

Acute pain management services have progressed, albeit insufficiently in Canadian academic hospitals

[Les services de traitement de la douleur aiguë ont évolué, mais pas suffisamment, dans les hôpitaux universitaires canadiens]

David H. Goldstein MB BCH MSc FRCPC, Elizabeth G. VanDenKerkhof RN DRPH, William C. Blaine BSc MSc

Purpose: Acute pain management services (APMS) evolved in response to the desire for improved management of postoperative pain. The management of postoperative pain received formal support from international organizations over the past decade and by 1993 half of the Canadian university-affiliated teaching hospitals had implemented an APMS. The purpose of this survey was to describe APMSs in Canadian academic institutions, with specific emphasis on postoperative analgesics, new analgesic methods, training and research.

Methods: Between June 2000 and January 2001, 62 Canadian hospitals affiliated with the 16 Canadian university anesthesiology departments were sent a postal questionnaire.

Results: Fifty of the 62 respondents returned a completed questionnaire representing a response rate of 81%. Eighty percent of the hospitals surveyed had at least 200 beds, 90% (45) had implemented an APMS. Anesthesiology was primarily responsible in all 45 hospitals with an APMS. The results presented are based on the 45 centres with an APMS.

Conclusion: Since the early 1990s the percent of Canadian academic hospitals with an APMS has increased from 53% to 92%. These figures are comparable to the United States. Greater collaboration from nursing and pharmacy, mandatory training for medical and nursing students and residents, and a standardized approach to continuous quality improvement remain necessary.

Objectif: Des services de traitement de la douleur aiguë (STDA) ont été mis sur pied pour répondre au besoin d'améliorer le traitement de la douleur postopératoire. Le traitement de la douleur postopératoire a reçu le soutien formel d'organismes internationaux pendant la dernière décennie et en 1993, la moitié des hôpitaux d'enseignement canadiens affiliés à des universités ont développé des STDA. Nous avons voulu décrire les STDA et mettre l'accent sur les analgésiques

postopératoires, les nouvelles méthodes d'analgésie, la formation et la recherche.

Méthode : Entre juin 2000 et janvier 2001, nous avons posté un questionnaire à 62 hôpitaux canadiens affiliés à 16 départements d'anesthésie universitaires.

Résultats : Des répondants de 50 des 62 centres visés ont retourné un questionnaire rempli, ce qui représente un taux de réponse de 81 %. Quatre-vingt pour cent des hôpitaux étudiés avaient au moins 200 lits, 90 % (45) avaient un STDA. L'anesthésiologie était principalement responsable de ces STDA. Nous présentons les données obtenues de ces 45 centres.

Conclusion : Depuis le début des années 1990, le pourcentage d'hôpitaux universitaires canadiens qui ont un STDA a augmenté de 53 % à 92 %. Le cas est similaire aux États-Unis. Par ailleurs, une collaboration plus importante des services de soins infirmiers et de la pharmacie, une formation obligatoire pour les étudiants en soins infirmiers et en médecine et les résidents, et une démarche normalisée d'amélioration continue de la qualité demeurent nécessaires.

ACUTE pain management services (APMS) evolved in response to the desire for improved management of postoperative pain. In 1988 and 1989 Ready introduced the concept of a collaborative, interdisciplinary approach to managing postoperative pain, which included formal curricula for anesthesiology residency education and the facilitation of clinical research in postoperative pain.^{1,2} Since then APMSs have received formal support from many national and international organizations.³⁻⁷ In 1993 Zimmerman reported that half of the Canadian university-affiliated teaching hospitals had implemented an APMS.⁸ By 1998 73% of US hospitals with more than 100 beds had an estab-

From the Department of Anesthesiology, Kingston General Hospital, Queen's University, Kingston, Ontario, Canada.

Address correspondence to: Dr. David H. Goldstein, Department of Anesthesiology, Kingston General Hospital, 76 Stuart St., Kingston Ontario K7L 2V7, Canada. Phone: 613-549-6666, ext. 3399; Fax: 613-548-1375; E-mail: goldsted@kgh.kari.net

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lished APMS.⁹ The purpose of this study was to describe APMSs in Canadian academic institutions.

