

# The effect of clinical academic service contracts on surgeon satisfaction

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**Objective:** The purpose of this study was to determine the satisfaction of members of an academic department who are funded by a Clinical Academic Service Contract (CASC), compared with those who are not. **Methods:** We mailed a satisfaction questionnaire designed to examine surgeons' perceived effect of CASCs on their participation in their division or department and on professional activities (research, teaching, clinical) to members of the surgery department who perform operative interventions. We analyzed responses from CASC and non-CASC members, using *t* tests for continuous variables and chi-square tests for categorical variables. **Results:** Four of 9 operative divisions (cardiac, thoracic, neurosurgery, pediatric surgery) are CASC-funded, and 5 are not (general, plastic, otolaryngology, urology, vascular). The response rate after 3 mailings was 59%. CASC responders agreed on the need for the following: improved focus and resolution of issues ( $p < 0.001$ ,  $p < 0.02$ ); focus on developmental and future planning ( $p < 0.001$ ); flexibility to change the level of participation in research, teaching and clinical activities ( $p < 0.001$ ); recognition for academic and administrative activities ( $p < 0.002$ ); opportunities to achieve career path goals ( $p < 0.002$ ); more autonomy in research ( $p < 0.04$ ); compensation for professional activities ( $p < 0.001$ ); and increased leisure time ( $p < 0.004$ ). Responders disagreed that morale was low ( $p < 0.001$ ). They were satisfied with the following: professional activities ( $p < 0.019$ ), increased research activities ( $p < 0.001$ ), quality of research ( $p < 0.001$ ), more presentations ( $p < 0.025$ ), increased teaching time ( $p < 0.004$ ) and ability to care for their patients ( $p < 0.001$ ). **Conclusion:** CASC responders were significantly more satisfied with their professional activities and more optimistic in their divisional roles than were non-CASC responders. Based on these results, all departmental members who perform operative interventions should consider being on a CASC.

**Objectif :** Cette étude visait à connaître la satisfaction des membres d'un département universitaire financés en vertu d'un contrat de services universitaires cliniques (CSUC), comparativement à ceux qui ne le sont pas. **Méthodes :** Nous avons envoyé par la poste un questionnaire sur la satisfaction aux membres du département de chirurgie qui pratiquent des interventions. Le questionnaire visait à savoir comment les chirurgiens percevaient l'effet des CSUC sur leur participation aux activités de leur division ou département et sur les activités professionnelles (recherche, enseignement, activité clinique). Nous avons analysé les réponses des membres financés en vertu d'un CSUC et celle des autres répondants en utilisant des tests *t* dans le cas des variables continues et des tests chi-carré dans celui des variables catégoriques. **Résultats :** Quatre des 9 divisions opératoires (cardiologie, thoracologie, neurochirurgie, pédochirurgie) sont financées par un CSUC et 5 ne le sont pas (chirurgie générale, chirurgie plastique, otorhinolaryngologie, urologie, chirurgie vasculaire). Le taux de réponse après trois envois a atteint 59 %. Les répondants financés par CSUC étaient d'accord avec les besoins suivants : amélioration de la convergence sur les problèmes et leur règlement ( $p < 0,001$ ,  $p < 0,02$ ); convergence sur les activités de développement et sur la planification ( $p < 0,001$ ); flexibilité pour changer le niveau de participation aux activités de recherche, d'enseignement et cliniques ( $p < 0,001$ ); reconnaissance des activités universitaires et administratives ( $p < 0,002$ ); possibilités d'atteindre les objectifs professionnels ( $p < 0,002$ ); plus grande autonomie en recherche ( $p < 0,04$ ); rémunération des activités professionnelles ( $p < 0,001$ ); plus de temps de loisirs ( $p < 0,004$ ). Les répondants n'étaient pas d'avis que le moral était bas ( $p < 0,001$ ). Ils étaient satisfaits des aspects suivants : activités professionnelles ( $p < 0,019$ ), activités accrues de recherche ( $p < 0,001$ ), qualité de la recherche ( $p < 0,001$ ), plus grand nombre de présentations ( $p < 0,025$ ), plus de temps d'enseignement ( $p < 0,004$ ) et capacité de soigner leurs patients ( $p < 0,001$ ).

