



# *Inhalers*

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- ***Aerosol delivery of drugs for respiratory disease has the advantage of being site-specific and thus enhancing the therapeutic ratio.***

- ***Anti-cholinergics:***
- Ipratropium bromide
- Tiotropium bromide
  
- ***Beta-2 agonists:***
- Salbutamol
- Salmeterol
- Formoterol

- ***Mast cell stabilizer :***
- Cromolyn sodium
  
- ***Corticosteroids :***
- Fluticasone
- Beclometasone
- Mometasone
- Budesonide

- ***Combinations :***
- Fluticasone/ Salmeterol
- Budesonide/ Formoterol
- Salbutamol / Ipratropium



**Patient**



**Pharmacist**



**Physician**



- **Devices used to generate therapeutic aerosols include:**
- Jet nebulizers
- Ultrasonic nebulizers
- Metered-dose inhalers (MDIs):
- Evohaler
- Dry powder inhalers (DPIs):
- Accuhaler
- Turbohaler
- Handihaler

- Jet nebulizers

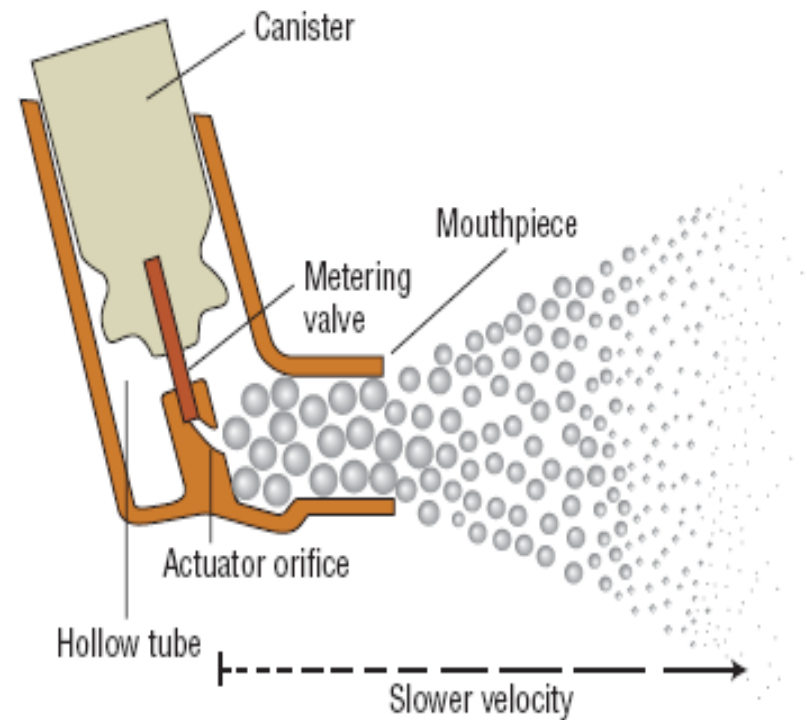
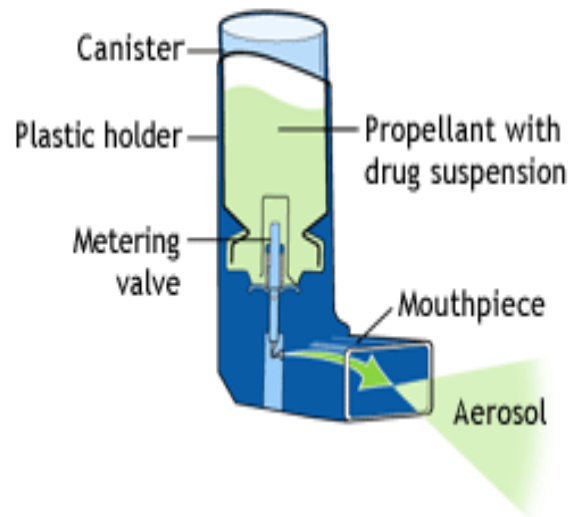




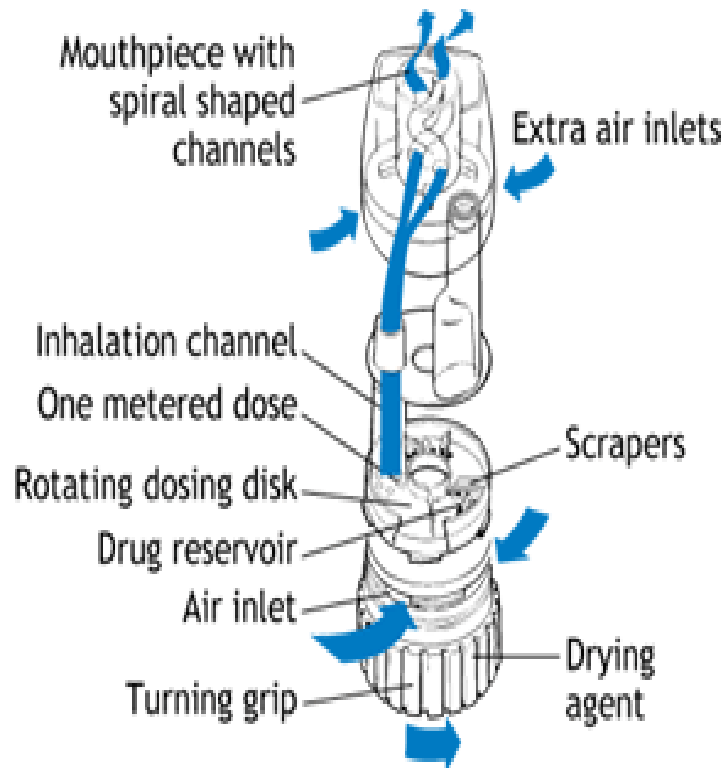
- Ultrasonic nebulizers



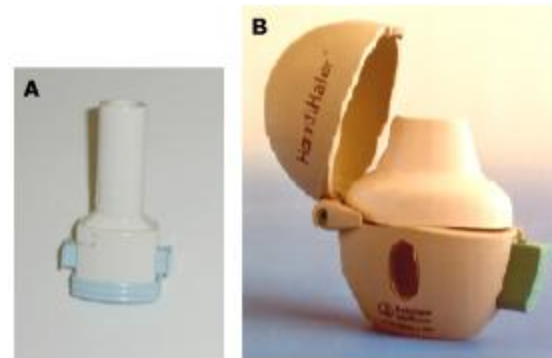
- Metered-dose inhalers (MDIs)



- Dry powder inhalers (DPIs)



**Single-dose devices**



**Multiple-dose devices**



# CFC vs HFA



## **What Is the Same?**

The medicines in the HFA inhalers are the same as those in the CFCs.

The new inhalers have proven in rigorous FDA studies to be just as effective as the old ones.

The dose and frequency for individual medicines remains the same.

## **What Is Different?**

The new inhalers may taste and smell slightly different.

Because the spray is less forceful, the HFA spray feels less cold coming out of the canister.

The HFA inhalers must be primed more than the old CFC inhalers needed to be.

They also need to be cleaned more often to avoid clogging.

# Spacer

To reduce deposition in the mouth and throat, and to reduce the need for precise synchronization of the start of inhalation with actuation of the device, MDIs are sometimes used with a complementary spacer or holding chamber device.



# Nasal spray

Cromolyn

Beclomethasone

Fluticasone

Budesonide

Oxymethasoline