

Using A Pari LC® Plus Nebulizer With Meropenem

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Many medications are available as inhaled treatments. Inhaled methods deliver medication directly to the airway, which is useful for respiratory problems.

A nebulizer delivery system consists of a nebulizer (small plastic medication cup with a lid that drops into the cup and twists) and a source for compressed air. The airflow from the compressor to the nebulizer changes the medication solution to a mist. When inhaled correctly, the medication has a better chance to reach the small airways. This increases the medication's effectiveness.

Supplies you will need:

- Nebulizer compressor
- Pari LC® Plus Nebulizer (Part #22F51) and solid mouthpiece to be used when administering inhaled Meropenem antibiotic; or, if you are living alone, mouthpiece with expiratory valve
- Pari Expiratory Filter Set (Part #41F05) (only need if another person or an animal is around during treatment)
- One box Pari Expiratory Filter Pads #41F0522P30) (only need if another person or an animal is around during treatment)
- Pre-treatment medicine
- Meropenem 500 mg. vial
- Syringes with needles and alcohol pads
- Sharps container
- Sterile water solution in 10 mL vial



Assembling the air compressor

Place the compressor and nebulizer on a clean, flat, hard surface. The compressor should be placed where it can safely reach its power source and where you can reach the ON/OFF switch.

- See the manufacturer's instructions for the specific nebulizer compressor being used.
 - Plug the power cord into an electrical outlet.
 - Connect the air tubing to the compressor.
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Preparing the medication if using Meropenem

1. Wash your hands prior to preparing each treatment.
2. Always use a clean nebulizer.
3. Remove the nebulizer insert from the nebulizer cup.
4. Meropenem comes in a powder form in a vial. Check the label on the vial of medicine. Make sure you have the right medicine. Check the expiration date. Do not use the medicine if the expiration date has passed.
5. Remove the plastic covers from the vial of sterile water and the vial of Meropenem. You will not replace these plastic covers. You will see a rubber stopper at the top of each vial. Wipe the top of each vial with an alcohol swab.
6. Attach the needle to the syringe.
7. Hold the syringe in one hand. Pull off the needle cover with your other hand (away from you). Do not touch the needle or lay the syringe down when the needle is uncovered.
8. Pull back the end of the plunger to the 5 mL line in order to fill the syringe with air.
9. While the vial of sterile water is sitting on a flat surface, insert the needle through the rubber stopper into the vial of sterile water.
10. While keeping the needle inserted, flip the vial of sterile water so the rubber stopper is facing down.
11. Make sure the needle is close to the rubber stopper, but inside the vial. Push the plunger so the air in the syringe goes into the vial and make sure the needle is always below the fluid line.
12. Now, pull back on the syringe plunger to pull 5 mL of sterile water from the inverted vial into the syringe.
13. Take the needle out of the vial.
14. Check for air bubbles in the syringe. Gently tap the syringe with the needle up. This will cause the air bubbles to rise to the needle end of the syringe slowly. Push the plunger, and air will leave the syringe.
15. Set aside the vial of sterile water.
16. While the vial of Meropenem is sitting on a flat surface, insert the needle through the rubber stopper into the vial.
17. Push the plunger of the syringe, and insert all of the sterile water into the vial of Meropenem.
18. Carefully remove the needle from the vial, and place the cap back on the needle. Set the syringe aside.
19. Pick up the vial that now contains the Meropenem powder and sterile water. Gently swirl or roll the vial in your hands until the powder is dissolved. Vigorous shaking will create a lot of foam. If foam develops, let the vial stand until it settles.

20. Once mixed, the strength of the Meropenem is 500 mg. in 5 mL.
 21. Using the same technique as steps 6-12, withdraw the 5 mL of Meropenem from the mixed vial.
 22. Put the Meropenem into your nebulizer cup. Do not mix the Meropenem with other medicines.
 23. Inhale the Meropenem mixture by aerosol nebulizer.
 24. Reconstituted vials of Meropenem are stable in the refrigerator for 24 hours. Used sterile water vials can also be kept in the refrigerator, but should be thrown away after 24 hours.
 25. A new needle and syringe should be used each day to maintain sterility.
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Assembling the PARI LC® Plus Nebulizer if you have family members or animals at home

- If using a mouthpiece and you have family members or animals at home, you will use an exhalation filter. This filter will help prevent family members or animals from inhaling the antibiotic.
- Place a filter pad in the exhalation filter and twist the exhalation filter closed. This filter pad will need to be changed each time you take a treatment.
- Connect the exhalation filter to the y piece.
- Attach the y piece to the front of the nebulizer. Attach the other end of the y piece to the solid mouthpiece as shown below.
- Connect the tubing to the bottom of the nebulizer.
- Turn the compressor on, and check the nebulizer for misting.



Assembling the PARI LC® Plus Nebulizer if you are in a closed room or outside, or if you live by yourself

- If using a mouthpiece and you are in a closed room or outside, or if you live by yourself, you may not need an exhalation filter. In this case, attach the mouthpiece to the front of the nebulizer. The blue expiratory valve should face upward.
 - Connect the tubing to the bottom of the nebulizer.
 - Turn the compressor on, and check the nebulizer for misting.
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If the nebulizer is not misting

- Check all of the connections.
- Refer to the manufacturer's instructions.

Taking a nebulized treatment using a mouthpiece

- Note: Remember to take all other inhaled medicine before taking your inhaled antibiotic.
- **Sit comfortably.** Position yourself in an upright, sitting position that will allow you to take a deep breath.
- **Turn the compressor on.** The nebulizer will begin to mist.
- **Put the mouthpiece in your mouth between your teeth, and close your lips around it.**
- **Hold the nebulizer in an upright position.** This prevents spilling and promotes nebulization.
- **As the mist starts, breathe in slowly and deeply over 3 to 5 seconds.**
- **At the end of a deep breath, exhale slowly through your mouth.**
- **Continue these steps until the onset of inconsistent nebulization, also called sputtering.**

Care and cleaning of nebulizer equipment after each use

Please follow the manufacturer's instructions for cleaning the nebulizer equipment. Suggested guidelines include the following:

- Take apart the nebulizer. Wash all parts (except tubing) in liquid dish soap and water. Rinse with water.

OR

- Place the nebulizer parts (except mask, tubing) in a dishwasher basket and place on the top rack of the dishwasher.
- After washing the nebulizer, shake off any excess water.
- Reattach the nebulizer pieces and tubing to the air compressor, and turn on the compressor to dry the nebulizer quickly.
Make sure the nebulizer is completely dry before storing the nebulizer or putting it back together.

Care and cleaning of nebulizer equipment every other treatment day

To disinfect and sterilize your nebulizer, take the nebulizer apart, then:

Heat methods:

- Place in boiling water and leave in a rolling boil for 10 minutes.
- Place in a microwave-safe container for 5 minutes.
- Use a dishwasher (water must be 70°C or 158°F for 30 minutes).
- Use an electric steam sterilizer.

Cold methods:

- Soak in 70% isopropyl alcohol for 5 minutes.

- Soak in 3% hydrogen peroxide for 30 minutes.

After washing the nebulizer, shake off any excess water. Place the pieces on a paper towel in a clean area in order to allow them to air dry.

OR

Reattach the nebulizer pieces and tubing to the air compressor, and turn on the compressor to dry the nebulizer quickly. **Make sure the nebulizer is completely dry before storing the nebulizer or putting it back together.**

Care of the compressor

- Check the manufacturer's instructions for cleaning and care of the compressor you are using.

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