



A survey assessing the need for spinal chloroprocaine to provide subarachnoid neuraxial anesthesia for short-duration surgeries in Canada

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Received: 26 January 2021 / Revised: 16 March 2021 / Accepted: 16 March 2021 / Published online: 12 April 2021
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To the Editor,

The ability to access chloroprocaine (CP) in Canada for subarachnoid blockade (SAB) and epidural use ceased in 2012.¹ It is still manufactured and widely available in the US and Europe under the trade names Clorotekal (B. Braun Medical Inc., Bethlehem, PA, USA), Nesacaine (Fresenius Kabi, Lake Zurich, IL, USA), and Ampres (Sintetica Limited, Mendrisio, Switzerland). Health Canada approved the importation of preservative-free CP to Canada in January 2021^A but accessibility is limited by foreign supply. Its fast onset, intense blockade, reliable duration, and quick offset make it ideal for short-duration surgery.^{2,3} Current recommendations during the COVID-19 pandemic favour regional anesthesia to avoid aerosol-generating medical procedures.^{4,5} This survey of Canadian anesthesiologists sought to assess the need for CP to provide SAB for short-duration surgeries.

Following ethics approval, an electronic survey link was sent to 2,218 members of the Canadian Anesthesiologists' Society (CAS) and, to give non-CAS members an

opportunity to provide their opinions, 1,720 members of the *Ontario's Anesthesiologists* (OA) Section of the Ontario Medical Association in active practice. To prevent inadvertent survey duplication by OA members responding to the CAS email, a prominent warning not to participate in the survey if it had been completed via other sources was included in their recruitment letter. The survey questions were developed using focused discussion (Appendix) and tested within the authorship team. The survey was conducted from 1 December 2020 to 4 January 2021 using the REDCap (Research Electronic Data Capture) platform. Descriptive statistics were performed on all variables, with categorical data reported as counts and percentages.

The CAS and OA survey response rates were 379/2218 (17%) and 81/1720 (5%) respectively, yielding a total of 460 consenting respondents. Twenty-seven were excluded (eight for not being in active practice and 19 for non-completion), leaving 433 for analysis (see Electronic Supplementary Material [eAppendix] for detailed responses).

Two hundred and twenty-seven participants (52%) had experience using CP. Participants reported their primary work setting as an academic institute or university hospital (239), community hospital (224), or private clinic (12). Prior to the COVID-19 pandemic, 73% estimated the number of short surgical procedures amenable to SAB to be at least three or more per week.

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12630-021-01980-w>) contains supplementary material, which is available to authorized users.

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^A *Fresenius Kabi*. Temporary importation of US-labelled Nesacaine-MPF (Chloroprocaine HCl, USP) 2% to address a medical need in Canada. Available from URL: <https://www.fresenius-kabi.com/en-ca/documents/HPC-Nesacaine-MPF-020521-En.pdf> (accessed March 2021).

Table Barriers to performance of subarachnoid blockade in order of frequency

	Freq	%
Prolonged time for spinal anesthesia regression causing delayed discharge readiness	372	86
Lack of reliable short-acting local anesthetic without risk of TNS.	311	72
Patients' fears of spinal anesthesia and being "awake"	140	32
Surgeons' or postanesthesia nurses' preference for general anesthesia	105	24
Lack of space such as block room to provide parallel processing	68	16
Insufficient time to provide SAB because of rapid operating room turn-over	62	14
Lack of personnel to assist in the performance of SAB	19	4

SAB = subarachnoid blockade; TNS = transient neurologic symptoms

During the pandemic, 57% reported providing SAB for short procedures sometimes, often, or always. If CP were available, 92% of respondents would provide SAB sometimes, often, or always. The choice of local anesthetic (LA) for SAB for short procedures was as follows: bupivacaine 65%, lidocaine 18%, mepivacaine 16%, and other 2%. Free text answers for those that wrote "other" were ropivacaine, a mixture of LAs, opioid added to LA, or CP.

Participants were asked to choose the main barriers to SAB provision and click all that applied. Eighty-six percent of respondents chose prolonged time for SAB regression, causing delayed discharge readiness (Table). The second most common barrier (72%) was the lack of a reliable short-acting LA without risk of transient neurologic symptoms. Lack of personnel, insufficient time, and lack of space were minor barriers.

Sixty-nine percent responded that access to spinal CP for SAB in short duration surgeries would be of "considerable help" or "extremely helpful". Previous experience using CP impacted the assessment of its usefulness such that 50% of those with experience felt CP would be "extremely helpful", compared with 14% with no experience using the drug. Even with no experience, 40% felt CP would be of "considerable help". Lastly, 88% (381) of respondents answered that they were more likely to provide SAB for short surgical procedures during the COVID-19 pandemic compared with their pre-pandemic practice.

The low survey response rate (5%) for OA members was likely because most members belonged to the CAS and had already received the recruitment emails. No email list of non-CAS members exists in Ontario. Although we asked anesthesiologists to complete the survey once, the risk of some duplicate responses cannot be completely ruled out.

