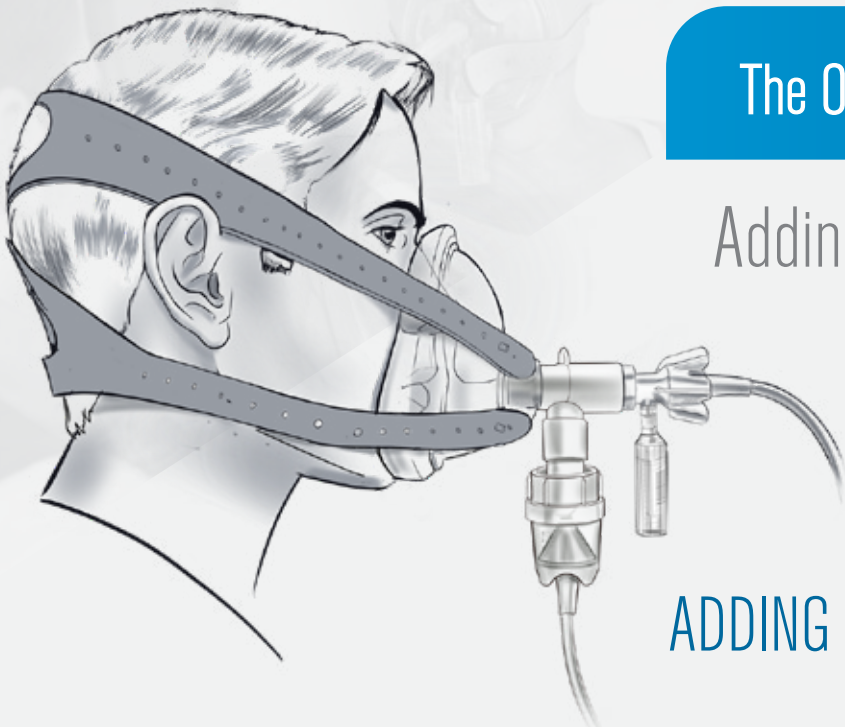Moe Halawani, MD | O-Two Clinical Specialist

The O-Two Single-Use CPAP (Part 2)

Adding In-Line Nebulizer & Filter
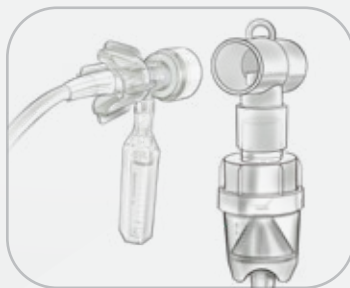
ADDING IN-LINE NEBULIZER ▶

The O-Two Single-Use CPAP system is compatible with in-line nebulizers, allowing healthcare providers to administer inhaled medications to patients in respiratory distress without disrupting CPAP pressure. This enhances patient care by integrating respiratory support and medication delivery in a single setup.
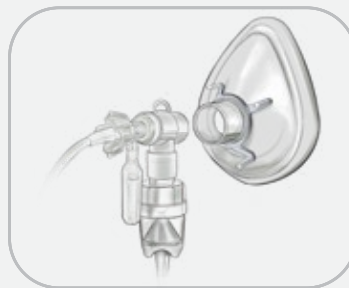
1 Attaching the Nebulizer

Attach the base of the T-piece to the nebulizer top cover.

Connect one end of the T-piece to the CPAP flow valve.

Connect the opposite end of the T-piece to the CPAP mask.

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2 Connect the Oxygen Supply:

Option 1: Using the O-Two In-Line Nebulizer

The O-Two in-line nebulizer is designed to operate at a fixed flow rate of 6 L/min, which allows both the CPAP system and nebulizer to use the same oxygen source when connected to the O-Two Adjustable Therapy Flow Regulator (01RO01O23-B). This eliminates the need for an additional oxygen source.

• **Step 1** : Attach the O-Two Adjustable Therapy Flow Regulator to the oxygen source. This regulator has two outlets:

1) **9/16" Self-Sealing DISS outlet:**

Connect the O-Two Nebulizer tubing to this outlet using the attached nut.

