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High Pressure Pop-off Safety Device when Using the Bain Circuit for CPAP Oxygenation during One-lung Ventilation

To the Editor:—A recent letter to the Editor¹ suggested the use of a Bain circuit as an alternative method of supplying CPAP to the non-dependent lung during one-lung anesthesia.

We have used a similar Bain circuit configuration (fig. 1) at our institution for the same purpose. We, however, in addition have added a 15-cm H₂O PEEP valve (arrow, fig. 1) proximal to the breathing bag to function as a high pressure pop-off safety device. If the Bain circuit pop-off or oxygen tank flow is accidentally altered, no more than 15 cm H₂O pressure is exerted on the airway, thus avoiding potential barotrauma.

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REFERENCE

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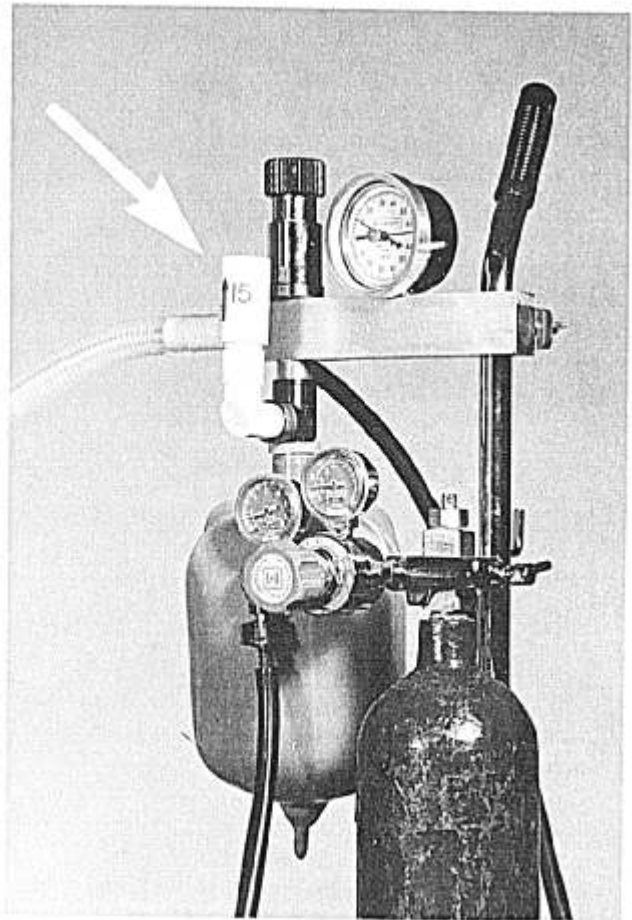


FIG. 1. PEEP valve inserted between breathing circuit and reservoir bag.

Economic Impact of Low-Flow Anesthesia

To the Editor:—The Department of Anesthesiology at the University of Maryland had been using fresh gas flow rates of 3–5 liters per minute with the standard adult circle system. Over successive 6-month periods, beginning in July of 1983 through June, 1985, isoflurane increased from 40% to 76% of the total volatile agent purchased. The monthly expenditures for volatile agents (halothane [\$0.08/cc], enflurane [\$0.26/cc],

isoflurane [\$0.48/cc]) were escalating. Since most of the fresh gas and volatile agent were exiting the patient and the operating room *via* the scavenging system, and the most expensive volatile agent was being used most often, the Department chose to implement a low flow (<2 l/min)-closed system anesthesia (<1 l/min) educational campaign. The purpose was to reduce volatile anesthetic costs and environmental pollution and to im-

TABLE 1. Effect of Low Flow Rate on Anesthetic Costs

	Dollars Spent on Volatile Anesthetics
January-June 1984 Isoflurane use moderate Low flow rare	\$15,042
July-December 1984 Isoflurane use high Low flow rare	\$22,345
January-June 1985 Isoflurane use high Low flow common	\$13,914

prove understanding of the kinetics of uptake and distribution and the physiologic monitoring facilitated by the closed system technique.

In June of 1984, two (1½ h) seminars were held to teach, discuss, and demonstrate (computer assisted and bedside) the principles of closed system anesthesia. In November, 1984, a visiting professor presented two 1-h lectures and bedside teaching in the operating room.

Members of the department were gently and frequently reminded of the patient, educational, cost, and environmental benefits derived from adopting a low-flow or a closed-system policy. Hand-held computers with closed system software were used during resident teaching in the operating room. Faculty acceptance was initially divided; however, resident and faculty enthusiasm, acceptance, and implementation was eventually the norm, and occurred over a 1-yr period.

With essentially no net change in anesthesiology minutes, the observations shown in table 1 have been made.

Currently, isoflurane accounts for more than 95% of the volatile agents used in 10,000 general anesthetics. Control of expenditures for volatile anesthetics is possible in a busy urban teaching hospital.

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Ambient Light Affects Pulse Oximeters

To the Editor:—While preparing to anesthetize an 18-month-old child, we noted an unusual response of the Nellcor Oximeter to light in the operating room. There was an audible and visible signal on the Nellcor model N100C Pulse Oximeter prior to the application of the model D-25 probe to the patient. The device signaled a heart rate of 189 beats per minute and an oxygen saturation of 98%. We assumed this to be an artifact resulting from the overhead fluorescent light. Subsequently, while setting up the device in the recovery room, we noted the same phenomenon. The room also was lit with fluorescent lights. In this instance, the recovery nurse was called to view the monitor without being informed that the probe had not yet been connected to the patient. The nurse's response was as follows, "The saturation is ok, but the heart rate is awfully fast. Why is that?" The heart rate read 199 and saturation 98%.

To our knowledge, this potentially misleading feature of the Nellcor Oximeter has not been described. The photodiode light receiver in the Model D-25 oxygen transducer must in some way receive a signal from the room light source that is sufficient to trigger the device to display erroneous data. Our mass spectrom-

eter-Nellcor interface (fiberoptic bundle) displayed the following data (fig. 1), when the probe was *not* connected to a patient. This could produce considerable confusion if the device were disconnected from a patient and the individual observing the patient were to act on erroneous data. Brooks *et al.*¹ stated that the

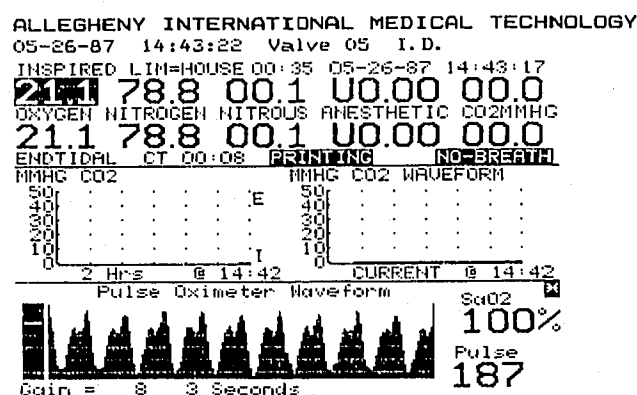


FIG. 1. Pulse oximeter data displayed along with mass spectrometer data. The oximeter probe was not attached to the patient, yet indicated a pulse rate of 187 and saturation of 100%.