

“CAPS” Cardiac Acute Pain Services—A Nationwide Survey From Canada

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Objectives: Acute Pain Services (APS) are well-established worldwide; however, their availability and use in cardiac surgery units are less widespread and, even where present, may be provided less consistently. The authors undertook this survey to assess the current organization of Cardiac Acute Pain Services (CAPS) in Canada.

Design: This was a prospectively administered survey.

Setting: This study included all centers in Canada that conducted adult cardiac surgery.

Participants: The participants were anesthesiologists.

Intervention: A 20-item questionnaire covered the demographics, functioning and APS structure.

Results: The authors achieved a response rate of 100% with completed questionnaires from all 31 centers. Ten centers (32.3%) stated that they had a dedicated CAPS, 9 centers (29%) stated that they did not have an APS, and 12 centers (38.7%) had APS but no CAPS. At the time of the

survey for the 10 centers with CAPS, 3 of the CAPS had a physician-run model, 4 had a combined physician and nurse service, and 1 used a combination of protocols, intensivists, and nurse practitioners. Nine centers had an anesthesiologist assigned to daily acute pain rounds. Only in 2 of 10 centers with CAPS were more than 50% of their cardiac surgery patients receiving care. In general, postoperative pain management was a protocol-driven activity.

Conclusions: CAPS are varied in both structure and functioning. Further work is required both at the institutional and the national levels to improve the postoperative care and the pain-related outcomes of patients undergoing cardiac surgery.

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KEY WORDS: Acute Pain Service, cardiac surgery, survey

SINCE THE CREATION OF the first acute pain services (APS) in Seattle in 1986, APS programs have both spread and evolved in response to the need for improved postoperative pain management.¹ APS have become well-established in Canada and across the world and have helped to implement and standardize postoperative pain protocols.^{2,3} More recently, research into enhanced recovery after surgery (ERAS) has highlighted the importance of postoperative pain management in improving perioperative patient safety and outcomes.⁴

Despite just over 3 decades of work in this field and published work suggesting that 90% of Canadian university teaching hospitals have adopted the APS concept, the availability and use of this service after cardiac surgery currently are unknown. Even where it is present, it may be provided less consistently, and the reasons for this may be multifactorial.⁵ Historically, the care of postoperative pain in cardiac surgery patients was based on the application of hospital-approved standardized protocols that used oral medications and was managed directly, or indirectly, by the surgeon through their fellows or residents. Additionally, patient-controlled analgesia (PCA) using specific pumps and invasive techniques has not been used widely in cardiac surgery and therefore did not require APS services specifically.

The authors therefore undertook this national survey to assess the current clinical practice of acute pain management after cardiac surgery. This survey was designed to determine the prevalence, structure, and function of Cardiac Acute Pain Services (CAPS), as well as the types of treatments provided within the scope of each service.

METHODS

The survey was approved by the institutional review board (Date 2012 & Project number 12-1350). The 20-item questionnaire was drafted by 2 anesthesiologists working in acute and postoperative pain management. The items were reviewed for content validity by a domain specialist. The items in the questionnaire were devised to retain the cardiac surgical

demographics as well as the structure, functioning, and demographics of the pain services (Appendix 1).

To perform this survey, a list of all the national centers performing adult cardiac surgery was required (Appendix 2). Initially, the section on cardiovascular anesthesia at the national society (Canadian Anesthesiologist's Society) was approached to obtain this list of centers. Because this list was not available or updated, the authors approached the Society of Perfusion Technology. Through their national body, the authors were able to get a list of all the centers across Canada where perfusion services were provided. The investigators and their research assistant then contacted each hospital and confirmed that adult cardiac surgery indeed was performed there. The authors also attempted to identify and reach the physician in charge of the cardiac anesthesia department and/or acute pain service. If there was no official APS physician, the research assistant requested the name and contact information of the anesthesiologist

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Table 1. Description of Cardiac Centers for the Full Study Sample (31 Centers) and 10 CAPS Centers