2) **Therapy Flow outlet (0 - 25 L/min):**

Connect the O-Two Single-Use CPAP system tubing to the barb outlet.

This Quick Configuration allows both the CPAP and nebulizer to run from a single oxygen source, reducing the need for additional equipment like separate regulators or oxygen cylinders.
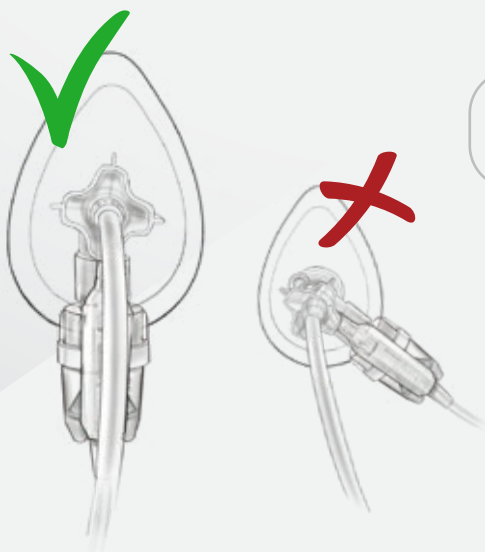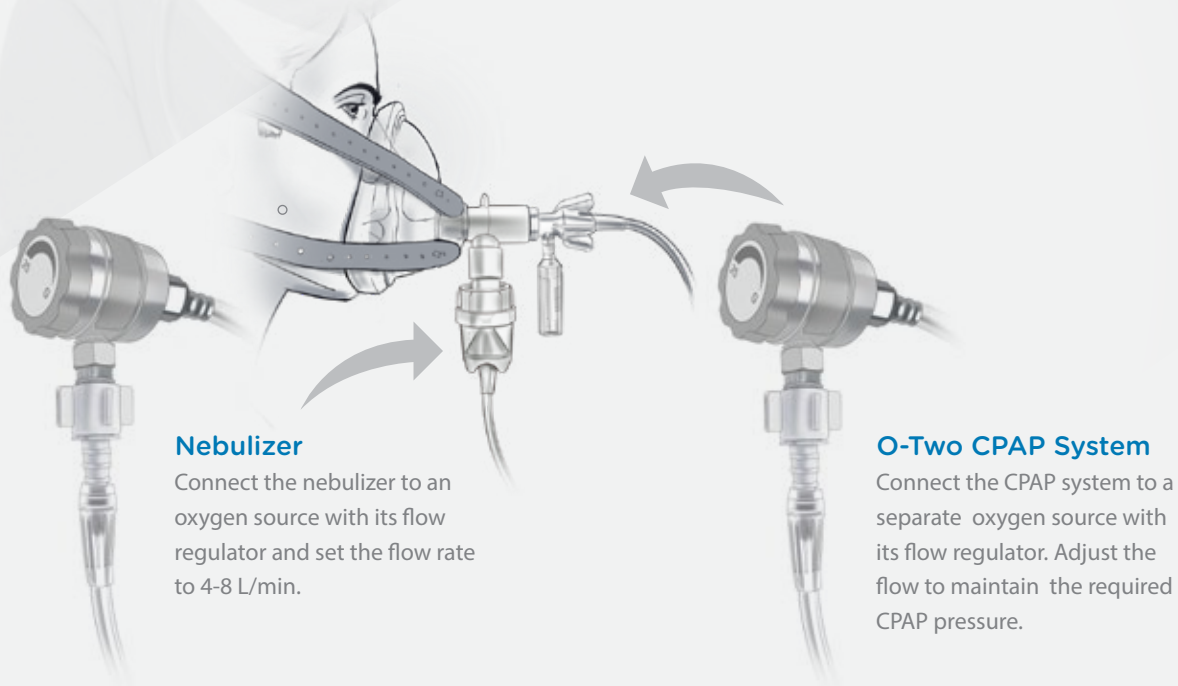

• **Step 2** : Oxygen Flow Management:

- After connecting the CPAP system and nebulizer, turn on the oxygen source.

- Titrate the oxygen flow to generate the desired CPAP pressure.

- The nebulizer will automatically deliver medication at a fixed flow rate of 6 L/min.

