

Surgeons' attitudes and perception of an acute pain service

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Objective To evaluate the attitude and perception of surgeons about postoperative pain management, and an anaesthesiologist-based acute pain service.

Design Questionnaire survey.

Setting Tertiary university teaching hospital, Hong Kong.

Participants All surgical staff members (specialists and trainees) of the Departments of Surgery, Orthopaedics and Traumatology, and Obstetrics and Gynaecology.

Main outcome measures Opinions on postoperative pain management, different pain management modalities, and services provided by the acute pain service.

Results Of the 147 questionnaires, 104 (71%) were returned. The majority (97%) agreed that effective pain control improves patient recovery and 88% believed that anaesthetists should be involved in postoperative pain management. Overall, 85% of the respondents were satisfied with the acute pain service. However, about one third of them wanted to maintain an active role in postoperative pain management and only 54% thought that the acute pain service has a significant impact on patient outcomes. In addition, only 10% of surgeons agreed that patients receiving acute pain service intervention would be discharged earlier. The respondents also thought that, compared to intravenous patient-controlled analgesia, epidural analgesia required more nursing care and was less cost-effective. Areas of the acute pain service warranting improvement included: education of surgeons on postoperative pain and its management (92%), communication (74%), and referral systems (80%).

Conclusion The majority of surgeons were satisfied with the acute pain service and agreed that anaesthetists should be involved in postoperative pain management. However, a proportion wanted to maintain an active role in postoperative pain management.

Key words

Analgesia; Attitude of health personnel;
Pain, postoperative; Questionnaires

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Introduction

Specialised pain management techniques, such as patient-controlled analgesia (PCA) and epidural analgesia, provide better postoperative analgesia than intermittent intramuscular injection of opioids.^{1,2} However, these analgesic techniques require special care and monitoring, and a team approach has been recommended. This has led to the establishment of the anaesthesiologist-led acute pain service (APS) in the United States,³ Canada,⁴ Australia,⁵ New Zealand,⁶ Europe,⁷ and Asian countries.^{8,9} Implementation of an APS has been shown to improve postoperative pain relief.^{2,10}

Studies have also demonstrated patient satisfaction with APS.¹⁰⁻¹² However, little is known about the attitude of surgeons towards APS, despite their being 'customers' of anaesthesiologists¹³ and having an important role in the implementation of any APS.¹⁴ Postoperative pain management interacts with surgical management. The requirement and efficacy of pain relief influences other aspects of postoperative recovery. The aim of this survey was to examine surgeons' perceptions and attitudes towards postoperative pain, various modalities of postoperative pain management, and the prevailing APS. This survey also examined measures to improve the APS and whether the service interfered with postoperative surgical care.

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Methods

Survey institution

The Prince of Wales Hospital (with 1364 beds) is a teaching hospital and tertiary referral centre in Hong Kong, which provides a full range of surgical specialty services. More than 16 000 operations are performed annually. The APS of the hospital's Department of Anaesthesia was established in 1993 and provides care to more than 1500 patients annually. Pain relief modalities include intravenous patient-controlled analgesia (iv-PCA), epidural PCA with opioid, epidural analgesia with continuous infusion of local anaesthetics and opioid, and occasionally regional analgesia with continuous local anaesthetic infusion. Patients served by the APS are followed up from the immediate postoperative period until PCA/epidural analgesia is weaned off and they are capable of resuming non-parental analgesia for pain control. The APS staff consists of two specialist anaesthesiologists, one trainee in pain medicine, two resident trainees in anaesthesiology, and two nurses. A 24-hour service is provided by the APS staff. Patient observations include pain score (by visual analogue scale), haemodynamic parameters, respiratory rate, oxygen saturation; in patients given epidural analgesia, motor power is also scored. These measurements are carried out by ward nursing staff at regular intervals as decided by the APS. Staff of the APS conduct daily ward rounds to assess pain treatment efficacy and side-effects. A pain resident is available to deal with problems related to pain management after hours.

Questionnaire

A 33-item questionnaire (Appendix) was developed to assess the attitude of surgeons towards postoperative pain relief, clinical interaction with the APS, opinions about PCA and epidural analgesia, satisfaction with the APS, and ways to improve it. Questions were answered by circling on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" (1 to 5 respectively). An open-ended question at the end asked for each surgeon's opinion on the APS. The questionnaire was piloted for content validity on two surgical Fellows and two surgical Trainees practising outside the survey institution. They were also interviewed to identify problematic questions and wording. Typical time to complete the questionnaire ranged from 10 to 15 minutes. After the pilot study, the questionnaire was revised and reduced to two pages.