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**Conclusion :** Les répondants financés par CSUC étaient beaucoup plus satisfaits de leurs activités professionnelles et plus optimistes quant à leurs rôles dans leur division que les répondants non financés par CSUC. Compte tenu de ces résultats, tous les membres de départements qui pratiquent des interventions devraient envisager d'être financés par CSUC.

The introduction of Clinical Academic Service Contracts (CASCs), or alternate funding plans in some locations, has been recommended as an ideal way to fund medical or surgical specialists in academic medical centres. With few exceptions, specialists recruited to an academic medical centre are highly trained and have received additional (above basic specialist) training in their respective subspecialty areas. Thus, the initial financial commitment by both the individual and by society is high.

In addition to their primary responsibilities as highly skilled medical or surgical specialists, these individuals are also required to excel at other academic activities, such as teaching or research or, frequently, both. Consequently, the expectations of these individuals are high.

The practice of clinical medicine or surgery and academic activities are often in conflict because of limited time and financial reimbursement and infrastructure limitations. Typically, patient care activities are reimbursed at a higher rate than either teaching or research. With diminishing resources at academic medical centres, specialists may opt for more clinical practice at the expense of teaching or research. These conflicts exist in every academic centre in Canada.

With the increased pressure of fewer positions in all areas of clinical medicine, there is greater pressure for academic specialists to perform more clinical activities. The pressure points are frequently manifested by physician dissatisfaction, independently by physician relocation or collectively by service withdrawal.

In British Columbia, these issues became key news stories during the fall of 2000. The prospect of service withdrawal at the largest tertiary care hospital for the province had wide-ranging implications; it meant that

many critically ill patients would need to be transferred out of the province or out of the country.

The development of CASCs soon followed and appeared to solve all of these conflicts. The funding of CASCs was meant to resolve the inequities in the reimbursement system for clinical and nonclinical activities, provide adequate remuneration for physician retention and provide for remuneration for future physician recruitment.

Conversely, participating in a CASC arrangement strictly forbade service withdrawals, otherwise the expectation of participating in a CASC was minimal, with loosely defined teaching and academic expectations. The number of patient cases was expected to remain the same.

The experiences from centres in Kingston and Toronto, Ontario, using similar funding plans has been mixed. At the Hospital for Sick Children in Toronto and the Faculty of Medicine in Kingston, research productivity has been maintained; however, the clinical outcomes are suspected to have dropped.

The department of surgery at the University of British Columbia is a highly regarded academic department in Canada. It consists of 11 divisions, 4 (cardiac, neurosurgery, pediatric, thoracic) of which participate in a CASC and 5 (general surgery, plastic surgery, otolaryngology, urology and vascular surgery) that are actively negotiating a CASC arrangement. The last 2 divisions (emergency medicine and radiation oncology) do not perform operative procedures and were not included in the study.

Despite the appeal for specialists and the promise of no service withdrawals for the funding agency, are CASCs worth it? The current arrangement of only 4 divisions participating in CASCs and the other divisions negotiating to participate in them pro-

vides an ideal setting to measure the effect of CASCs on the clinical and academic outputs of the divisions currently participating. The non-CASC divisions would serve as the "internal controls" by measuring their clinical and academic productivity over the same period.

## Objectives

Our overall objective was to measure and compare the clinical and academic productivity of the CASC and non-CASC divisions to determine the effect of CASCs on health care delivery, teaching, research productivity and surgeon job satisfaction in an academic department of surgery. In this study, we report on the initial surgeon satisfaction component.

## Methods

### Questionnaire design

We designed a questionnaire to examine the effect of CASCs on surgeons' perceptions of their participation in research, teaching and clinical activities in their division and in the department. We used an existing questionnaire to assess physician satisfaction and quality of work life in 2 hospital-wide assessments in 1995 and 1998 at the Vancouver General Hospital. We used input from personnel in leadership roles to adjust the questionnaire. Our final questionnaire comprised 36 items and used a 5-point Likert scale for item responses (1 = poor to 5 = excellent). The final questionnaire was pre-tested on 3 departmental members.

The physician survey consisted of 3 parts:

- Part I: Organization (16 items)
- Part II: Professional activities: research activities (7), teaching activities (5) and clinical activities (6)

• Part III: Demographics: age, sex, years in practice, hospital affiliation and academic appointment  
The following is a sample statement: I am satisfied with the way our division is managed. In their response, participants selected from a Likert scale (1 = poor and 5 = excellent).

