



FREQUENTLY ASKED QUESTIONS

What is the Apogee?

The Apogee is a lightweight portable oxygen system using a compressed gas cylinder and the patented Selective Oxygen Delivery technology. It consists of an attractive carrying bag, a custom regulator, a patented Dynamic Nasal cannula and the Dynamic Oxygen Controller (DOC).

How does the Apogee's portable oxygen system compare to portable oxygen concentrators (POC) of similar size and weight?

The Apogee is a fraction of the cost of a POC. At around 4.5 lbs., is quieter and should have several hours more range than a similarly sized POC. In addition, the Apogee delivers a 'uniform' dose of oxygen to the most open nostril at nearly 100% oxygen purity. The Apogee's volume remains the same with every breath.

POC's with a built-in conserver deliver **minute volume** (a constant volume of oxygen produced each minute) and reduce the volume sent as the breath rate increases. They may only produce 82% oxygen. Because they always deliver oxygen to both nostrils — even when one is blocked — POCs may not meet the prescribed dosage.

What is Selective Oxygen Delivery?

Selective Oxygen Delivery -- found only in the **Apogee** -- is a new patented process that tracks the changes in nasal resistance and delivers oxygen only to the most open/receptive nasal passage. The **Apogee** is the first device in the world to launch this technology for use by portable oxygen patients.

How does Selective Oxygen Delivery improve a patient's Rx compliance?

It is critical that patients receive consistent oxygen therapy to better comply with the doctor's prescribed oxygen flow rate. Unfortunately, with other oxygen devices used today, as much as 50% of the oxygen is wasted -- which could jeopardize the therapeutic benefits of the oxygen.

How can Selective Oxygen Delivery reduce nasal dryness and irritation?

Because no flow is delivered to the blocked nostril during therapy, this allows time for that nostril to rest, rehydrate and repair itself. This process alternates between nostrils throughout the day.

Why do humans usually breathe out of a dominant side of the nose?

Both anatomical and physiological factors account for uneven nasal airflow. Examples of *fixed causes* may include a deviated septum, nasal polyps, or enlarged nasal turbinates.

Physiological factors may be caused by allergies, body position and the **nasal cycle**. We **nasal cycle** throughout the day and night for periods of 20 minutes to several hours.

Why do humans and all mammals have a nasal cycle?

The two most widely accepted reasons we have a nasal cycle are 1) Keeping one nostril closed helps prevent both sides of the nose from drying out. Essentially, while we are breathing through the active nostril, the other nostril has time to rest and rehydrate. 2) Nasal cycling may improve our ability to smell, especially since some odors require a longer time to travel through the nose to be detected. Our olfactory sense allows humans to not only enjoy the scent of a flower but also to detect danger like a gas leak or food burning on the stove. For mammals, smell directly impacts their ability to track down food, find mates, and identify dangers and enemies.

How do oxygen systems using today's standard nasal cannula differ from the cannula used by the Apogee?

Nasal cannulas are the tubes that deliver oxygen from the oxygen source to a patient's nose. Nasal cannulas were first introduced in 1948 and, until now, little has changed in their operation. The standard nasal cannula has a single hose that separates itself into a left and right nasal prong. Studies show that this results in the oxygen being split evenly and delivered to each nostril at the same time. The Apogee's nasal cannula, although it may look like a standard nasal cannula, has two tubes fused together, one entering each nostril. Each nasal airway is sensed separately, and the full oxygen dosage is then sent directly to the most receptive nostril.

What happens when one nostril becomes blocked using systems that use a standard nasal cannula?

Up to 50% of the prescribed oxygen in standard cannulas is blocked at the closed nostril and released to the atmosphere. This flow never enters the patient's lower airway. When this occurs, flow rates must be doubled to achieve the same FiO₂ (percent oxygen entering the airway). For example, three liters of flow must be increased to six.

What is pulse oxygen delivery and why is it used?

Oxygen can be delivered either continuously during both inhalation and exhalation (as is in most stationary home oxygen concentrators) or in a pulse dose mode where the oxygen is only delivered upon inhalation (as seen in most portable oxygen systems). This is to extend the time the portable system will operate.

What are the most important factors to consider when comparing pulse oxygen conserving systems?

1. The size of oxygen bolus (flow amount) delivered for each breath. Many units deliver a 'minute volume' so the faster you breathe, the smaller the bolus of oxygen becomes. The **Apogee**, on the other hand, delivers a 'uniform pulse dose' so that the bolus size remains constant regardless of breath rate.
2. The ability to detect inhalation at the earliest moment is critical to optimize therapy because only the first portion of inhalation will get deep enough into the lungs where gas exchange occurs. Units that sense and deliver late may only fill up the dead space in the airway. The Apogee's dual sensors detect and deliver the oxygen before many oxygen systems can even begin to detect that inhalation has begun.
3. The purity of the oxygen being delivered. Some concentrators that are exceedingly small can only deliver oxygen purity that is less than 85% whereas oxygen tanks deliver about 99% purity.

What are some of the advantages of the Apogee's Selective Oxygen Delivery?

1. The most important advantage of selective delivery is receiving oxygen consistently regardless of whether one side of the nose is completely blocked. This is important because if your oxygen is being split 50% to each nostril and one nostril becomes blocked then only half of the oxygen will be therapeutic.
2. Because the **Apogee** does not flow any gas to the congested nostril, dryness and irritation may be substantially reduced.

Why until only very recently was there little information about the nasal cycle?

The nasal cycle was first described in a medical text in 1895. For nearly 100 years thereafter, there was little study on this subject -- possibly because there was no way to continuously observe nasal airflow in real-time. The inventors of the **Apogee at Dynaris** discovered how the nasal cycle occurs inadvertently after inventing and patenting a device to improve the way sleep laboratories measure nasal breathing for sleep apnea patients. At first, they thought their machine was broken because it would often only detect airflow out of one nostril at a time. After research and testing of hundreds of patients at the Stanford University Sleep Center, the nasal cycle was rediscovered. The graph shown on the homepage of this website records a real patient's nasal airflow pattern at Stanford.

The nasal cycle is now widely studied throughout the world. It is mentioned in publications, medical textbooks and even Wikipedia.