"... relatively unknown and toxic drug..." Atracurium has undergone extensive investigation and has been approved by the Food and Drug Administration for patient care. In addition, our study demonstrated a lack of toxicity in 26 patients when used in large doses. Hypotension as a side effect was brief and easily managed in the 11 patients in which it occurred.

Unlike Dr. Kirkpatrick, we believe that this study is a straightforward, simple description of the practical clinical use of large doses of the intermediate nondepolarizing muscle relaxants used to facilitate rapid intubation. Studies such as these may result in more optimal and safer patient care.

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Dilution of Anesthetic Gases by a New Light Source for Bronchoscopy

To the Editor:—We would like to report a potential hazard associated with the use of the intrinsic air pump in the newly introduced Karl Storz Automatic Xenon Flash Generator and Light Source®. The pump provides a stream of air that reduces fogging of the telescope lens. We employed this device during bronchoscopy in a small child and found that the anesthetic gases were diluted by the flow of air. The patient, a 14-month-old, 6.2 kg boy with subglottic stenosis and resolving bronchopulmonary dysplasia, was anesthetized via his tracheostomy with halothane and oxygen. A Hopkins telescope was assembled with its antifog tube; the xenon light source and the air hose from the pump were attached (fig. 1). Insertion of this unit into the mouth, through the narrowed larynx, and beyond the tracheostomy site was uneventful. However, while the bronchi were being examined, the oxygen saturation as measured by pulse oximetry decreased below 80%. The saturation rose to 90% when the air pump was turned off.

After this incident, we measured the amount of air flow through the antifog tube and its effect on the concentration of delivered oxygen. The output of the pump measured with a Collins spirometer was 2.4 l/min and 2.3 l/min with a Wright respirometer. The specifications of the manufacturer indicate a 1 l/min output of air. The pump air flow from our other xenon light source measured 2.8 l/min on a Wright respirometer. Thus, dilution of inspired oxygen will vary, depending on fresh gas flow, minute ventilation, and the type of anesthetic system used.

We are now doing a prospective study of infants and small children during endoscopy to further define the conditions that promote desaturation.

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Fig. 1. Xenon Light Source with attachments to telescope, antifog tube, and bronchoscope. 1. Xenon light source. 2. Air pump outlet. 3. Light cable. 4. Air delivery hose. 5. Telescope. 6. Connection for light cable. 7. Air inlet on antifog tube. 8. Ventilating port for anesthetic apparatus on bronchoscope. 9. Bronchoscope. 10. Outlet for air and anesthetic gases.
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CORRESPONDENCE

In reply.—We realize that many factors must be taken into consideration when ventilating the pediatric airway during a bronchoscopy procedure and agree that dilution of inspired gases is one more variable of which anesthesiologists should be aware.

We agree with the authors warning their fellow practitioners; however, to use such a strong word as “hazard” is very alarming. We also would like to suggest a simple solution such as regulating the air flow with a valve or clamp on the antifog line.

The authors used a Collins spirometer and a Wright respirometer to measure the air flow. These are designed to measure the volume of a patient’s lungs and they do not provide any resistance to the air flow.

The Karl Storz Automatic Xenon Flash Generator (catalog #610C) has a built-in air pump, the output of which is inversely proportional to the resistance (pressure). The maximum output is 2.5 l/min with no restriction. With a minimal resistance (30 mmHg) such as in an antifog sheath with the telescope in place, the output is 1 l/min; therefore, the precise outflow pressure and volume of the pump depend on the application in which it is used.

When the air pump is used for antifog during a bronchoscopic procedure, the amount of restriction depends on the size of the telescope used and the corresponding antifog sheath. The authors did not indicate which size was used or if the telescope was in place during their measurements. They also did not indicate by what means the patient was ventilated after the bronchoscope was inserted and with what mixture of gases. Presumably, the tracheostomy tube was removed and the patient was ventilated via the bronchoscope tube.

When a small 3.5 bronchoscope tube is used, the telescope and antifog sheath almost completely fill the lumen of the tube. Usually, the telescope and antifog tube can be left in for only 10–20 s and then must be removed to allow adequate ventilation of the patient. Is this limited amount of time sufficient for substantial dilution of the anesthesia?

We at Karl Storz believe that the authors’ tests and results are interesting, and we look forward to the more conclusive results that will be provided by their further prospective study.

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A Cost-saving Method of Modifying the Nellcor® Pulse Oximeter Finger Probe

To the Editor.—The pulse oximeter has become a valuable and commonly used instrument for monitoring anesthetized patients.1 The disposable finger probes (Item D-20, D-25, Nellcor Inc., Hayward, CA) are designed for single use and have a limited life expectancy if reused. Each time the probe is removed from the finger the adhesive tape included with the probe tends to delaminate the probe and break the wires, making the unit inoperable. Our institution presently uses 1,200 probes yearly at a total patient cost of $31,200. With increased use in the recovery room and the intensive care unit, these numbers are escalating.

We have devised a simple means of extending the life expectancy of these probes as well as making them more easily and more quickly applied, especially in pediatric patients.

First, the adhesive wings of the probes are folded backward and opposed to each other, creating a sticky surface on the back side of the probe for easy gluing. Second, scavenge the Velcro® from the neck ties of the disposable operating room scrub gowns (Convertors®, American Hospital Supply, Evanston, IL). Third, glue the smaller “hooked” Velcro® piece to one arm of the probe and glue in place (Superglue Corp., Hollis, NY). Fourth, apply the “looped,” long portion of Velcro® to one-half of the “velcroed” probe, wrap around the finger, and attach to the uncovered portion of the hooked piece of Velcro® (fig. 1).