Methods

This postal survey took place between June 2000 and January 2001. The 16 Canadian university departments of anesthesiology were contacted and asked to provide the names of affiliated hospitals and the names of the individuals most responsible for the treatment of postoperative acute pain in their respective departments. Subsequently, these individuals were contacted to verify their reported role in the treatment of postoperative acute pain. In cases where the individuals contacted were not primarily responsible for the management of postoperative acute pain, a referral to the appropriate individual was requested. This iterative process identified 62 hospitals affiliated with academic institutions. Participants were asked to respond to 93 closed-ended questions. The questionnaire took approximately 20 min to complete and asked about the structure and function of APMSs, postoperative analgesics, analgesic methods, educational initiatives and research. Participants were asked to return the questionnaire even if they did not have a formal APMS in place. Follow-up of non-respondents consisted of a combination of e-mail reminders, letters and telephone calls.

Results

Fifty of the 62 study participants returned a completed questionnaire representing a response rate of 81%. All 16 universities returned at least one questionnaire and each of the nine provinces from which the 62 academic hospitals originated, was represented. Eighty percent of the hospitals surveyed had at least 200 beds, 90% (45) had implemented an APMS and one hospital was planning to initiate the service. The results are based on the 45 centres with an APMS.

Anesthesiology was primarily responsible for the APMS in all 45 hospitals. Approximately 18% of APMSs were initiated between 1995 to 2000 and 49% had over 20 patients per day on the service. Forty percent had an APMS committee in place and in 89% of centres the committee was multidisciplinary. The structure of the APMS clinical team consisted of an anesthesiologist (100%), a designated nurse (56%) and a designated pharmacist (33%). Additional demographic and staffing details (Table I) are presented as Additional Material at www.cja-jca.org.

Consultation requests to the APMS in the perioperative period were made by the operating room anesthesiologist in consultation with the surgeon in 96% of hospitals. Patients with epidurals were admitted to the ward in 98% of hospitals and critical care areas in 82%

of hospitals. The average length of stay on the APMS was greater than 48 hr in the majority of hospitals. Additional details regarding operational aspects of an APMS (Table II) are available as Additional Material at www.cja-jca.org.

All 45 centres prescribed morphine via *iv* patient controlled analgesia (IVPCA). Ninety-six percent of centres provided continuous epidural infusions, 80% used single shot blocks, and 73% provided continuous infusion nerve blocks. Additional information regarding analgesic types and modes of delivery (Table III) are available as Additional Material at www.cja-jca.org.

Transitional analgesia refers to the initiation of oral analgesics in an effort to acquire therapeutic serum levels prior to discontinuing an existing modality. Co-analgesia refers to the use of a non-steroidal anti-inflammatory drug (NSAID) or acetaminophen with an IVPCA, epidural opiates or a peripheral block to minimize the dose and side effects of opiates. Over half of the centres provided NSAIDs as the primary transitional and co-analgesic. Naproxen, ketoralac and indomethacin were the primary NSAIDs used. Ketaprofen was used in only five (11%) centres. Additional responses to questions related to the use of transitional and co-analgesia (Table IV) are presented as Additional Material at www.cja-jca.org.

Thirty-two percent of centres provided formal education in the management of acute pain to anesthesiology residents and 60% provided formal education to medical students (Table V, available as Additional Material at www.cja-jca.org). Of the 14 centres with residency education in acute pain only half had a formal curriculum with written goals and objectives, and an assessment process.

Sixty percent of centres used specific APMS data collection tools for charting, while 29% had data available in an electronic format. Seventy-five percent reported collecting data on pain scores using the visual analogue scale and at least 80% reported collecting data on sedation, nausea, vomiting, pruritus, sensory and motor block, and hypotension. Twenty-nine percent reported having ongoing data collection for the purposes of an APMS outcomes database. Additional details regarding data management (Table VI) are available as Additional Material at www.cja-jca.org.

Discussion

This survey of academic institutions found that 90% of respondents had an established APMS, a small majority had implemented a multidisciplinary team and many were using newer analgesic methods such as continuous infusion epidurals. However, only one quarter were using the latest methods such as patient

controlled epidural analgesia. Many centres reported a paucity of research activity and educational initiatives for medical students and residents.

Given the findings of this survey, it appears that Canadian academic hospitals have made varying attempts to achieve Ready's four goals when developing and implementing an APMS.¹ The following section will review the progress of Canadian academic APMSs with respect to these four goals.

