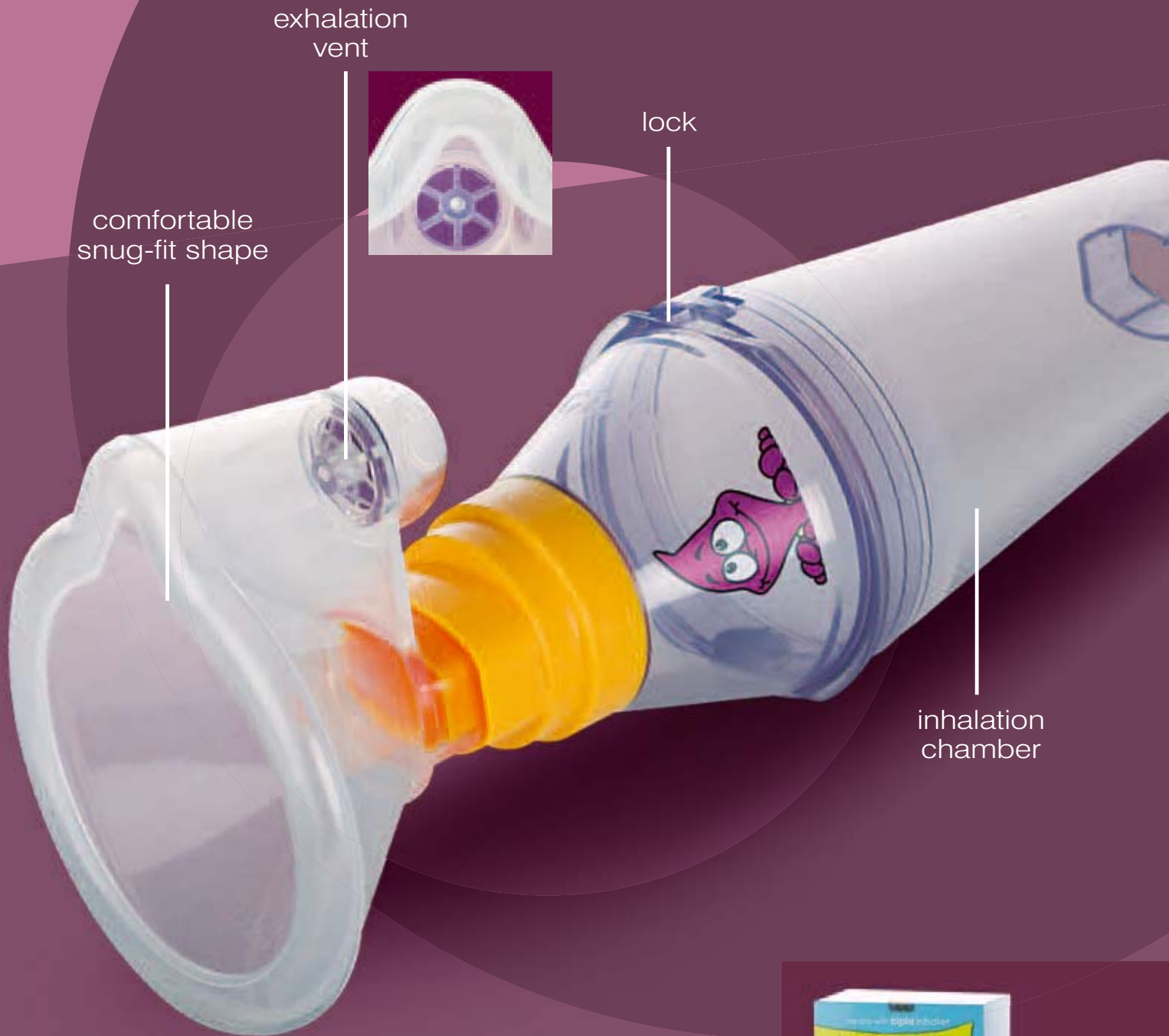
## Features of the Huf Puf Kit

- Easy to use - no need to dismantle and re-assemble the kit every time.
- Attractive and child friendly pack.
- Convenient to carry.