	Full Study Sample (31 Centers)		10 CAPS Centers	
	Mean	Range	Mean	Range
Number of operating rooms	4.03	1-15	4.4	2-14
Number of intensive care beds	14.16	2-28	15.5	9-28
Number of step-down beds	17.53	0-432	3	0-12
Number of beds on surgical floor	35.96	12-200	30.89	15-100
Number of cardiac surgeries per year	973.17	245-2000	973	500-1850
Full-time anesthesiologists	13.13	4-29	13.89	6-29

responsible for postoperative pain management after cardiac surgery. If no one person could be identified for postoperative pain control, the materials were directed to the anesthesiology department chairperson who either completed the survey or delegated it to another physician in charge of postoperative pain control. The cover letter and online survey, using Survey Monkey, were sent electronically to the designated person for completion and return. If a response was not forthcoming within 3 weeks, a reminder was sent. A single follow-up call was made if the survey had not been submitted within 6 weeks. Data collection occurred from January through April 2013. Data were analyzed using simple descriptive statistics.

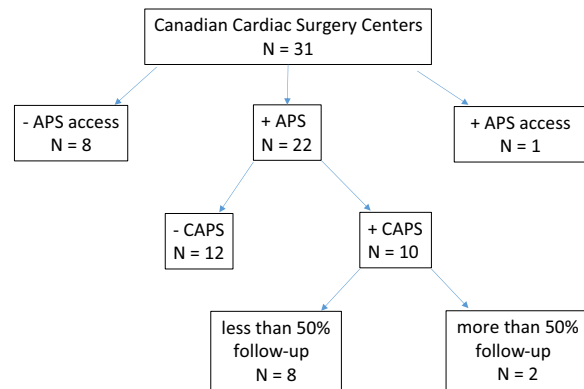
RESULTS

Demographics

Thirty-one centers doing adult cardiac surgery were identified in Canada. The authors received a response from all centers for a 100% response rate. On average the centers had 4 operating rooms, 14 beds in intensive care, 18 beds in step-down, 36 beds on their surgical floor, 13 full-time-equivalent anesthesiology staff, and performed 938 cardiac surgeries per year (Table 1).

Twenty-two centers (71.9%) stated that they had an organized APS within the hospital. Nine centers (29.1%) stated that they did not, although 1 center (3%) stated that they consulted a neighboring institution when required. However, of the 22 centers that replied in the affirmative, most stated that their APS was “rarely involved with cardiac patients” or “only on select patients,” or “only if they had a PCA or an epidural,” or “managed by cardiac anesthesia.” In fact, they saw fewer than 10% of patients undergoing cardiac surgery. In effect, there were only 10 centers (32.3%) with an organized CAPS (Fig 1). There were no differences in basic demographics between those centers that used CAPS and those that did not.

For the 10 centers that had a CAPS service, 5 (50%) had been running for more than 5 years, 2 (20%) for 2-to-5 years, and 2 (20%) had been running fewer than 2 years. One center (10%) did not answer this question. Depending on the APS model and the number of patients having cardiac surgery, there could be between 5 and 40 patients on the CAPS each week (Table 2). In these same centers, between 0 and 21+ PCA pumps were available (Table 2).

**Fig 1. Canadian centers with organized cardiac acute pain services**

APS Model

For the 10 centers with an organized CAPS, 3 had a physician-only model, 6 had a combined physician and nurse CAPS, and 1 had “other” (Table 3). However, only in 2 of the 10 centers with CAPS were more than 50% of the patients receiving APS care after cardiac surgery (Fig 1). These centers performed 1,550 and 1,850 surgeries per year, respectively, and had between 21 and 40 patients on the service per week (Table 2). The center with the largest number of patients had more than 20 PCA pumps in use. In the 8 other centers, which performed between 600 and 1,200 cases per year, fewer than 10% of post-cardiac surgery patients were followed by the pain service. In 3 of 10 centers, anesthesiologists completed full days on the APS, in 4 centers rounds were combined with other duties, and in 3 centers supervision was remote or provided by a combination of other medical personnel (intensivists, nurse practitioners, and cardiac surgical associates; Table 3).

Table 2. Description of Follow-up and Care on CAPS

Characteristics	Centers (n)
Number of patients followed on CAPS per week	
0-5	6
6-10	0
11-20	1
21-40	3
>40	0
Number of PCA pumps per center	
0	2
1-10	4
11-20	1
21+	3
Maximum number of days patients receive CAPS care	
1	1
2	3
3	1
4	2
5	1
>5	2

ABBREVIATIONS: CAPS, cardiac acute pain services; PCA, patient-controlled analgesia.

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