A Simple, Easy, and Inexpensive Method for Monitoring ETCO$_2$ through Nasal Cannulae

To the Editor:—The monitoring of end-tidal CO$_2$ (ETCO$_2$) can provide useful data about adequacy of ventilation in the sedated or narcotized patient. Depression of respiratory rate and CO$_2$ retention can be readily evaluated. Such a system can even serve as an apnea monitor.

The following setup, which allows measurement of ETCO$_2$ during delivery of oxygen via nasal cannulae, can be easily and rapidly assembled. A standard 16-gauge intravenous catheter is inserted perpendicular through the plastic tubing and threaded into the lumen of one cannula. The metal stylet is removed and the CO$_2$ sampling tube attached to the iv catheter hub, as illustrated in figure 1. The waveform depicted in figure 1 was obtained during quiet breathing with a partially opened mouth and 3 l O$_2$ flow. The morphology of the alveolar plateau suggests that the sample obtained is indeed end-tidal.

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One-way Leak in Mass Spectrometer Sampling System

To the Editor:—Mass spectrometry has become an increasingly common monitoring device. As with any monitoring tool, however, effective utilization requires the practitioner to be able to identify artifactual or erroneous data. A recent letter published in this journal reported on an unusual end-tidal CO$_2$ waveform resulting from a loose luer-lock fitting in the sampling tubing. We report here an apparent one-way leak in the sampling system caused by a small crack in the capillary tubing.

Our operating suite is equipped with a Perkin-Elmer 1150® Respiratory Monitoring System. A disposable sampling tubing with luer lock manufactured by the Dryden Corporation® (#12711) is currently in use. During the course of two otherwise uneventful general endotracheal anesthetics, the partial pressure of expired nitrogen suddenly increased, while no inspired nitrogen was detected, a situation compatible with significant air embolus (fig. 1). A leak in the circuit was considered, although the absence of inspired nitrogen
was confusing. Nonetheless, all circuit connections were checked without any effect on the mass spectrometer findings. Finally, the sampling capillary tubing was replaced with prompt elimination of the measured expired nitrogen (Fig. 2). Upon further inspection, a small crack was noted near the luer locking patient end connector.

Apparently, during the positive pressure inspiratory phase of mechanical ventilation, the flow at the gas sampling site was great enough that no ambient air was entrained, but, during the passive expiratory phase, air was indeed entrained and diluted the other gases being analyzed by the mass spectrometer. The cleft seen in the capnogram was probably also related to these flow relationships.

In considering these findings, we would caution practitioners to contemplate the possibility of a damaged sampling system when facing the presence of a confusing mass spectrometry finding. We would also suggest that a flexible sleeve protecting the capillary tubing near the luer connector be considered by the manufacturer.

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A Note of Caution when Using Different cuffs with the Dinamap™

To the Editor.—In the May issue of ANESTHESIOLOGY, Drs. Yamashita, Motokawa, and Tsuneto describe an adaptor for attaching a DURA-CUF™ blood pressure cuff to the DINAMAP™ Monitor Model 1846 8-foot hose designed specifically for use with a neonatal DISPOSACUF™. Although it appears to be a convenient alternative to switching hoses between patients of varying sizes, a number of issues surrounding the design and function of DINAMAP™ Monitors should be considered.

DINAMAP™ Monitor Models 1846, 1846SX, and 8100 employ a method known as “cuff typing” for determining whether the attached cuff is in the neonatal or adult/pediatric range. It is achieved through the pneumatic system of the DINAMAP™ Monitor, and the key determinant is the length of the hose attached to the device. Based on this information, the DINAMAP™ Monitor operates under one of two sets of standards; one for adult/pediatric patients, and the other for neonatal patients. The DINAMAP™ monitor will automatically switch into the proper mode when the correct length air hose is attached to it. An operator attempting to monitor an adult/pediatric patient whose blood pressure cuff is attached to a neonatal air hose