1) To improve postoperative analgesia

Ninety percent of Canadian academic hospitals have implemented an APMS. This is up from 53% in 1993.⁸ These figures are comparable to the United States¹⁰ and possibly higher than the United Kingdom, where 44% of non-academic hospitals had an APMS in 1995.¹¹ Consistent with Zimmerman's findings,⁸ the average number of patients on the APMS exceeded 20 per day and in 65% of centres the length of stay on the APMS was greater than 48 hr. Success of an APMS is dependent upon a multidisciplinary clinical team.^{1,2} While anesthesiology was involved in all centres, much lower representation was reported for nursing (55%) and pharmacy (33%). These findings are only slightly higher than those reported by Zimmerman in 1993.⁸ Growing clinical demands and reduced numbers^{12,13} of anesthesiologists may explain why anesthesiology providing sole coverage to the APMS has decreased from 36% in 1993⁹ to 22% in 2001. The literature suggests that a designated group of anesthesiologists will contribute to continuity of care while providing input into policies, procedures, continuous quality improvement initiatives and the advancement of APMS research,^{11,14,15} yet in this study only 44% of centres reported having a designated group of APMS physicians. Issues related to the importance of appropriate and adequate nursing involvement on the APMS team have been addressed in recent publications.^{16,17} Consistent with the literature, only one-third of centres had pharmacy represented on the clinical team.⁸ In spite of increasing numbers of centres with an APMS and mandates by professional organizations,^{18,19} there is still a lack of resources to treat pain adequately. However, resources may be more effectively utilized in treating acute pain in the perioperative setting than managing chronic postsurgical pain in the future.²⁰

2) To apply and advance new analgesic methods

Our study found IVPCA, epidural analgesia and peripheral nerve blocks to be the mainstays of therapy on the wards. Baker,²¹ Rawal²² and Klein²³ report a trend towards discharging patients with indwelling

nerve block catheters. These initiatives along with improved management of postoperative pain in hospitals may address the high rates of moderate to severe pain being reported by patients after discharge from hospital^{24,25} and may ultimately facilitate earlier discharge from hospital and reduce readmission rates in both postsurgical and palliative patients.

The use of transitional and co-analgesia has been shown to improve pain scores, reduce side effects and facilitate ambulation,^{26,27} however fewer than two-thirds of centres reported prescribing transitional analgesia when weaning patients from IVPCA, epidurals or peripheral blocks.

3) To train anesthesiology residents

The findings of this study support the need for a more comprehensive, formalized approach to the preparation of anesthesiologists regarding the management of postoperative pain. This initiative should be targeted at both the undergraduate and postgraduate level. In addition, currently in Canada there are only approximately 18 training fellowships in acute pain or regional anesthesia offered per year²⁸ and the exact number of practicing Canadian anesthesiologists with fellowship training in these specialties is unknown.

4) To carry out clinical research

Access to well defined, consensus based data is a prerequisite to research and continuous quality improvement in the management of acute pain,^{2,29,30} yet only 29% of centres reported having an ongoing prospective data collection system. Pain and side effect indices are collected in varying degrees among the centres, and only a minority collect information on the treatment and success of treatment of side effect therapy.

Data are essential for the development of a strategy for the clinical management of APMSs in both academic and community hospitals.^{2,15,31} Having prospective consensus based data available in an electronic format would improve access to data at the point-of-care for clinical purposes, while allowing for easy access to data for the purposes of audit, research and administrative reports.

A major weakness of this study is the limited ability to apply the results to a broader population. Only academic institutions with an APMS were included in the study and therefore results cannot be generalized to all Canadian hospitals. In addition, no information was obtained about the management of acute pain in patients not followed by an APMS, which represents the vast majority of postoperative patients. Twenty percent ($n = 12$) of academic institutions did not respond to the survey. If non-responders were less

likely to have an APMS in place than responding institutions, than the proportion of academic centres with an APMS may be as low as 73%. Recall bias is an inherent weakness of survey research. Respondents were asked to report on aspects of the APMS not directly related to anesthesiology (e.g., nursing and pharmacy), therefore results should be interpreted with caution as perceptions and responses to these questions may differ from those of other health care professions, educators and administrators.

Strengths of the study include the comprehensiveness of the questionnaire, which provides a snapshot of the current status of APMSs in Canadian academic centres. An additional strength of the study is its ability to identify centres with an APMS thereby providing necessary information to aid in the development of a national acute pain network.¹⁶

Conclusion

We suggest that a national consensus be reached to define those variables in the perioperative cycle that are thought to be significant to the clinical management of acute pain. With these variables we must monitor our clinical activities and their effectiveness in providing acute pain and symptom management for our patients. This will result in improved postoperative analgesia, advancement with new analgesic methods, improved undergraduate and graduate medical education in pain and increased efforts to carry out standardized bench, clinical, and population-based research. These efforts will provide health care professionals with comprehensive feedback so they may strive for both clinical excellence and professional fulfillment.

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