

## ETCO<sub>2</sub> SAMPLING

### **Accurate Determination of End-Tidal Carbon Dioxide During Administration of Oxygen by Nasal Cannulae**

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**ABSTRACT:** Measurement of end-tidal carbon dioxide tension (PETCO<sub>2</sub>) by mass spectrometry or infrared capnometry provides a clinically useful approximation of arterial carbon dioxide tension (PaCO<sub>2</sub>) in intubated patients. Although several devices have been proposed to sample PETCO<sub>2</sub> during spontaneous breathing, (i.e., unintubated patients receiving supplemental oxygen), thus far no reports have documented their efficacy. This article reports the use of an easily constructed modification of simple nasal cannulae that permits accurate sampling of PETCO<sub>2</sub> during oxygen administration to unintubated patients. After amputation of the closed tip, a cap from a syringe was inserted via a slit made at the base into one prong of a pair of nasal cannulae. A capnometer was connected to the syringe cap, and PETCO<sub>2</sub> and PaCO<sub>2</sub> were determined simultaneously during the administration of 3 L/min oxygen via nasal cannulae to 21 normocapnic patients. The PaCO<sub>2</sub> - PETCO<sub>2</sub> gradients were calculated and compared with values obtained in the same patients after intubation and mechanical ventilation. No significant difference was found between the calculated and compared with values obtained in the same patients after intubation and mechanical ventilation. No significant difference was found between the calculated gradients with nasal cannulae ( $2.09 \pm 2.82$  mm Hg.) Simultaneous oxygen administration and accurate sampling of PETCO<sub>2</sub> may be achieved in unintubated patients by using this easily constructed modification of nasal cannulae.

**KEY WORDS:** Measurement techniques: capnography. Monitoring: carbon dioxide. Oxygen: delivery.