

Nebulizers

What is a Nebulizer?

A nebulizer is a device that converts liquid medicine into a mist (drug-aerosol), which is inhaled through a mouthpiece or mask to benefit individuals with respiratory conditions by improving drug penetration into the lungs and airways.

There are three main types of nebulizers, which use different mechanisms to turn liquid medication into the fine mist for inhalation.

1. Jet Nebulizers use compressed air.
2. Mesh Nebulizers use a fine mesh.
3. Ultrasonic Nebulizers use high-frequency vibrations.

Jet Nebulizers are the most common and used for example in this document. Defer to manufacturer specifications, especially if using a different type of nebulizer.

Who May Need a Nebulizer?

Nebulizers are often used to deliver medication for people with lung diseases, including:

- Asthma
- COPD
- Cystic Fibrosis

Nebulizers may be deemed advantageous to alternative inhaler options for some residents as they facilitate drug delivery into the airways, without advanced dexterity or inspiratory capacity needs on the part of the resident. This is especially important in residents with advanced lung disease. Conversely, they may not be preferred for some residents, due to increased administration time, bulkiness (inhalers are small and portable), and higher equipment costs.

Using a Nebulizer

A Jet Nebulizer consists of several important parts:

- Air compressor – generates air to produce drug-aerosol mist
- Small cup – holds medication after it is added to nebulizer

- Thin hose – allows the air to move from the machine to drug cup
- Mask or mouthpiece – for patient to inhale the drug

Administration Steps

Note: The following are general, common administration steps. Read and follow the instructions that come with the nebulizer in use for product-specific guidance. Your facility may have policies and procedures in place for nebulizer administration.

1. Wash hands well.
2. Put together the nebulizer machine, tubing, medicine cup, and mouthpiece or mask per manufacturer instructions.
3. Plug nebulizer cord into electric outlet and set machine on sturdy flat surface such as bedside table or desk.
4. Place the prescribed amount of medicine into the nebulizer cup.
5. Place lid on nebulizer cup.
6. Ensure nebulizer cup is connected to air compressor with thin hose.
7. Ensure mask or mouthpiece is connected to nebulizer cup.
 - a. Mask: Fit snugly over resident's nose and mouth.
 - b. Mouthpiece: Place in resident's mouth and instruct them to close their lips to form a tight seal around mouthpiece.
8. Turn the nebulizer machine **ON**. A light mist should come from the back of the tube opposite the mouthpiece or from the mask.
9. Instruct patient to sit up straight (or as otherwise recommended by nebulizer instructions) and take slow, deep breaths through the mouth until the medicine cup is empty and/or the mist stops. This should take about 10 minutes (see manufacturer instructions for specifics).
10. Turn the nebulizer machine **OFF**. Remove resident's mouthpiece/mask.

11. Follow manufacturer instructions for cleaning and storing nebulizer machine until next use. It is very important to clean and disinfect the machine according to these instructions.

Nebulizer Cleaning

Note: The following are general, common cleaning instructions. Read and follow the instructions that come with the nebulizer in use for product-specific guidance. Your facility may have policies and procedures in place for nebulizer cleaning.

Cleaning the nebulizer is critical to prevent bacterial growth and to keep the nebulizer working properly.

After each use:

1. Wash the medicine cup and mouthpiece/mask with warm water with/without mild dish soap.
2. Rinse well and shake off excess water.
3. Air dry parts on a clean paper towel.
4. Hook up nebulizer and run air through machine (without adding medication) for approximately 30 seconds, to ensure parts are completely dry.
5. Take apart and store in a clean covered area until next use.

The tubing and compressor should NEVER be put into water. They can be wiped with a damp towel or disinfectant wipe if needed

If machine appears soiled:

1. Optionally, add a soaking step to the above cleaning routine: Soak the cup and mouthpiece in 1 part distilled white vinegar, 2 parts warm water solution.

The tubing and compressor should NEVER be put into water. They can be wiped with a damp towel or disinfectant wipe if needed

Commonly Nebulized Medications

• Ipratropium Bromide and Albuterol Sulfate Inhalation Solution

- Supplied as a 3 mL sterile solution for nebulization in unit-dose vials.
- Unit-dose vials should remain stored in their protective foil pouch until time of use.

- If removed from foil pouch, the individual vials should be used within one week.
- Store between 2° and 25°C (36° and 77°F).
- Protect from light.
- Discard after the expiration (EXP) date printed on carton.
- Discard if the solution is not colorless.

• Levalbuterol Inhalation Solution

- Supplied in 3 mL unit-dose vials.
- Clear, colorless, sterile, preservative-free, aqueous solution.
- Store in the protective foil pouch.
- Store at 20° to 25°C (68° to 77°F).
- Protect from light and excessive heat.
- Keep unopened vials in the foil pouch.
- Once the foil pouch is opened, the vials should be used within 2 weeks.
- Vials removed from the pouch, if not used immediately, should be protected from light and used within one week.
- Discard any vial if the solution is not colorless.

CMS State Operations Manual

• F695

○ Resident Care Policies

- The facility, in collaboration with the medical director, director of nurses, and respiratory therapist, as appropriate, must assure that resident care **policies and procedures** for respiratory care and services, are developed, according to professional standards of practice, prior to admission of a resident requiring specific types of respiratory care and services. The policies and procedures, based on the type of respiratory care and services provided, may include, but are not limited to:
 - Aerosol drug delivery systems (**nebulizers**/metered-dose inhalers) and medications (preparation and/or administration) used for respiratory treatments.