Survey procedure

The questionnaire was sent to medical staff of the Departments of Surgery, Orthopaedics and Traumatology, and Obstetrics and Gynaecology at the Prince of Wales Hospital. A self-addressed envelope

外科醫生對急性疼痛治療服務的態度和認知

目的	評估外科醫生對術後鎮痛護理及以麻醉科醫生為主的急性疼痛治療服務的態度和認知。
設計	問卷調查。
安排	香港一所大學教學醫院。
參與者	外科、骨科、婦產科所有外科人員（包括專科醫生和受訓醫生）。
主要結果測量	對術後鎮痛護理、不同的鎮痛方法和急性疼痛治療部門服務的意見。
結果	發出問卷147份，共收回104份（71%）。大部分（97%）同意有效的鎮痛有助病人康復，而88%相信麻醉科醫生應當參與術後鎮痛護理。整體而言，85%回應者滿意急性疼痛治療部門的服務，但當中三分之一希望更多參與術後鎮痛護理；只有54%認為急性疼痛治療部門服務對病人康復情況影響很大。再者，只有10%的外科醫生，對於接受急性疼痛治療的病人會提早出院的說法表示同意。回應者亦認為，相對於病人靜脈自控鎮痛，硬膜外鎮痛需要更多人手護理，成本效益較低。要改善急性疼痛治療服務，必須加強外科醫生在術後疼痛及其護理方面的教育（92%），改善溝通渠道（74%），以及提升轉介系統（80%）。
結論	大部分外科醫生滿意急性疼痛治療服務，且同意麻醉科醫生應當參與術後鎮痛護理，但有相當一部分醫生希望能更多參與術後鎮痛護理。

was supplied for return of the questionnaire, which was unsigned. A second reminder questionnaire was sent to those who had not returned the initial questionnaire after 6 weeks. Anonymity was guaranteed through the use of a coding system. A research assistant blinded to the coding system entered the collected data for subsequent analysis.

Data analysis

Results were analysed using the Statistical Package for the Social Sciences (Windows version 10.1; SPSS Inc, Chicago [IL], US); the 95% confidence intervals (CIs) were estimated of the proportion of respondents who agreed ("agree" and "strongly agree") to questions assessing attitudes towards various issues. To determine who should decide the primary mode of analgesia, respondents were asked to circle on a 5-point Likert scale for each question relating to the three groups: surgeons, anaesthesiologists, and patients. The relative value (%) for each group was estimated by dividing the total sum score of the three questions by the sum score of the individual question. For example, if out of 10 respondents, 3, 4 and 3 subjects strongly agreed (value of 5) that postoperative analgesia mode was to be decided by patients, surgeons

TABLE. Demographic data and training of the surveyed surgeons (n=104)

Demographic information	No. (%)
Sex	
Male	84 (81)
Female	20 (19)
Status	
Trainee	46 (44)
Fellow/Specialist	58 (56)
Experience*	
Trainee	46 (45)
<5 years	20 (19)
5-9 years	20 (19)
10-19 years	13 (13)
>20 years	4 (4)
Subspecialty*	
Orthopaedics and traumatology	25 (25)
General surgery	22 (21)
Obstetrics and gynaecology	21 (20)
Neurosurgery	8 (8)
Paediatric surgery	6 (6)
Urology	6 (6)
Ear, nose and throat surgery	6 (6)
Plastics/head and neck surgery	5 (5)
Cardiothoracic surgery	4 (4)

* Data of one questionnaire were missing

and anaesthetists respectively, the relative value for each group would be 30% (15/50), 40% (20/50), and 30% (15/50). The same methodology was used to determine issues pertaining to weaning and termination of postoperative analgesia.

The 5-point scale of global satisfaction with the APS was dichotomised to satisfied ("agree" and "strongly agree") and not satisfied ("no opinion", "disagree", and "strongly disagree"). Fisher's exact test was used to examine if satisfaction differed between Fellows and Trainees. A Mantel Haenszel test was used to assess global satisfaction with the APS with respondents who agreed that it makes a significant impact on patient outcome, adjusted for training level. Odds ratios and 95% CIs were reported. The level of significance was set at $P < 0.05$.

