

Quick Start-up Guide for the eAdvantage® System

1 Introduction to Nitrous Oxide (N₂O)

Nitrous Oxide is a fast-acting analgesic and anxiolytic gas used for a broad range of medical procedures due to its quick onset (less than 60 seconds) and rapid elimination from the body.

2 Indications for Use

Nitrous Oxide is used for pain management and anxiety reduction in patients older than 1 year and is suitable for any mild to moderate painful procedures without needing extensive monitoring or preparation.

3 Contraindications

- **Altered Level of Consciousness:** Unsuitable for patients with impaired awareness.
- **Pressure-sensitive Conditions:** Not to be used for any active pathology involving confined spaces that can be affected by pressure changes (e.g., otitis media, sinusitis, bowel obstruction, pneumothorax, pneumocephaly).
- **Vitamin B12 Deficiency:** Avoid the use of N₂O in chronic and severe vitamin B12 deficiency due to potential neurological impacts.
- **Respiratory Conditions:** Contraindicated in individuals with severe active asthma or COPD.

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eAdvantage® Principles of Operation

The O-Two eAdvantage® N2 O/O2 electronic analgesic gas mixing and delivery systems are intended to administer an operator-adjustable mixture of nitrous oxide analgesic/anxiolytic gas and oxygen on demand to conscious, spontaneously breathing patients.

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Environment of Use

The O-Two eAdvantage® is suitable for use in hospitals, clinics, dental and doctor's offices where short-term or intermittent inhalation analgesia is required.

6

Setup the device:

- Connect the mixer to medical-grade O₂ and N₂O supplies, an electrical source, and attach a Single-use patient circuit with a nasal mask or mouthpiece.



- Press and hold the Control Knob for 1 second.

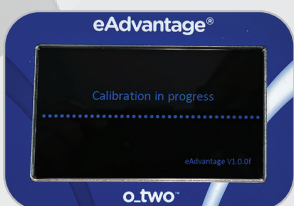
o_two Hands-On

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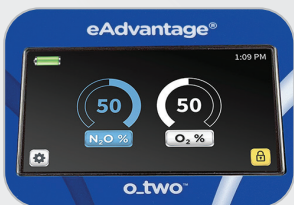
- Observe the green LED flashing at a high frequency, indicating power ON.



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Calibration

- It automatically begins upon start-up.
- A progress bar appears on the screen, moving left to right, taking approximately 5-10 seconds to complete.



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Operational Screen

- After calibration, the screen shows the pre-set gas concentration (50%-50% N₂O / O₂ by default), current time, battery status, and lock status.
- The system is now ready for operation.

9

Selecting Gas Concentration

- Adjust the concentration of Nitrous Oxide (N₂O) and Oxygen (O₂) mixture by using the Control Knob. Rotate the Control Knob to change the concentration, and select from available customizable ratios:

0% N₂O / 100% O₂ (pure Oxygen)

5% N₂O / 95% O₂

10% N₂O / 90% O₂

15% N₂O / 85% O₂

20% N₂O / 80% O₂

25% N₂O / 75% O₂

30% N₂O / 70% O₂

35% N₂O / 65% O₂

40% N₂O / 60% O₂

45% N₂O / 55% O₂

50% N₂O / 50% O₂

60% N₂O / 40% O₂

65% N₂O / 35% O₂

70% N₂O / 30% O₂ (Maximum N₂O / O₂)

- You may lock the settings to prevent unauthorized adjustments, ensuring controlled delivery of analgesic gas mixture under healthcare supervision.

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Patient Instructions for Self-Administered Inhalation Analgesia

The eAdvantage® system is designed for patient self-administration under the supervision of healthcare professionals. Healthcare providers attending to the patient should provide the following instructions for use:

1. About the Analgesic Gas:

- You are being provided with a self-administered inhalation analgesia for pain relief.
- The gas is a mixture of nitrous oxide (commonly known as 'laughing gas') and oxygen.
- Nitrous oxide is a colourless gas with a pleasant, slightly sweet odour and taste. It is known for its anesthetic, analgesic, and anxiety-reducing effects in medical settings like dentistry, minor surgeries and procedures.

2. Initiating Pain Relief:

- The nasal mask will be sealed over your nose / You need to hold and use the mouthpiece during the procedure.
- Inhale to receive a controlled dose of the analgesic gas mixture.

3. Breathing Technique:

- After inhaling, exhale through the mask. This directs your exhaled breath through the tube and into the gas-scavenging system.

4. In Case of Discomfort:

- If inhaling through the mask becomes difficult, or if you feel nauseous or disoriented, immediately remove the mask.
- Notify a staff member about your discomfort.
- Removing the mask and breathing regular room air will quickly clear the gas from your system.

11 Administration Protocol

1. Pre-Procedure:

- No fasting (NPO) requirements, cardiac monitoring, or IV placement are necessary.
- Apply the mask or mouthpiece securely without using a head harness for easy and quick removal.

2. During Use:

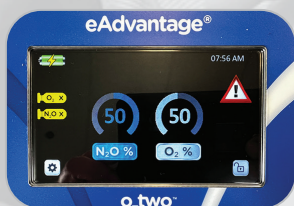
- Begin N₂O and O₂ administration simultaneously, initially start with pure 100% O₂ for the first 15-30 seconds.
- Gradually increase the N₂O concentration by 10%-20% increments every 30 to 60 seconds until the desired effect is achieved, with a maximum of 70% N₂O to maintain at least 30% O₂.
- The O-Two eAdvantage® system automatically adjusts the flow to match the patient's tidal volume requirements of each breath, so no manual flow adjustments are required.
- Proceed with the medical procedure once the desired level of anxiolysis and analgesia has been reached.
- Maintain communication with the patient, If the patient cannot converse, turn off or titrate down the gas

3. Post-Procedure:

- After completing the procedure, discontinue the N₂O and allow the patient to breathe 100% O₂ for 1 minute
- Remove the breathing circuit and let the patient remain seated while transitioning back to breathing room air for 1 to 2 minutes.
- The patient can then be discharged.

12 Possible Side Effects

- Patients may experience dizziness, nausea, or vomiting. These side effects usually subside once nitrous oxide (N₂O) administration is stopped.



13 Safety and Monitoring

- The eAdvantage® system has multiple alarms and safety checks to maintain proper function and alert healthcare professionals to operational issues

14 Maintenance and Cleaning

- Follow the manufacturer's guidelines for cleaning, disinfecting, and performing routine maintenance checks on the device to ensure the system's performance.

15 Discharge Procedure

- Typically, patients can return to normal activities immediately after the procedure without specific restrictions. They can also safely drive themselves home.

Important Note: This Quick Start-Up Guide outlines the basic setup and use of the eAdvantage® system. For comprehensive details, always refer to the official eAdvantage® Manual. In addition, institutional healthcare policies and guidelines may vary and should prevail for safe and practical application.

Reference: Managing Acute Pain in the ED: Nitrous oxide tool. American College of Emergency Physicians. (n.d.).
[https://poctools.acep.org/POCTool/AcutePain\(MAP\)/f040e536-e11d-4d5a-ac17-c55f60f82e89/](https://poctools.acep.org/POCTool/AcutePain(MAP)/f040e536-e11d-4d5a-ac17-c55f60f82e89/)