## how to use the huf puf kit™





exhalation vent

comfortable snug-fit shape

lock

inhalation chamber



# nebulizers

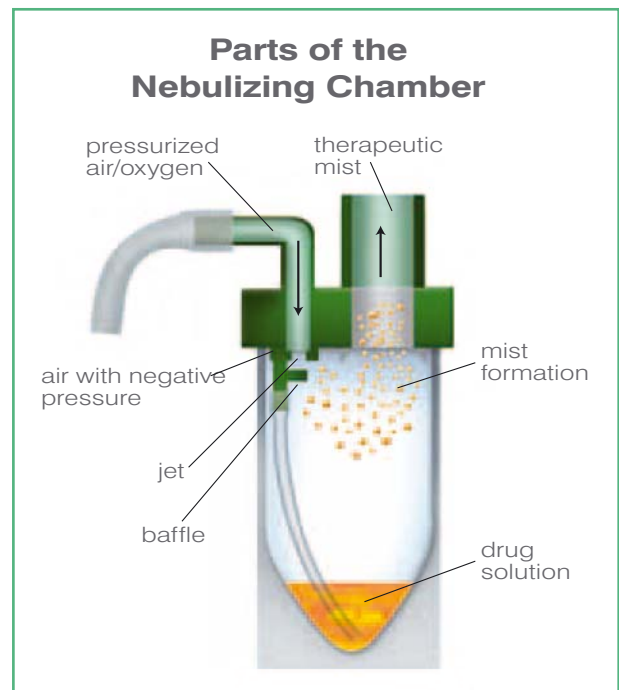


The nebulizer converts the drug solution into a continuous fine aerosol mist, which can be inhaled directly into the lungs via a face mask or mouthpiece. Nebulizing chambers are small plastic devices into which the drug solution is placed. These devices are driven by a compressor (electric/battery operated) or oxygen. A gas flow of about 6-8 litres/minute is normally required to drive the nebulizer.

Drug inhalation is accomplished by normal tidal breathing over a 5-10 minute period.

## Advantages of nebulizers

- No effort required; needs only tidal breathing.
- A large dose of the drug can be administered simply and effectively.
- Home treatment for patients who are too ill, short of breath, or otherwise unable to use hand-held inhalers.
- A very effective method for treating asthma in children below 3 years of age, who cannot use other inhalation devices.





## Main Clinical Indications for Nebulizer Therapy

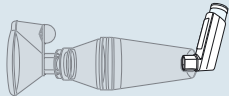
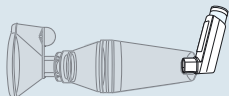
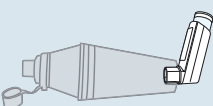
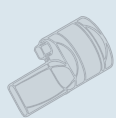
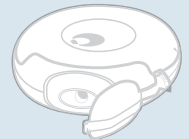


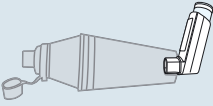
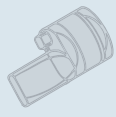
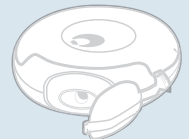


- Emergency treatment of acute asthma and COPD.
- Long-term treatment of airway diseases in patients unable to use other devices.
- Bronchodilator treatment under intensive care.
- Delivery of antibiotics in diseases like cystic fibrosis.

## Types of Nebulizers

- **Jet nebulizers** are used with air compressor-driven machines called nebulizer compressors and are approved for use with all available nebulizer medications. These are the most widely used type of nebulizers.
- **Ultrasonic nebulizers** use sound waves to burst liquid molecules into mist.