Surgeons were instructed to complete the questionnaire that asked about their current satisfaction. Because the last CASC (thoracic surgery) was formed in 2002, surgeons in a CASC were reporting on their satisfaction at least 2 years after

their CASC was formed. The other 3 CASCs (neurosurgery, cardiac surgery, pediatric surgery) were formed in 2001.

Questionnaires were mailed out to 111 surgeons in the department of surgery during the summer of 2004. A reminder was sent 1 month after the initial mail out and a second reminder 1 month after that.

We compared responses between CASC and non-CASC members using Student *t* tests for continuous variables and the chi-square statistic for categorical variables.

**Results**

Sixty-six (59%) departmental members responded after the 3 mail outs; 24/42 (57%) were CASC members and 42/69 (61%) were not. The mean age was 50.4 (standard deviation [SD] 7.9) years. There were 60 male and 6 female surgeon responders. The mean number of years in practice was 16.5 (SD 8.9 yr). Sixty percent had primary appointments at Vancouver General Hospital, 21.2% at St. Paul's Hospital and 18.2% at British Columbia Children's Hospital.

**Table 1**

| Questionnaire item                                                                                                                                | Scores:* mean (and SD) |             | p value |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------|---------|
|                                                                                                                                                   | Non-CASC member        | CASC member |         |
| 1. I am satisfied with the way our division is managed                                                                                            | 3.27 (1.30)            | 3.75 (1.39) | 0.17    |
| 2. I take part in the planning of policies in hospital and division                                                                               | 3.48 (1.17)            | 3.91 (1.19) | 0.17    |
| 3. There is an appropriate balance among the key accountability areas we have undertaken                                                          | 3.37 (1.94)            | 3.96 (1.66) | 0.23    |
| 4. There has been an improvement in focus with respect to the following divisional activities:                                                    |                        |             |         |
| Focus on issues                                                                                                                                   | 2.90 (0.94)            | 3.87 (1.10) | 0.001   |
| Resolution of issues                                                                                                                              | 2.59 (0.91)            | 3.35 (1.34) | 0.02    |
| Focus on developmental planning                                                                                                                   | 2.64 (1.04)            | 3.83 (1.19) | 0.001   |
| Focus on workforce planning                                                                                                                       | 2.83 (1.15)            | 3.91 (1.24) | 0.001   |
| Future planning for the division                                                                                                                  | 2.66 (1.19)            | 3.96 (1.15) | 0.001   |
| 5. My division has the flexibility to change the level of participation by each member with respect to research, teaching and clinical activities | 2.76 (1.21)            | 3.83 (1.11) | 0.001   |
| 6. My division is organized in a way that holiday selections are dealt with equitably                                                             | 4.21 (1.63)            | 4.50 (1.41) | 0.48    |
| 7. In my division, clinical colleagues make decisions affecting my practice over which I have little control                                      | 2.90 (1.12)            | 2.57 (1.80) | 0.35    |
| 8. In my division, there is a good team relationship                                                                                              | 3.38 (1.10)            | 3.87 (1.18) | 0.1     |
| 9. I am recognized for the contributions I make to academic/administrative activities in hospital                                                 | 3.17 (1.03)            | 4.09 (1.16) | 0.002   |
| 10. I have the opportunity to achieve my career path goals at this hospital                                                                       | 3.14 (1.12)            | 4.09 (1.20) | 0.002   |
| 11. I have autonomy with respect to my level of participation in:                                                                                 |                        |             |         |
| Research                                                                                                                                          | 3.85 (1.53)            | 4.18 (0.73) | 0.35    |
| Teaching                                                                                                                                          | 3.54 (1.25)            | 4.05 (0.67) | 0.04    |
| Clinical activities                                                                                                                               | 3.59 (1.26)            | 4.09 (1.44) | 0.15    |
| 12. The work I do affords me the opportunity to feel that I have done a good job of case management                                               | 3.67 (0.87)            | 4.09 (0.90) | 0.07    |
| 13. Overall, I am satisfied with the compensation I receive for professional activities                                                           | 2.88 (1.11)            | 4.21 (0.93) | 0.001   |
| 14. Overall, I am satisfied with leisure time available to me                                                                                     | 2.88 (1.27)            | 3.91 (1.44) | 0.004   |
| 15. At this point in time, my morale is low                                                                                                       | 3.45 (1.11)            | 2.00 (1.24) | 0.001   |
| 16. Overall, the amount of work-related stress that I have experienced has decreased                                                              | 2.41 (0.71)            | 2.3 (0.70)  | 0.55    |

SD = standard deviation; CASC = clinical academic service contracts.  
\*1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent.

