performance of the procedure is within the realm of most family physicians, management of the pharmacology of ITN requires a specialized skill set. Just as a non-anesthetist family physician would not be expected to perform spinal anesthesia for a cesarean section, we should not encourage them to perform mini-spinals for labour analgesia.

—Phil Dopp MD CCFP
Sault Ste Marie, Ont
by e-mail

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Response

We are pleased (and not surprised) that single-dose spinal anesthesia during labour would stimulate debate. We agree with all of the technical points Dr Dopp brings forth, in fact they were well described in our first draft, but the review needed to be shortened for publication.

Delivery of safe obstetric service in our location includes general practitioners providing anesthesia, cesarean sections, external versions, and bedside ultrasounds. Clearly, varying levels of expertise and training are required.

Settings without epidural services are left with limited options for analgesia, including repeat doses of intravenous or intramuscular narcotics. These also impose the risk of respiratory depression and the need for adequate protocols for monitoring. In our situation the nursing staff was familiar with the use of intrathecal morphine as a common analgesic after cesarean section. It was an easy leap for them to modify their post-operative intrathecal narcotics (ITN) protocols. In our institution, intrathecal morphine patients are monitored with this protocol for 18 hours.

Dr Dopp identifies fetal bradycardia as a potential problem with this technique, and we referenced the study by Mardirosoff and colleagues (level I evidence), in which ITN did not have any effect on Apgar scores.

We are respectful of the opinion that Dr Dopp expresses about the suitability of this procedure's being disseminated through Canada's rural hospitals,

but we don't share it. Nor is it consistent with the feedback we have received from family doctors. We have had inquiries since this article was published from doctors wanting to improve analgesia in their obstetric practices, including GP-anesthetists hoping to provide a service that is less labour intensive than an epidural service. I note that many communities our size and larger provide no obstetric analgesia service of any kind because of the onerous time commitments that the epidural service entails. In our experience this time-efficient procedure has allowed us to provide a comprehensive obstetric analgesia service, including ITN and occasional epidurals.

If this article has piqued the interest of any family doctors to consider providing ITN during labour, we are confident they will be able to perform the due diligence to safely implement the program. We believe that family medicine training in Canada is specifically designed to give our doctors the skills to start providing new services as they evolve. This is not to dismiss the complex infrastructure set up in all of our hospitals that supports and ensures the provision of safe services. These include, but are not limited to our hospital boards, medical advisory committees, risk management departments, obstetric service departments, capable nursing staff and mangers, and hospital pharmacists.

—R.G. Minty MD FCFP
—Len Kelly MD MClinSc CCFP FCFP
—Alana Minty
—D.C. Hammett MD CCFP FRACGP
Sioux Lookout, Ont
by e-mail

Morphine in breast milk

I read in the January issue of *Canadian Family Physician* about the tragic death of the baby resulting from the breastfeeding mother taking acetaminophen and codeine.[1] "Following the development of poor neonatal feeding, the mother expressed milk and stored it in a freezer. Analysis of the milk for morphine ... revealed a concentration of 87 ng/mL.... The morphine measurement was further confirmed by gas chromatography–mass spectrometry. "[1]

I have 2 questions.

Question 1: At 87 ng/mL, 1000 mL of breast milk would contain at total of 87 µg of morphine. How can such a small quantity be toxic to a baby that drinks only 60-90 mL at a time?

Also, "mass spectrometry revealed a blood concentration of morphine at 70 ng/mL and acetaminophen at 5.9 µg/mL. Neonates receiving morphine for analgesia have been reported to have serum concentrations of morphine at 10 to 12 ng/mL." [1]

Question 2: How can such small quantities of morphine in breast milk cause such high blood levels in the infant?

—Mitch Young MD
Manchester, NH
by e-mail

Reference

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Response

We wish to thank Dr Young for his interest in our Motherisk Update, and for his thoughtful observations.

The dose of 87 µg/L of milk calculated by him is not "such a small quantity" for a newborn. In fact, it is 30 µg/kg. In older infants a dose of 50 µg/kg is used for sedation. The newborn has much lower capacity to deactivate morphine.[1] Moreover, the newborn has substantially higher sensitivity to the central effects of morphine, partially due to more penetration through the blood-brain barrier.[2]

Last, as we indicated in the paper, the homozygocity the child exhibited to glucuronidation of morphine