Results

Demographics

Of the 147 surgeons who were sent the questionnaires, 104 completed and returned them. The overall response rate was 71%. The Table summarises the demographic data of the respondents and their

surgical subspecialties.

Attitude on postoperative pain management

Most surgeons agreed or strongly agreed that effective pain control improves patient recovery (97%; 95% CI, 92-99%). However, 70% (95% CI, 61-78%) believed that after an operation, patients should expect some pain. Most surgeons (88%; 95% CI, 80-93%) agreed that hospitals should provide an APS for surgical patients and anaesthesiologists should be involved in postoperative pain management (88%; 95% CI, 81-93%).

Among surgeons who utilised the APS frequently, a majority (88%; 95% CI, 80-93%) indicated that up to 50% of their patients required the service. All surgeons from cardiothoracic, urology, plastics/head and neck, paediatric, and ear, nose and throat specialties indicated that their patients should have some degree of APS involvement.

Attitude on various pain control modalities

Agreement with various aspects of the APS by surgeons is shown in the Figure. The majority of surgeons thought that iv-PCA was more cost-effective than epidural analgesia, and that though not more expensive, epidural analgesia was significantly less cost-effective as it required more nursing care.

Attitude on the acute pain service

Regarding the choice of pain treatment modalities, our respondents believed that the relative weighting of the decision should be: 35% by the anaesthesiologists, 34% by the surgeons, and 30% by the patients. Similarly, our respondents believed that the corresponding relative weighting of the decision to terminate PCA or epidural analgesia should be 34% by the APS, 32% by the surgeons, and 34% within a specific time frame.

If given the same patient, half (49%; 95% CI, 37-61%) of the respondents believed that the APS pain management protocol differed markedly from their clinical practice. Although most surgeons (67%; 95% CI, 57-76%) agreed that patients managed by the APS would experience less pain, and half (54%; 95% CI, 44-63%) thought that the APS had a significant impact on patient outcome, only 10% (95% CI, 5-17%) agreed that the patients would be discharged earlier if pain was managed by the APS.

The majority of surgeons agreed that the service provided by the APS could be improved by: a better referral system (80%; 95% CI, 71-87%); better communication, such as via regular meetings (74%; 95% CI, 64-82%); and better teaching of frontline staff (92%; 95% CI, 84-96%).

