2 *Dreyfuss D, Soler P, Basset G, et al.* High inflation pressure pulmonary edema. Am Rev Respir Dis 1988; 137: 1159–64.

REPLY:

Thank you for the opportunity to respond. On review of the reported events, we noted that the ventilator functioned as designed, in response to the respiration values set on the ventilator. The ventilator was operating in the Pressure Control Ventilation mode, with an Inspired pressure setting of 25 cm H_2O.

The design of the ADU takes into account that for automatic ventilation, especially in Pressure Mode, higher than intended airway pressure would be the most likely potential cause of damage to the lung. The amount of tidal volume delivered is a function of the set target pressure and the compliance of the lungs. The compliance factor for the patient discussed in the article indicates a healthy lung.

Incorporation of alarms is a balance between promoting safety, and not being obtrusive. We thank Dr. Wong and Mr. Shirzad for sharing an experience that reiterates the importance of that balance. However, we find the comment made on "tidal volume alarms not being incorporated" was not relevant, because the ADU incorporates airway pressure alarms, disconnect alarm, and low Minute Volume alarm functions as appropriate alarms for this mode of ventilation, and in accordance with the relevant Anesthesia System standards (ISO 8835-1, IEC 601-2-13, ASTM 1850, EN 740).

We agree with the authors that using a "ventilator mode unfamiliar to the anesthesiologist" is potentially dangerous, as would be employing any sophisticated medical device without adequate understanding of the device, with its potential advantages and disadvantages.

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Thin end of the wedge

To the Editor,

The thin edge of the wedge arrives. Dr. MacManus is to be congratulated on his balanced and thoughtful editorial; *"Trained nurses can provide safe and effective sedation of MRI in pediatric patients"*.[1] The demand for anesthesia services outstrips supply. The central question for those of us in the Canadian anesthesia community is whether alternate anesthesia providers with remote supervision by physician anesthesiologists is a solution. I do not believe that this is acceptable. There is a lack of discussion regarding quality and informed consent in the sedationist proposal. Most Canadian parents believe that when their children are "deeply sedated" (unconscious) that they will be attended by physically present, appropriately trained, physicians. Are parents offered the choice between physician and non-physician providers? Are they informed that our definition of success for non-physician providers is between a 1 in 10 to 1 in 20 chance that the procedure will need to be rescheduled because of unsatisfactory sedation?

Egelhoff[2] has demonstrated that a program of sedation monitored by radiologists is as safe and effective as the one supported by Dr. MacManus. The problem with wedges is the inexorable squeezing that occurs over time. How many sedations can be supervised at a time? What else could the supervising anesthesiologist do? Is a procedure painful if local anesthesia is injected? We need a thorough National Debate about any sedationist proposal before we abandon the CAS guidelines. *"The only indispensable monitor is the presence at all times of an appropriately trained and experienced physician".*

Michael Sullivan MD FRCPC
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References

1 *MacManus B.* Trained nurses can provide safe and effective sedation of MRI in pediatric patients (Editorial). Can J Anesth 2000; 47: 197–200.
2 *Egelhoff JC, Ball WS Jr, Koch BL, Parks TD.* Safety and efficacy of sedation in children using a structured sedation program. AJR Am J Roentgenol 1997; 168: 1259–62.

An unusual cause of difficult spinal anesthesia

To the Editor:

Spinal anesthesia was planned for elective total hip arthroplasty in a healthy 59-yr-old man. A 25 gauge Quinke needle was passed into the subarachnoid space, as evidenced by the appearance of clear fluid in the needle hub. The solution to be injected had been prepared using a single-use spinal anesthesia tray (Baxter Health Care Corporation, Deerfield, Illinois, USA). Three ml local anesthetic and 0.3 ml preservative free opioid had been drawn into a glass syringe using a filter needle. The solution was injected without difficulty until the final 0.2 ml of injectate when firm resistance to further injection was encountered. The syringe was detached from the hub of the needle

FIGURE

and clear fluid continued to flow from the hub. The syringe was reconnected and, with gentle traction, clear fluid could still be aspirated.

The syringe was then inspected more carefully and it was noted that a glass fragment was floating freely in the syringe cavity (Figure). The syringe had not been taken apart during the filling process and the fragment was too large to have been aspirated through a filter needle so the supposition must be that the fragment was introduced during the manufacturing process.

Supplemental local anesthetic, 0.5 ml, was injected through the needle using a separate syringe without difficulty. The case proceeded uneventfully and no harm came to the patient.

The introduction of a foreign substance into the subarachnoid space is potentially disastrous. Only the size of the glass fragment prevented it from being injected into the patient on this occasion. One wonders how often smaller, invisible fragments find their way into spinal anesthesia syringes and thence into the patient. Once clear fluid had been drawn into the syringe the glass fragment was invisible.

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