Single-Prong Nasal Cannula
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The single-prong dual-port nasal cannula reliably delivers oxygen into the back of the nasal cavity at its distal end while the port sensor at the nostril opening simultaneously monitors a patient’s breathing. The intentional distance between the oxygen and carbon dioxide port ensures maximal oxygen delivery during shallow breathing, allows more accurate carbon dioxide monitoring and reduces the risk of oxygen ignition caused by hemostatic cautery devices. The single-prong prevents interference during facial surgeries, and the slender profile provides a comfortable patient experience. This device is simple to use, is inexpensive to produce and is patient-friendly. It is an ideal medical device for all nasal cannula uses.
UNIQUE DESIGN
The cannula has a streamlined design to enter one of the patient’s nostrils without crossing the cheekbone, providing surgeons an unobstructed, secure working space.

SAFE
The superior design dispenses oxygen deep into the nasopharynx, reducing the risk of fire from cautery devices.

ACCURATE
Unlike other cannulas, the carbon dioxide port is externally located, distant from the oxygen port, ensuring a more accurate detection of respiration.
## Specifications

**SUMMARY**

A single 8 French double lumen cannula is sufficient for delivery of 2-3 liters of oxygen per minute while simultaneously measuring carbon dioxide. The cannula is placed into the nose through a single nostril and passed to the posterior nasopharynx (5-6 cm from the nasal root) with a separate port for carbon dioxide monitoring that rests in the nasal vestibule.

**COMPONENTS**

- Approximately 50 cm of dual lumen cannula stock, 8 French
- Approximately 15 cm of single lumen cannula stock, 6 French
- Two over molded port, one for oxygen and one for carbon dioxide
- One over molded bifurcated junction that separates the single cannula into individual lumens

**DIMENSIONS**

- The catheter is approximately 35-45 cm long
- The carbon dioxide detection port is 8-10 cm from the tip of the catheter
- A mark to assist in proper catheter placement is 10 cm from the tip

**MATERIALS**

- Medical grade silicon or polyurethane extruded tubing conforming to ASTM Volume 13.01 Medical and Surgical Materials and Devices (I):
  - E667 F2477

**PATENT STATUS**

- Patent Pending

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R. Patrick Yeatts, MD, an experienced ocular surgeon, has a keen eye for problem-solving. Yeatts earned his degree from Wake Forest School of Medicine. He is a dedicated clinician who enjoys tackling diverse and challenging cases.

SPECIALTY
R. Patrick Yeatts, MD, is an ophthalmologist with over 30 years of experience in ophthalmic plastic and reconstructive surgery. As a surgical specialist, he performs numerous orbital surgeries to remove tumors and repair trauma, as well as treating orbital diseases.

EXPERIENCE
During Yeatts’ career, he noticed that the standard nasal cannulas used in surgery inhibited access to orbital areas. While performing simultaneous procedures, Yeatts observed a colleague using a Foley catheter instead of a cannula. He was surprised that the makeshift device allowed patients to be heavily sedated and maintained sufficient oxygen levels. Patrick Yeatts attempted this method during subsequent procedures, but found that it did not measure carbon dioxide levels and caused mucus buildup.

Yeatts envisioned a cannula with a single tube and two channels that would supply oxygen and measure carbon dioxide. This device would not only solve the problem of surgical access to the face but could also prove to be a superior method for delivering oxygen under sedation. He decided on a single-prong design, which separated the oxygen and carbon dioxide ports by an 8-10 cm tip. This design lessens the risk for ignition during surgery and dislodges less frequently. The single-prong nasal cannula, developed in partnership with Wake Forest Innovations, is available for licensing and is ready for manufacturing.
Wake Forest Innovations accelerates the journey from discovery to commercialization so that important scientific discoveries can become life-improving realities.

- We help transform the ideas, discoveries and inventions of our scientists and clinicians into valuable proprietary technologies and license these to industry.
- We help industry to research and develop its own discoveries by providing open access to the intellectual, clinical and research capabilities of Wake Forest.

Through open innovation with industry we improve health by transforming ideas, discoveries and inventions into valuable health care products.