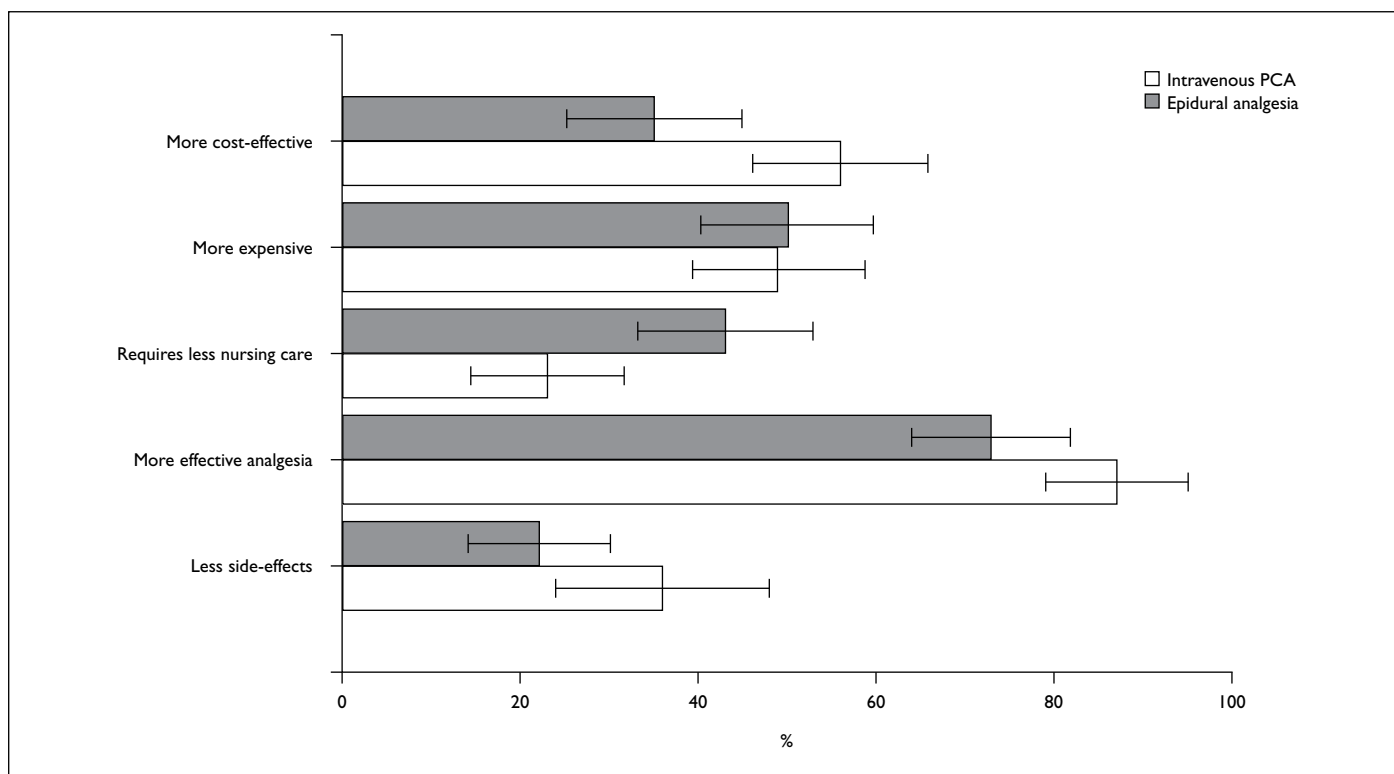


FIG. Proportion of surgeons (95% confidence interval) who agreed or strongly agreed on various aspects of patient-controlled analgesia (PCA) and epidural analgesia in comparison to conventional opioids given by intramuscular injections when necessary

Predictors of overall satisfaction with acute pain services

Overall, the majority of surgeons were satisfied with the APS (85%; 95% CI, 77-91%). There was no difference in the degree of satisfaction with the APS between Trainees and Fellows (37/42 vs 44/53; Fisher's exact test, P=0.57). After adjusting for training status, respondents were five times more likely to be satisfied with the APS if they agreed or strongly agreed that it had a significant impact on patient outcome (Mantel Haenszel odds ratio=5.36; 95% CI, 1.19-25.91).

Discussion

The concept that surgeons, in addition to patients and administrators, are the 'customers' or 'clients' of anaesthesiologists has been introduced since 1993.^{13,15} Previous studies have measured the satisfaction of surgeons with anaesthetic services and examined means of improving them as part of continuous quality improvement.^{16,17} Traditionally, postoperative pain has been managed by surgical teams; the emergence of an APS would, to a certain extent, produce a conflict with surgeons. Saidman¹⁸ pointed out in his editorial that one of the components for establishing an APS was willingness (or eagerness) of surgeons to relinquish provision of postoperative analgesia, it being crucial for anaesthesiologists and surgeons to cooperate.

Our study showed that one third of the surgeons still wanted to maintain an active role in postoperative pain management, including the mode of analgesia and the termination of PCA and epidural analgesia. About half of the surgeons would have selected a different postoperative pain management protocol. In addition, the majority of surgeons thought that the APS could improve by developing a better referral system, better communication mechanism (such as regular meetings), and provision of regular teaching. This finding indicated that good communication between surgical teams and the APS, and to some extent, the anaesthesiologists, was vital to providing optimal postoperative pain management to suit each team. Since surgeons and the APS work together closely on a daily basis, improving relationships between the teams can benefit the individuals concerned and, ultimately, improve patient care.

The APS has gained acceptance in the management of postoperative pain. In this study, most surgeons agreed that effective pain control could improve patient recovery and that hospitals should provide or have an access to an APS for surgical patients. Our results also confirmed a report¹⁹ that surgeons expect patients to have 'some' pain after surgery. In addition, Warfield and Kahn³ noted that 77% of patients believed that pain was unavoidable after surgery. These perceptions may

contribute to widespread inadequate postoperative pain relief. Efforts to reduce such misbelief among patients and surgeons could enhance postoperative pain management.