Thirty-six percent were members of a CASC, and 63.6% were not. There was no difference in age or years in practice between the 2 groups. Table 1 shows the mean scores for each item in Part I: Organization in the CASC and non-CASC groups. Table 2 shows the mean scores for the 3 general items in Part II: Professional activity. Scores for research items are shown in Table 3, teaching items in Table 4 and clinical items in Table 5. A higher mean score indicated stronger agreement with the item.

CASC responders felt there was an improvement in the focus on issues, resolution of issues, developmental planning, workforce planning and future planning for their division

( $p < 0.05$ ). There was no difference between responders on management of the division, participation in policy making and accountability. Each of these items had means in the mid-range for both groups. CASC members did, however, feel that they had more recognition for their contributions ( $p = 0.002$ ) and greater autonomy in the level of teaching ( $p = 0.04$ ); they were more satisfied with compensation for professional activities ( $p = 0.001$ ), had more leisure time ( $p = 0.004$ ) and experienced a high morale ( $p = 0.001$ ), compared with non-CASC responders.

Professionally, there was no difference in the number of hours spent on research (6.0 for CASC members v.

3.82 for non-CASC members 3.82;  $p = 0.07$ ), teaching (9.05 v. 7.51;  $p > 0.05$ ) and clinical activities (41.33 v. 46.08;  $p > 0.05$ ). CASC members felt that they had increased the amount of time for research ( $p = 0.001$ ), improved research quality ( $p = 0.001$ ) and increased the number of research presentations ( $p = 0.025$ ) over the previous year, compared with non-CASC responders.

There was no difference between the groups in satisfaction with teaching in the operating room and the number of teaching awards received with each item, with each item having mean scores in the mid-range. CASC members did, however, felt they had

Table 2

## Results of Part II of the questionnaire: Professional activities (general)

| Questionnaire item                                        | Scores;* mean (and SD) |              | p value |
|-----------------------------------------------------------|------------------------|--------------|---------|
|                                                           | Non-CASC member        | CASC member  |         |
| What is the average number of hours/week you spend doing: |                        |              |         |
| Research                                                  | 3.82 (4.09)            | 6.00 (4.96)  | 0.07    |
| Teaching                                                  | 7.51 (7.53)            | 9.05 (7.21)  | 0.45    |
| Clinical                                                  | 46.08 (17.23)          | 41.33 (4.35) | 0.28    |
| How has this changed over the past year?                  |                        |              |         |
| Research                                                  | Same                   | Increased    | 0.001   |
| Teaching                                                  | Same                   | Same         | 0.734   |
| Clinical                                                  | Same                   | Same         | 0.12    |
| How satisfied are you with this change?                   |                        |              |         |
| Research                                                  | 2.65 (0.89)            | 3.68 (0.72)  | 0.001   |
| Teaching                                                  | 2.97 (0.80)            | 3.55 (0.67)  | 0.007   |
| Clinical                                                  | 2.95 (0.91)            | 3.50 (0.74)  | 0.019   |

SD = standard deviation; CASC = clinical academic service contracts.  
\*1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent.

Table 3

## Results of Part II of the questionnaire: Professional activities (research)

| Questionnaire item                                                       | Scores;* mean (and SD) |             | p value |
|--------------------------------------------------------------------------|------------------------|-------------|---------|
|                                                                          | Non-CASC member        | CASC member |         |
| Over the past year, research conducted by my division has been excellent | 3.13 (1.16)            | 3.62 (0.86) | 0.091   |
| I have had more time available to conduct research                       | 2.15 (0.91)            | 3.09 (1.06) | 0.001   |
| My research activities this year have increased                          | 2.30 (0.94)            | 3.50 (0.91) | 0.001   |
| The quality of my research has improved                                  | 2.50 (0.75)            | 3.43 (0.87) | 0.001   |
| The number of presentations over the past year increased                 | 2.59 (0.87)            | 3.14 (0.99) | 0.025   |
| I am satisfied with my achievements in research                          | 2.68 (1.01)            | 3.14 (0.74) | 0.15    |

SD = standard deviation; CASC = clinical academic service contracts.  
\*1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent.

more time available for teaching ( $p = 0.004$ ) and were more satisfied with their teaching activities outside the operating room ( $p = 0.026$ ) than were non-CASC responders.