# selection of inhalation devices

Age	1st choice	2nd choice
0-3 years	<p><b>MDI + Spacer + Babymask</b></p> 	Nebulizer
3-6 years	<p><b>MDI + Spacer + Babymask</b></p>  <p>(4 years and above)</p> <p><b>MDI + Spacer</b></p>  <p>or</p> <p><b>DPI</b></p>    <p>or</p> <p><b>BAI</b></p> 	Nebulizer
6 years and above	<p><b>MDI + Spacer</b></p>  <p>or</p> <p><b>DPI</b></p>    <p>or</p> <p><b>BAI</b></p> 	—

# Select Inhaled Medications

## Bronchodilators

**Asthalin**

Salbutamol

**Ipravent**

Ipratropium

**Levolin**

Levosalbutamol

**Tiova**

Tiotropium

## Combination Bronchodilators

**Duolin**

Ipratropium + Levosalbutamol

**Duova**

Tiotropium + Formoterol

## Inhaled Corticosteroids (ICS)

**Budecort**

Budesonide

**Ciclohale**

Ciclesonide

**Flohale**

Fluticasone

## ICS / Bronchodilator Combinations

**Aerocort**

Beclomethasone + Levosalbutamol

**Foracort**

Budesonide + Formoterol

**Seroflo**

Fluticasone + Salmeterol

**Triohale**

Tiotropium + Formoterol + Ciclesonide

**Fullform**

Beclomethasone + Formoterol

**Maxiflo**

Fluticasone + Formoterol

## Nebulized Formulations

**Levolin**

Levosalbutamol

**Ipravent**

Ipratropium

**Budesal**

Budesonide + Salbutamol

**Budecort**

Budesonide

**Asthalin**

Salbutamol

**Flohale**

Fluticasone

**Duolin**

Ipratropium + Levosalbutamol

**Inhalex**

Ambroxol



Cipla  
**levolin**  
respules 0.63mg

Cipla  
**levolin**  
respules 1.25mg

Cipla  
**inhalex**  
respules  
for inhalation only

Cipla  
**budesal**  
es 0.5 mg

Cipla  
**budesal**  
respules 1mg

Cipla  
**budecorl**  
respules 0.5 mg

Cipla  
**budecorl**  
respules 1

Cipla  
**tiova**  
multi-haler

Cipla  
**seroflo**  
multi-haler 250

Cipla  
**seroflo**  
multi-haler 500

Cipla  
**foracort**  
multi-haler 200

Cipla  
**foraco**  
multi-haler

Cipla  
**tiova**  
inhaler

Cipla  
**duova**  
inhaler

Cipla  
**duova**  
inhaler

Cipla  
**seroflo**  
125  
autohaler

Cipla  
**seroflo**  
250  
autohaler

Cipla  
**foracort**  
inhaler 400

Cipla  
**foraco**  
forte  
inhaler

Cipla  
**maxiflo**  
inhaler 125

Cipla  
**maxiflo**  
inhaler 250

Cipla  
**seroflo**  
inhaler 50

Cipla  
**seroflo**  
inhaler 125

Cipla  
**seroflo**  
inhaler 250

Cipla  
**foracort**  
inhaler 100

Cipla  
**foraco**  
inhaler

Cipla  
**maxiflo**  
orte

Cipla  
**maxiflo**

Cipla  
**maxiflo**  
250

Cipla

Cipla  
**seroflo**  
250

Cipla

Cipla  
**foraco**  
100

## Devices

### Babymask

For use with Cipla spacers/inhalers only

### Huf Puf Kit

(ZeroStat VT Spacer + Babymask)  
For use with Cipla inhalers only

### Revolizer

For use with Cipla rotacaps only

### Rotahaler

For use with Cipla rotacaps only

### ZeroStat Spacer

For use with Cipla inhalers only

### ZeroStat VT Spacer

For use with Cipla inhalers only