In comparison to as-needed intramuscular analgesia, it is now accepted that iv-PCA provides better analgesia without increasing side-effects and results in higher patient satisfaction.^{1,2} In addition, Choinière et al²⁰ noted that nursing time for post-hysterectomy patients receiving iv-PCA was less than for those on regular intramuscular opioids. Contrary to published reports,²¹ most of our surgeons felt that PCA provided more effective analgesia without an increase in side-effects, but was more costly in terms of nursing time. Better communication might therefore enhance understanding about PCA by surgeons. However, whether PCA is economical and cost-effective remains controversial.^{20,22}

Epidural analgesia is generally considered more effective than iv-PCA, by virtue of superior analgesic efficacy, improved pulmonary function,^{1,2} and by being more cost-effective.²³ This is in contrast with the view of our surgeons that iv-PCA provided better pain control and was more cost-effective than epidural analgesia. These conflicting views may be related to their observation of analgesic failures associated with epidural analgesia, which was reported to be 17 to 37% in some series.² Other possible explanations relating to the technical problems of epidural analgesia include: catheter displacement/dislodgement, unsuccessful placement, unilateral block, missed segments, and hypotension.² Measures to reduce the incidence of analgesic failure and minimise technical problems associated with epidural analgesia are therefore needed to widen its acceptance by surgical teams.

In this survey, about half of the surgeons in our institution believed that the APS had a significant impact on patient outcome, but the majority thought that it had minimal effect on duration of hospital stay. The cost-effectiveness of an APS remains undetermined.²⁴ A recent meta-analysis and a review also failed to establish the effect of an APS on post-surgical outcome, which was partly due to the absence of clearly defined and widely acceptable measures of patient outcomes.^{1,25} Hence, large multi-centre studies are required to obtain the objective evidence on post-surgical outcomes as well as the cost-effectiveness of the anaesthesiologist-led APS strategy.

The APS has been introduced into our institution

for more than 15 years. Although it is generally well received and is regarded as satisfactory (as per this survey), a proportion of surgeons nevertheless want to maintain an active role in postoperative pain management. Moreover, it has even been suggested that postoperative pain management should be integrated into the multimodal rehabilitation programme for specific (fast-track or usual clinical pathway) surgical procedures.²⁵ In the future, the APS should engage with different surgical teams and decide on a postoperative pain management regimen, tailored for specific procedures. This would amount to a multidisciplinary approach for postoperative pain.

Although other pain management modalities, such as regional analgesia, were provided by the APS, such techniques were only applicable to two particular surgical teams. Hence, only PCA and epidural analgesia were examined in this survey, as they constituted 98% of the APS workload each year. The sample population of this study consisted of surgeons in a tertiary, university teaching hospital, and hence may not reliably reflect the attitudes of all surgeons. Surgeons in other sectors, such as in private practice or peripheral public hospitals, may have a different perspective on an APS and on postoperative pain management. Thus, a large-scale survey is needed to evaluate the attitude of surgeons in all sectors. It should also be noted that the validity and reliability of the questionnaire are unknown, requiring caution in interpreting the results.

In summary, the majority of surgeons in our institution were satisfied with the service provided by the APS and agreed that anaesthesiologists should be involved in postoperative pain management. However, a proportion of surgeons wanted to maintain an active role in postoperative pain management. Of the two commonest pain management modalities, surgical teams considered iv-PCA more cost-effective than epidural analgesia. Areas for the APS to improve included: education for surgeons on postoperative pain and its management, and communication to tailor the needs of individual surgical teams. Regular surveys and communication with the surgeons could provide useful information for improving the APS.

Appendix

Additional material related to this article can be found on the HKMJ website. Please go to <<http://www.hkmj.org>>, search for the appropriate article, and click on Full Article in PDF following the title.

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Appendix. Questionnaire on the attitudes of surgeons towards the acute pain service

Note : Acute pain service (APS) is defined, for the purpose of this survey, as a multidisciplinary team approach with an anaesthesiologist as one of the team members that provide patient-controlled analgesia (PCA) and epidural analgesia as part of the postoperative pain management. In addition, APS also provides guidelines/protocol for postoperative pain management and education/teaching to frontline staff.

