our codes and labels which can be easily read are a necessity. In addition, perhaps it is time for a national body such as the Canadian Anaesthetists' Society to become involved in the problem of packaging-related drug errors in anaesthesia.

Finally, it is important to remember that drug labeling and packaging is only part of the complex patient safety issue of getting the right drug to the right patient at the right time by the right route in the right dose. There are many opportunities for human error in all stages of the action of giving a patient a drug^{3,4} and any changes made in labeling and packaging should be done in consultation with the end users.

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Fentanyl infusions for post-thoracotomy pain management

To the Editor:

We congratulate the efforts of Dr. Baxter *et al.*¹ in their attempt to shed further light on this important and challenging topic of post-thoracotomy pain management. However, we question the validity of comparing two pairs of variables (*iv*-PCA-morphine + *iv*-fentanyl infusion vs *iv*-PCA-morphine + epidural-fentanyl infusion). It is feasible that *iv*-PCA-morphine consumption reflects an inadequately managed infusion (epidural or intravenous fentanyl) rather than demonstrating the superiority of one technique over the other. An appropriately managed infusion requires frequent patient assessment and titration. Over- or underdosing a constant infusion will add bias, and favour the more appropriately dosed infusion. As noted in Dr. Grant's editorial, fentanyl has a five-fold MEC range, therefore dosing on a per kilogram basis for a non-titrated constant infusion, is probably inappropriate. Intravenous-PCA-fentanyl vs epidural-PCA-fentanyl may be a more valid method for comparing these two techniques, rather than *iv*-PCA morphine consumption.

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REPLY

We appreciate the interest of Drs. Kahn and Jackson in our study, and their comments about our study design.

We agree that a fixed-rate infusion regimen will not produce optimum analgesia for some patients because of variations in MEC. It is therefore important to allow the administration of additional analgesia by some means. We allowed patients to self-titrate patient-controlled morphine, as used in many other studies as an index of the efficacy of the regimen being investigated. It is possible that some patients with low MEC may have received more fentanyl than necessary with the fixed-rate infusion, and this may have produced respiratory depression. However, all patients used supplementary morphine during the study period, which we interpret as indicating inadequate analgesia at that time.

Titration of the infusion alone requires frequent assessment of the patients, may involve a latent period until changes in rate become effective, and introduces bias by involving the assessor in the "analgesic arc." "Over- or under-dosing a constant infusion" will only "add bias", as suggested by Drs. Kahn and Jackson, if the two infusion routes were treated differently (they were not in our study). Alternatively, this could have been a problem if the two routes should have been managed in different fashions and were not, but we are not aware of any evidence to suggest this.

Indeed the hypothesis to be tested by our study was that the effects of fentanyl were the same whether given by the epidural or intravenous route. We, therefore, used the same regimen by both routes: a variable dosage regimen would make interpretation of the results more difficult.

We agree that PCA administration may provide effective dose titration by both the epidural and intravenous routes. This has been used in three studies, two showing lower fentanyl requirements with epidural administration^{1,2} and the third indicating no advantage to the epidural route.³

It is noteworthy that studies using infusion titration,⁴ PCA,^{1,3} or constant infusion, as in ours, have all shown a similar pattern of poor pain control in the immediate postoperative period. Perhaps we should be looking more at other modalities, e.g., NSAIDs, intra- and/or postoperative local anaesthetics, or other opioids, rather than relying on a single agent technique for pain control in this situation.

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