## Inhaled Drugs for Airway Diseases

### Aerocort Rotacaps

Beclomethasone 100 mcg + Levosalbutamol 100 mcg

### Aerocort Inhaler

Beclomethasone 50 mcg + Levosalbutamol 50 mcg

### Aerocort Forte Rotacaps

Beclomethasone 200 mcg + Levosalbutamol 200 mcg

### Asthalin Rotacaps

Salbutamol 200 mcg

### Asthalin Inhaler

Salbutamol 100 mcg

### Asthalin Eco Pack Inhaler

Salbutamol 100 mcg

### Asthalin Respiratory Solution

Salbutamol 5 mg/ml

### Asthalin Respule

Salbutamol 2.5 mg/2.5 ml

### Beclate 100 Rotacaps

Beclomethasone 100 mcg

### Beclate 200 Rotacaps

Beclomethasone 200 mcg

### Beclate 400 Rotacaps

Beclomethasone 400 mcg

### Beclate 100 Inhaler

Beclomethasone 100 mcg

### Beclate 200 Inhaler

Beclomethasone 200 mcg

### Budecort 100 Rotacaps

Budesonide 100 mcg

### Budecort 200 Rotacaps

Budesonide 200 mcg

### Budecort 400 Rotacaps

Budesonide 400 mcg

### Budecort 100 Inhaler

Budesonide 100 mcg

### Budecort 200 Inhaler

Budesonide 200 mcg

### Budecort 0.5 mg Respule

Budesonide 0.5 mg/2 ml

### Budecort 1 mg Respule

Budesonide 1 mg/2 ml

### Budesal 0.5 Respule

Budesonide 0.5 mg + Salbutamol 2.5 mg/2.5 ml

### Budesal 1 Respule

Budesonide 1 mg + Salbutamol 2.5 mg/2.5 ml

### Ciclohale 200 Rotacaps

Ciclesonide 200 mcg

### Ciclohale 80 Inhaler

Ciclesonide 80 mcg

### Duolin Rotacaps

Levosalbutamol 100 mcg + Ipratropium 40 mcg

### Duolin Inhaler

Levosalbutamol 50 mcg + Ipratropium 20 mcg

### Duolin Respule

Levosalbutamol 1.25 mg + Ipratropium 500 mcg/2.5 ml

### Duonet Rotacaps

Salbutamol 200 mcg + Ipratropium 40 mcg

### Duova Rotacaps

Tiotropium 18 mcg + Formoterol 12 mcg

### Duova Inhaler

Tiotropium 9 mcg + Formoterol 6 mcg

### Flohale 50 Rotacaps

Fluticasone 50 mcg

### Flohale 100 Rotacaps

Fluticasone 100 mcg

### Flohale 250 Rotacaps

Fluticasone 250 mcg

### Flohale 50 Inhaler

Fluticasone 50 mcg

### Flohale 125 Inhaler

Fluticasone 125 mcg

### Flohale 0.5 mg Respule

Fluticasone 0.5 mg/2 ml

### Flohale 2 mg Respule

Fluticasone 2 mg/2 ml

### Foracort 100 Rotacaps

Budesonide 100 mcg + Formoterol 6 mcg

### Foracort 200 Rotacaps

Budesonide 200 mcg + Formoterol 6 mcg

### Foracort 400 Rotacaps

Budesonide 400 mcg + Formoterol 6 mcg

### Foracort 200 Multihaler

Budesonide 200 mcg + Formoterol 6 mcg

### Foracort 400 Multihaler

Budesonide 400 mcg + Formoterol 6 mcg

### Foracort 100 Inhaler

Budesonide 100 mcg + Formoterol 6 mcg

### Foracort 200 Inhaler

Budesonide 200 mcg + Formoterol 6 mcg

### Foracort 400 Inhaler

Budesonide 400 mcg + Formoterol 6 mcg

### Foracort Forte Rotacaps

Budesonide 400 mcg + Formoterol 12 mcg

### Foracort Forte Inhaler

Budesonide 400 mcg + Formoterol 12 mcg

### Foratec Rotacaps

Formoterol 12 mcg

### Fullform 200 Rotacaps

Beclomethasone 200 mcg + Formoterol 6 mcg

### Fullform 400 Rotacaps

Beclomethasone 400 mcg + Formoterol 6 mcg