A. Your particulars (Tick the appropriate box for each question)

<p>1. Sex</p> <p><input type="checkbox"/> Male</p> <p><input type="checkbox"/> Female</p>	<p>3. Number of years since fellowship</p> <p><input type="checkbox"/> <5 years</p> <p><input type="checkbox"/> 5-9 years</p> <p><input type="checkbox"/> 10-19 years</p> <p><input type="checkbox"/> 20-29 years</p> <p><input type="checkbox"/> ≥30 years</p>
<p>2. Status</p> <p><input type="checkbox"/> Trainee of HKCS, please go to Q4</p> <p><input type="checkbox"/> Fellow of HKCS or RACS, please go to Q3 and Q4</p>	<p>4. Surgical specialty</p> <p><input type="checkbox"/> General surgery</p> <p><input type="checkbox"/> Cardiothoracic</p> <p><input type="checkbox"/> Urology</p> <p><input type="checkbox"/> Plastics, head and neck</p> <p><input type="checkbox"/> Paediatric surgery</p> <p><input type="checkbox"/> Neurosurgery</p> <p><input type="checkbox"/> Orthopaedics</p> <p><input type="checkbox"/> O & G</p> <p><input type="checkbox"/> ENT</p>

B. Postoperative pain management

Please circle the appropriate number for each question.

(1 – strongly disagree, 2 – disagree, 3 – no opinion, 4 – agree, 5 – strongly agree)

5. Effective pain control will improve the patient's recovery	1	2	3	4	5
6. Patients after an operation should expect to have some pain	1	2	3	4	5
7. All hospitals should provide or have access to APS for surgical patients	1	2	3	4	5
8. Anaesthesiologists should be involved in the patient's postoperative pain management even after they have been discharged from the recovery room	1	2	3	4	5
9. The mode of postoperative analgesia should be decided by the patient	1	2	3	4	5
10. The mode of postoperative analgesia should be decided by the surgeon	1	2	3	4	5
11. The mode of postoperative analgesia should be decided by the anaesthesiologist	1	2	3	4	5
12. How frequently do your patients require APS involvement	<input type="checkbox"/> 0% - end of survey. Thank you! <input type="checkbox"/> 1% to 10%. Please go to Q16 <input type="checkbox"/> 10% to 20%. Please go to Q16 <input type="checkbox"/> 20% to 50%. Please go to Q16 <input type="checkbox"/> ≥50%. Please go to Q16				

C. Acute pain service (APS)

Please circle the appropriate number for each question.

(1 – strongly disagree, 2 – disagree, 3 – no opinion, 4 – agree, 5 – strongly agree)

13. APS pain management protocols differ markedly compared to what I usually do if given the same patient	1	2	3	4	5
14. In contrast to conventional opioids IMI p.r.n., PCA produces less side-effects	1	2	3	4	5
15. In contrast to conventional opioids IMI p.r.n., PCA provides more effective analgesia	1	2	3	4	5
16. In contrast to conventional opioids IMI p.r.n., patients on PCA requires less nursing care	1	2	3	4	5
17. In contrast to conventional opioids IMI p.r.n., PCA is more expensive	1	2	3	4	5
18. Overall, in contrast to conventional opioids IMI p.r.n., PCA is more cost-effective	1	2	3	4	5
19. In contrast to conventional opioids IMI p.r.n., epidural analgesia produces less side-effects	1	2	3	4	5
20. In contrast to conventional opioids IMI p.r.n., epidural analgesia provides more effective analgesia	1	2	3	4	5
21. In contrast to conventional opioids IMI p.r.n., patients on epidural analgesia requires more nursing care	1	2	3	4	5
22. In contrast to conventional opioids IMI p.r.n., epidural analgesia is more expensive	1	2	3	4	5
23. Overall, in contrast to conventional opioids IMI p.r.n., epidural analgesia is more cost-effective	1	2	3	4	5
24. All PCA (or epidural analgesia) should be terminated within a specific time frame (eg less than day 4 postop)	1	2	3	4	5
25. APS should determine when to wean off the PCA (or epidural analgesia), as they have more experience on pain management	1	2	3	4	5
26. The surgical team should determine when to terminate the PCA (or epidural analgesia), as they know the patient's progress better than APS	1	2	3	4	5

27.	In your practice, patients managed by APS experience less pain than those with no APS intervention	1	2	3	4	5
28.	In your practice, patients managed by APS are discharged sooner from the hospital than those with no APS	1	2	3	4	5
29.	APS has a significant impact on patient outcome	1	2	3	4	5
30.	APS can improve their service by having a better referral system	1	2	3	4	5
31.	APS can improve their service by a better communication mechanism (eg regular meetings)	1	2	3	4	5
32.	APS can improve their service by providing regular teaching to ward nursing staff and junior medical officers	1	2	3	4	5
33.	Overall, I am satisfied with the services provided by APS	1	2	3	4	5

Any suggestions / comment

End of survey. Thank you very much for your time.