

Misuse of infusion pump during propofol anaesthesia

To the Editor:

We read with interest the recent case report by Tong *et al.* describing recall after total intravenous anaesthesia due to equipment misuse.¹ They experienced two misuses; one is uncommon (the latch was not clamped to the plunger) and the other is common (the system had not been purged to confirm the delivery visually). We would like to suggest that one possible cause of intraoperative awareness is the flow interruption of propofol which occurs when the syringe is exchanged without purging.

An infusion pump (STC-525X; Terumo) was used. A 50 ml syringe (Terumo) containing 50 ml propofol or saline and fitted with a 21-gauge needle was loaded into the pump without purging. Twelve combinations of body weight (40, 60, 80 kg) and infusion rate (4, 6, 8, 10 mg·kg⁻¹·hr⁻¹) were evaluated. After the infusion pump was turned on, the delay until the second droplet of the solution was observed from the needle was measured five times. This delay increased in the lower infusion dose, and closely matched power curves in both solutions (see Table below). Saline had a longer delay than did propofol. The main reason for the delay is probably sticking of the plunger, as a longer delay was observed for the lower infusion dose.² Small gaps in the grooves in which the syringe ear and plunger end are loaded may also contribute to the delay.

Although the delay may vary for different infusion pumps and syringe brands, the syringe should be purged to prevent intraoperative awareness.

TABLE Observed delay (min)

Infusion rate/ body weight	40 kg	60 kg	80 kg
propofol			
4 mg·kg ⁻¹ ·hr ⁻¹	5.4 ± 0.3	3.1 ± 0.1	2.2 ± 0.1
6 mg·kg ⁻¹ ·hr ⁻¹	3.0 ± 0.4	1.9 ± 0.1	1.7 ± 0.1
8 mg·kg ⁻¹ ·hr ⁻¹	2.3 ± 0.2	1.6 ± 0.4	1.3 ± 0.1
10 mg·kg ⁻¹ ·hr ⁻¹	1.9 ± 0.2	1.3 ± 0.3	1.0 ± 0.1
saline			
4 mg·kg ⁻¹ ·hr ⁻¹	7.4 ± 0.1	4.8 ± 0.1	3.7 ± 0.2
6 mg·kg ⁻¹ ·hr ⁻¹	5.2 ± 0.1	3.3 ± 0.2	2.4 ± 0.1
8 mg·kg ⁻¹ ·hr ⁻¹	3.9 ± 0.1	2.4 ± 0.1	1.8 ± 0.1
10 mg·kg ⁻¹ ·hr ⁻¹	2.6 ± 0.1	2.0 ± 0.1	1.6 ± 0.1

All values are expressed as mean ± SD (n = 5, each).

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Awake fibre-optic intubation

To the Editor:

We anaesthetised a 71-yr-old woman with bowel obstruction secondary to rectosigmoid carcinoma, multiple metastatic deposits giving rise to carcinoid syndrome, and cervical spine damage caused by radiotherapy to her spinal metastases.

She had a permanent neck brace, and radiographs confirmed an unstable neck with complete loss of the bodies of C3 and C4. Airway assessment revealed a Mallampatti grade 4 view, 2 cm mouth opening, thyromental distance of 5 cm, and no antero-posterior temporomandibular movement. Neck movement was minimal. Despite the risk of tumour stimulation,^{1,2} we felt awake fibreoptic intubation to be the safest method available to secure the airway.

After premedication including octreotide,³ sedation with incremental midazolam under full invasive monitoring was instituted. Adequate topical anaesthesia was provided with lidocaine gel nasally, 10% spray transorally, and the trachea intubated using the "spray-as-you-go" technique.⁴ An armoured endotracheal tube was railroaded into position, and anaesthesia induced with thiopentone, morphine, and vecuronium. Ventilation was instituted with oxygen/nitrous oxide and isoflurane 1%.

All remained stable until tumour manipulation, when the arterial pressure decreased suddenly. Airway pressure increased with no change in central venous pressure (CVP), or significant bleeding. A rapid 1L colloid infusion raised the CVP but not the arterial pressure. This did normalise with a bolus of 500,000 iu aprotinin.⁵ The operation was completed uneventfully.

We feel this case demonstrates that awake fiberoptic intubation can be used safely in patients with carcinoid syndrome, and that aprotinin still has a role to play in its acute management together with octreotide.

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Use and misuse of syringes

To the Editor:

Lessard and Trépanier ask why 60% of Canadian anaesthetists reuse at least some syringes. They present evidence suggesting that any reuse of syringes is misuse since it exposes patients to the risk of cross-infection. Correctly interpreting one of the reasons for reuse, i.e., wastage of drugs, they suggest that this can be minimised by modifications of technique. I suggest that this is a relatively unimportant reason for re-use. I suspect that there are at least two other reasons. First, the evidence of a high risk to patients is not compelling. The same data may be interpreted to suggest that the risk is low and can be made to approach zero with simple modifications of technique that are rigorously applied. Avoiding "old" *iv* infusions, using sets with remote injection ports (more than 1 m from the *iv* cannula) and functional one-way valves, using the opposite arm for BP measurements, and maintaining high index of suspicion for contamination are all simple adaptations.

The second reason, I suspect, is environmental responsibility. If the reuse of syringes by anaesthetists

is eliminated, there could be a 2-fold increase in the volume of contaminated waste generated by our specialty. Most contaminated medical waste ends up in land-fill sites of which every province has a diminishing supply.

I am not convinced that the answer is "use once and throw away." Surely there is an opportunity here to Reduce, Reuse and Recycle.

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REPLY

*Dr. Imrie brings a surprising perspective to the issue. Although laudable, these ecological concerns must be weighted against patient safety. We believe that, given a choice, most of our patients would ask for a sterile set of syringes and accept the extra waste. Only patients sharing Imrie's convictions might accept potentially contaminated syringes. Patients should be informed that such working habits are not supported by neither the CDC, ASA, APSE, or Health Canada. We reiterate that "although the estimated risk of transmission of blood borne pathogens associated with the practice of reusing syringes in anaesthesia is low, it is real and not trivial" and that "the practice of reusing a syringe to administer medication to more than one patient is unacceptable and must be abandoned."*²¹

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Transfusion practices among Mexican anaesthesiologists

To the Editor:

Because the practice of anaesthesia often involves the administration of blood in the perioperative period, we performed a survey to determine the transfusion practices among Mexican anaesthesiologists. A written questionnaire was given to every anaesthesiologist attending the major course organised in 1996 by the *Sociedad Mexicana de Anestesiología*. Of 669 questionnaires, 259 (38.7%) were returned. Questionnaires from residents, 45, and from respondents performing procedures only in children, 9, were excluded. We analysed 205 questionnaires expressing answers in relation to adult patient only. The majority, 69.8%, required patients to have a