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Option 2: Using Other Nebulizers

If using a nebulizer other than the O-Two in-line nebulizer, both the CPAP system and nebulizer will require separate oxygen sources and regulators to manage both therapies at the same time.

Nebulizer
Connect the nebulizer to an oxygen source with its flow regulator and set the flow rate to 4-8 L/min.

O-Two CPAP System
Connect the CPAP system to a separate oxygen source with its flow regulator. Adjust the flow to maintain the required CPAP pressure.

3 Ensure Proper Positioning:

- Keep the nebulizer upright to prevent spilling of the liquid.

- Verify that all connections are secure to prevent air leaks and ensure proper therapy delivery.

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Hands-On

The O-Two Single-Use CPAP
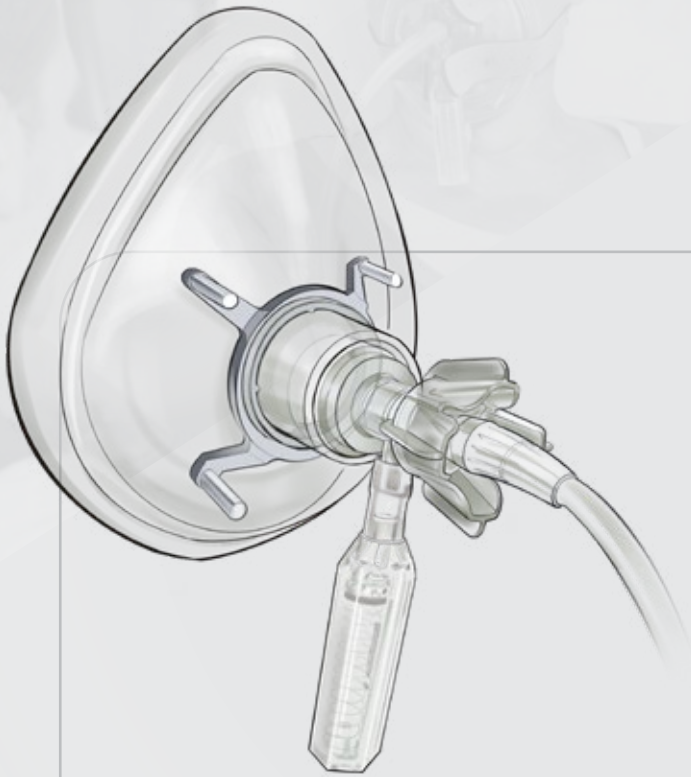
Evaluation and Findings

Performance evaluations were conducted to assess the impact of adding an in-line nebulizer to deliver a nebulized solution with the O-Two Single-Use Open Circuit CPAP System and to determine its effect on the CPAP levels delivered to the patient.
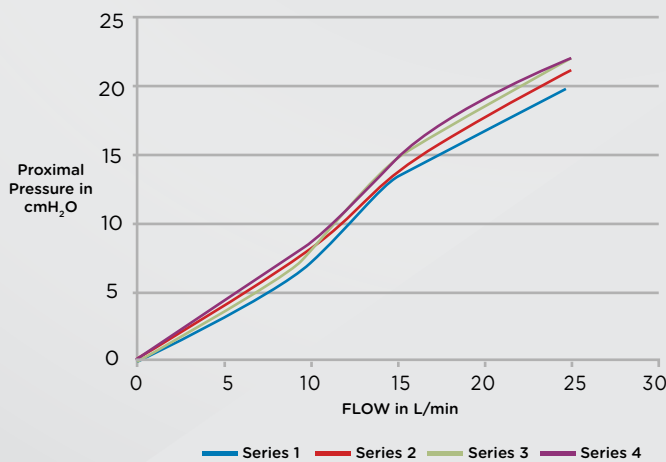
Effect of the nebulizer on CPAP delivery

Proximal Pressure in cmH$_2$O vs FLOW in L/min

— Series 1 — Series 2 — Series 3 — Series 4

Fig 1: Performance of O-Two CPAP with different Nebulizer Flow Rates.