Respondents worked in a broad range of settings. Access to CP was deemed to be extremely helpful by 69% of Canadian anesthesiologists, and 52% had prior experience using CP. Experience with the drug, versus no experience,

positively influenced the overall assessment of the helpfulness of CP availability to the provision of SAB.

This study shows that, at least prior to the COVID-19 pandemic, there were sufficient short surgeries taking place to justify a freely accessible CP supply. Until recently, CP was available for individual patients in Canada only through Health Canada's Special Access Program. This was not a practicable daily option given that the indication for release was the exceedingly rare allergy to amide LAs, with the additional requirements to state why a general anesthetic was not an option and to order the drug well in advance. It is unclear if the approval of CP importation will meet the demand for SAB-amenable short duration surgeries shown in this survey, given the limited export supply from the United States.

Canadian anesthesiologists identified the lack of a suitable short-acting LA as the major barrier to performing SAB for short duration surgery. Access to CP would allow anesthesiologists to tailor the anesthetic to permit rapid discharge, with a low risk of transient neurologic symptoms, solving the two most frequently identified barriers in this survey. The study further shows that the choice of anesthesia for short-duration surgery is dependent on accessibility to CP.

In the COVID-19 pandemic, it is imperative to have CP available. Access to SAB should be promoted not only to provide patient care options, patient satisfaction, safety, and environmental benefit, but also to protect perioperative staff from aerosolized particles during airway manipulation for general anesthesia. Eighty-eight percent of respondents are more likely to consider SAB for the prime anesthetic at this time. Given that this is the case, Canadian anesthesiologists should have ready access to this option within the LA armamentarium.

Acknowledgements We wish to thank the Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University for providing grant support (CAD 1600.00) to fund this project.

Disclosures None.

Funding statement Department of Anesthesia, Pain Management and Peri-operative Medicine, Dalhousie University Internal Grant.

Editorial responsibility This submission was handled by Dr. Stephan K.W. Schwarz, Editor-in-Chief, *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*.

Appendix: Assessing the need for spinal chloroprocaine to provide subarachnoid neuraxial anesthesia for short duration surgeries in Canada

Chloroprocaine became UNAVAILABLE in Canada in 2012. In the face of the COVID-19 pandemic, regional anesthesia is recommended to avoid airway manipulation. The trend toward same-day discharge after surgery is increasing.

This survey seeks to gather information on how useful spinal chloroprocaine would be in the anesthetic care of patients in your daily practice for patients undergoing procedures lasting up to 60 minutes. This survey will take less than 10 minutes of your time. Your participation in this survey is voluntary, and your responses will remain anonymous.

Are you an anesthesiologist in current practice?

Yes/No [If no, exit survey]

- 2) Do you have prior experience with spinal chloroprocaine for subarachnoid neuraxial anesthesia (SAB)?
 - a) Yes
 - b) No
- 3) What is your primary practice setting: (please select all that apply)
 - Academic institute or university hospital
 - Community hospital
 - Private clinic
- 4) Prior to the COVID-19 pandemic, how many patients did you care for who have SHORT surgical procedures (up to sixty minutes) such as cystoscopy, hysteroscopy or knee arthroscopy, where SAB anesthesia might be an option.
 - a) < once a week
 - b) 1–3 patients a week
 - c) 3–5 patients a week
 - d) 5–10 patients a week
 - e) >10 patients a week
- 5) How often do you CURRENTLY provide SAB for your patients undergoing SHORT surgical procedures such as cystoscopy, knee arthroscopy, or hysteroscopy.

- a) Never
- b) Rarely
- c) Sometimes
- d) Often
- e) Always

- 6) If spinal chloroprocaine were available, how often would you consider providing SAB for your patients undergoing short procedures such as cystoscopy, knee arthroscopy, or hysteroscopy.

- a) Never
- b) Rarely
- c) Sometimes
- d) Often
- e) Always

- 7) What is the spinal local anesthetic you use currently for short procedures amenable to SAB?

Lidocaine

Mepivacaine

Private clinic

Other: _____

- 8) What are the main barriers to YOUR provision of SAB for short surgical procedures? Tick all those that apply.

- a) Patients' fears of spinal anesthesia and being "awake"
- b) Surgeons' or post anesthesia nurses' preference for general anesthesia
- c) Prolonged time for spinal anesthesia regression causing delayed discharge readiness.
- d) Insufficient time to provide SAB because of rapid operating room turn-over
- e) Lack of space such as block room to provide parallel processing
- f) Lack of personnel to assist in performance of SAB
- g) Lack of reliable short acting local anesthetic without risk of TNS.

9. If spinal 1% or 2% chloroprocaine was available, how helpful would this be to your ability to provide SAB for short surgical procedures lasting up to 60 minutes?

- a) Would not make any difference to my current practice
- b) Would be somewhat helpful, and I might consider doing more SAB
- c) Would be a considerable help and I would strongly consider its use.
- d) Would be extremely helpful and would be my first choice.

10. Are you more likely to provide SAB for short procedures because of the COVID-19 pandemic? Are

you more likely to provide SAB for short procedures because of the COVID-19 pandemic?

Yes/No

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