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Appendix A. Supplementary data

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Intravenous dexmedetomidine

I was interested to read the editorial by Sng et al.[1] in which the use of intravenous (IV) dexmedetomidine in obstetric anesthesia is described. My anesthetic group has been using the drug for the last two years to relieve peri-operative shivering during cesarean delivery, this being a distressing symptom for most women, especially following labor. This decision was taken after reading the preliminary results of a study from Montreal [2] that were first reported at the Society of Obstetric Anesthesia and Perinatology meeting in 2016. The investigators described the benefit of a 30 μg dose of IV dexmedetomidine for the relief of shivering at cesarean delivery. Our experience is that dexmedetomidine, administered as a slow IV bolus of 15–30 μg in this setting, is as or more effective than 25 mg IV meperidine. It works within 45–90 s and it is rare that the patient requires a second dose. Since we are now trying to find ways to limit opioid exposure in our patients, it would seem prudent for IV dexmedetomidine to replace meperidine for shivering during cesarean delivery. Dexmedetomidine can cause a transient, moderate increase in systolic and diastolic blood pressures and a transient, manageable, fall in heart rate which, arguably, is useful after inducing spinal anesthesia. Blood pressure changes, however, are biphasic and there may be a period of hypotension after its use, but this has not been a clinically important finding in our practice. Patients may experience a brief period of sedation and anxiolysis, which has prompted some in our group to use dexmedetomidine for intra-operative anxiety instead of midazolam.

I am aware that other therapies for shivering during cesarean delivery, such as clonidine and tramadol, have been used and evaluated around the globe but our group has no experience with those drugs in this context.[3–5]

Dexmedetomidine is an inexpensive drug (about US$2 for a 200 μg vial) and I believe it should be considered as a first-line treatment for shivering, and as an option for the treatment of anxiety during cesarean delivery under neuraxial anesthesia. As such, dexmedetomidine is indeed a very useful "weapon in our armoury".

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Knowledge and comfort with neonatal resuscitation among practising anesthesiologists

The Neonatal Resuscitation Program (NRP) was developed in 1987 by the American Heart Association and the American Academy of Pediatrics to teach an evidence-based approach to neonatal resuscitation.[1] When obstetric anesthesia became an accredited fellowship in 2011, NRP training became a requirement for graduation. However, most anesthesiologists do not have an obstetric anesthesia fellowship or formal NRP training and most of those who work on the labor and delivery unit do not have NRP training.[2] We conducted a pilot study, the purpose of which was to develop a reliable and valid survey that assesses anesthesiologists' knowledge and comfort with neonatal resuscitation. A demographics

section stratified respondents based on their training background. Twenty-nine true-or-false knowledge questions were generated by incorporating key concepts from the *Textbook of Neonatal Resuscitation*.[1] The comfort section assessed the respondent's comfort with neonatal resuscitation and consisted of 11 statements, each scored on a seven-point Likert scale (1=strongly disagree to 7=strongly agree).

To establish face validity, three question writers determined that the questions represented an appropriate sample of NRP knowledge. Next, content validity was established by a five-member expert panel that included an anesthesiologist, neonatologist, pediatrician and two registered nurses, all of whom regularly practise or teach NRP. The panel members were instructed to rate each knowledge and comfort question on a four-point scale (1=not relevant, 2=slightly relevant, 3=relevant, and 4=extremely relevant) to ensure that pertinent information was being assessed. Questions were included in the final survey if at least four of five experts gave a relevance rating of three or four. Following this review, 23 of the original 29 knowledge questions and all 11 comfort questions were retained. The revised survey (Supplementary material) was exempted by the Tufts Health Sciences Campus Institutional Review Board and distributed anonymously to faculty anesthesiologists at a single academic medical center either electronically or on paper.

Of 36 surveys administered, 19 (53%) were completed by five pediatric anesthesiologists, three critical care anesthesiologists, two cardiac anesthesiologists and one pain anesthesiologist (none of whom was obstetric fellowship trained). Nine (47%) respondents work on the labor and delivery unit at least once monthly and although two (11%) had undergone NRP training at some point, none was currently NRP certified. The internal consistency of knowledge questions was acceptable (Cronbach's alpha 0.7). There was also a strong correlation between combined comfort and knowledge scores (rho 0.69, P=0.001). These results suggest that the survey is a consistent tool for the assessment of both knowledge and comfort with NRP among anesthesia providers.

Knowledge scores ranged from 30-87% correct (median 56%) and combined comfort scores ranged from 11–69 (median 43). Comparing anesthesiologists who practise on labor and delivery unit at least once monthly versus those who never do, there was no difference in knowledge (57% vs 54%, P=0.74) or comfort scores (39 vs 26, P=0.08). However, pediatric anesthesiologists had significantly better knowledge (70% vs 52%, P=0.03) and higher comfort scores (66 vs 38, P=0.001).

Only 16% of anesthesiologists with obstetric anesthesia responsibilities have current NRP accreditation but 65% reported being involved in neonatal resuscitation.[2] In most cases, the Good Samaritan laws protect the anesthesiologist from liability if an unintended injury occurs.[3] However, there are legal precedents for payments on behalf of anesthesiologists performing neonatal resuscitation and having NRP training may decrease this risk.[4]

This pilot study assessed knowledge and comfort with the NRP among anesthesiologists and found a significant lack of NRP training. This was highlighted when we found those working on the labor and delivery unit to have poor knowledge and comfort with the NRP. Future studies should be undertaken, with a larger sample size, to assess differences between anesthesiologists with and without obstetric anesthesia fellowship training.

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Appendix A. Supplementary data

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