- **Series 1:** CPAP only.
- **Series 2:** CPAP with Nebulizer at 4 L/min flow.
- **Series 3:** CPAP with Nebulizer at 6 L/min flow.
- **Series 4:** CPAP with Nebulizer at 8 L/min flow.

The graph shows a proportional increase in proximal pressure as the flow rate increases across all series. The lines for Series 2, 3, and 4 (with nebulizer) closely follow Series 1 (CPAP only), indicating that the addition of the nebulizer has a minimal impact on CPAP pressure. This evidence supports the stability of CPAP pressure, even with varying nebulizer flow rates. Although the changes are minimal and may not always occur, the manometer helps detect any minor variations if present and allows for rapid adjustments of the CPAP pressure.

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Key Findings:

1. Stability and Performance:

CPAP pressure remains stable across different nebulizer flow rates (4 L/min, 6 L/min, and 8 L/min) and CPAP levels (5, 10, and 15 cm H_2O). These findings confirm that the system can handle the additional nebulizer flow without significantly affecting CPAP pressure.

2. Effective Inhaled Medication Delivery:

The O-Two Single-Use CPAP system delivers nebulized medications effectively to the lower respiratory tract, as confirmed by lung simulator tests at various CPAP levels.

3. Reduced Delivery Time:

Using CPAP reduces the time required to deliver nebulized solutions compared to a nebulizer alone. The study showed that delivering 2 ml of the solution was faster with CPAP, especially at higher CPAP levels.

ADDING A FILTER ▶

Filters protect patients from airborne pathogens and particulates, ensuring that the delivered flow is clean and safe. In certain clinical conditions, healthcare providers might need to add a filter to the O-Two Single-Use CPAP system to reduce airborne contaminants. Follow these recommendations to ensure it does not compromise the effectiveness of CPAP therapy:

1   Choose Low-Resistance Filters

- Integrating a filter may introduce minimal resistance to the flow, potentially reducing CPAP pressure slightly.

- Choose low-resistance filters to minimize the impact on flow and pressure.

- Low-resistance filters maintain smooth gas flow to the patient, minimizing pressure drops and keeping CPAP pressure stable.

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2 Attach the Filter:

or
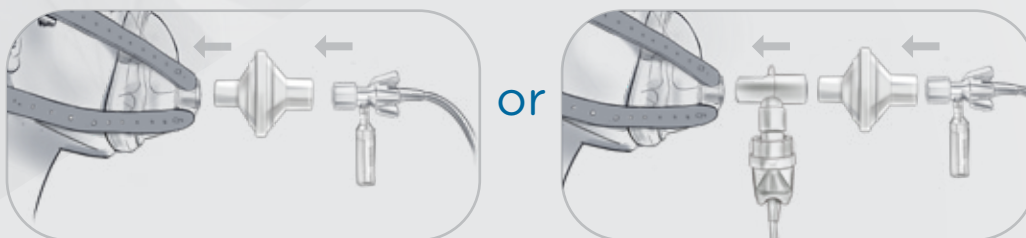
- It is recommended to use the O-Two Single-Use CPAP system with a manometer to monitor CPAP pressure and make necessary adjustments to maintain the desired therapeutic level, as even low-resistance filters can introduce some resistance.

- Connect the filter to the outlet of the CPAP flow valve and the CPAP mask.

- Ensure all connections are tight and secure to prevent air leaks.

- Increase the oxygen flow rate slightly to compensate for any resistance introduced by the filter if needed to maintain the required level of CPAP pressure.

For more information about the use of O-Two CPAP system, please refer to the Hands-On: The O-Two Single-Use CPAP (Part 1)

Disclaimer: This O-Two Hands-On topic is intended for informational purposes only and is not a substitute for clinical judgment, institutional protocols, or professional medical evaluation, diagnosis, or treatment. It supports continuous learning by providing a quick reference for O-Two products' setup, settings, and optimal use. This guide does not replace official policies, or clinical judgment, or serve as a source of professional medical advice, diagnosis, or treatment. Healthcare providers should always rely on their clinical expertise, follow updated institutional protocols, and adhere to their facility's guidelines before making changes to patient care practices. For more information about the device, please refer to the product manual.

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