### Fullform 100 Inhaler

Beclomethasone 100 mcg + Formoterol 6 mcg

### Fullform 200 Inhaler

Beclomethasone 200 mcg + Formoterol 6 mcg

### Inhalex Respule

Ambroxol 15 mg/2 ml

### Ipravent Rotacaps

Ipratropium 40 mcg

### Ipravent Inhaler

Ipratropium 20 mcg

### Ipravent Respiratory Solution

Ipratropium 250 mcg/ml

### Ipravent Respule

Ipratropium 500 mcg/2 ml

### Levolin Rotacaps

Levosalbutamol 100 mcg

### Levolin Inhaler

Levosalbutamol 50 mcg

### Levolin 0.31 Respule

Levosalbutamol 0.31 mg/2.5 ml

### Levolin 0.63 Respule

Levosalbutamol 0.63 mg/2.5 ml

### Levolin 1.25 Respule

Levosalbutamol 1.25 mg/2.5 ml

### Maxiflo 100 Rotacaps

Fluticasone 100 mcg + Formoterol 6 mcg

### Maxiflo 250 Rotacaps

Fluticasone 250 mcg + Formoterol 6 mcg

### Maxiflo 125 Inhaler

Fluticasone 125 mcg + Formoterol 6 mcg

### Maxiflo 250 Inhaler

Fluticasone 250 mcg + Formoterol 6 mcg

### Maxiflo Forte Rotacaps

Fluticasone 500 mcg + Formoterol 12 mcg

### Mucinac Respules

Acetylcysteine 200 mg/ml

### Serobid Rotacaps

Salmeterol 50 mcg

### Serobid Inhaler

Salmeterol 25 mcg

### Seroflo 100 Rotacaps

Fluticasone 100 mcg + Salmeterol 50 mcg

### Seroflo 250 Rotacaps

Fluticasone 250 mcg + Salmeterol 50 mcg

### Seroflo 500 Rotacaps

Fluticasone 500 mcg + Salmeterol 50 mcg

### Seroflo 250 Multihaler

Fluticasone 250 mcg + Salmeterol 50 mcg

### Seroflo 500 Multihaler

Fluticasone 500 mcg + Salmeterol 50 mcg

### Seroflo 50 Inhaler

Fluticasone 50 mcg + Salmeterol 25 mcg

### Seroflo 125 Inhaler

Fluticasone 125 mcg + Salmeterol 25 mcg

### Seroflo 250 Inhaler

Fluticasone 250 mcg + Salmeterol 25 mcg

### Seroflo 125 Autohaler

Fluticasone 125 mcg + Salmeterol 25 mcg

### Seroflo 250 Autohaler

Fluticasone 250 mcg + Salmeterol 25 mcg

### Simplyone 100 Rotacaps

Ciclesonide 100 mcg + Formoterol 6 mcg

### Simplyone 200 Rotacaps

Ciclesonide 200 mcg + Formoterol 6 mcg

### Simplyone 160 Inhaler

Ciclesonide 160 mcg + Formoterol 4.5 mcg

### Tiova Rotacaps

Tiotropium 18 mcg

### Tiova Inhaler

Tiotropium 9 mcg

### Tiova Multihaler

Tiotropium 18 mcg

### Triohale Inhaler

Tiotropium 9 mcg+ Formoterol 6 mcg + Ciclesonide 200 mcg

### Triohale Multihaler

Tiotropium 18 mcg+ Formoterol 12 mcg + Ciclesonide 400 mcg

## Inhaled Antibiotics

### Tobamist Respules

Tobramycin 300 mg/5 ml

### Xylistin Injection, Infusion or Inhalation

Colistimethate sodium 1 MIU

“The use of inhaled aerosols allows selective treatment of the lungs by achieving high drug concentration in the airways and reducing systemic adverse effects.

The effectiveness of inhaled drugs depends not only on the formulation but perhaps even more on the delivery device and the patient’s ability to use the device correctly.”

Respir Care 2005; 50:1376-83



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