CASC responders felt they were adequately compensated for their clinical activities ( $p = 0.001$ ), felt less pressure clinically ( $p = 0.009$ ) and were more able to provide quality care to their patients ( $p = 0.001$ ) than were non-CASC responders.

All responders equally felt pressure to complete surgical procedures within the allotted time and all responders felt that ease of scheduling surgical procedures was poor.

**Discussion**

The image of the tireless academic

physician who continues to accept more clinical responsibilities, teaching assignments and research obligations may well be outdated. In our department, we have endured the threatened disruption of clinical services and witnessed the creation of separate CASC agreements as a response from the funding agencies. This initial report showed that CASCs were highly beneficial. Among responders, CASC members were significantly more satisfied with their professional activities, more optimistic in their divisional role and more satisfied with their financial compensation than were non-CASC responders. For items in which statistical significance was not achieved, all members felt that they could have more control over decisions made by clinical colleagues that

affected their practices and felt that the overall work-related stress had not decreased. In terms of research, all responders felt moderately satisfied with their achievements.

Few studies have been conducted internationally to assess these issues. In the UK, a consultant contract was established in 1948. A new approach to the contract was proposed in Britain in 2001,<sup>1</sup> owing to increasing clinical demands, lack of flexibility, poor relations between reward and effort and outcome and lack of recognition of extra responsibilities. In Scotland, French and colleagues<sup>2</sup> developed a physician questionnaire from focus groups and data provided by the Scottish Executive Health Department to assess the amount of dissatisfaction. In 2003,

**Table 4**

**Results of Part II of the questionnaire: Professional activities (teaching)**

| Questionnaire item                                                | Scores;* mean (and SD)† |             | p value |
|-------------------------------------------------------------------|-------------------------|-------------|---------|
|                                                                   | Non-CASC member         | CASC member |         |
| I have had more time for my teaching                              | 2.48 (0.77)             | 3.09 (0.81) | 0.004   |
| I am satisfied with my teaching activities:                       | 3.38 (0.96)             | 3.52 (0.98) | 0.58    |
| In the OR                                                         |                         |             |         |
| Outside the OR                                                    | 3.17 (1.01)             | 3.73 (0.77) | 0.026   |
| The quality of my teaching has improved                           | 3.00 (0.80)             | 3.32 (0.84) | 0.14    |
| My student evaluations have improved                              | 3.17 (0.73)             | 3.09 (0.61) | 0.68    |
| I have been the recipient of teaching awards, no. of participants |                         |             |         |
| Departmental                                                      | 16                      | 9           | 1.0     |
| Faculty                                                           | 5                       | 5           | 0.275   |

SD = standard deviation; CASC = clinical academic service contracts; OR = operating room.  
 \*1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent.  
 †Unless otherwise indicated.

**Table 5**

**Results of Part II of the questionnaire: Professional activities (clinical)**

| Questionnaire item                                                                 | Scores;* mean (and SD)† |             | p value |
|------------------------------------------------------------------------------------|-------------------------|-------------|---------|
|                                                                                    | Non-CASC member         | CASC        |         |
| I have been adequately compensated                                                 | 2.71 (1.02)             | 4.14 (0.65) | 0.001   |
| There has been less pressure with my clinical activities                           | 2.17 (0.73)             | 2.95 (1.15) | 0.009   |
| I am able to provide quality care for my patients                                  | 2.95 (1.15)             | 4.00 (0.77) | 0.001   |
| I have not felt pressured to complete surgical procedures within the allotted time | 1.93 (1.07)             | 2.33 (1.32) | 0.195   |
| I perform surgery on RAD days, no. of participants                                 | 17                      | 9           | 1.00    |
| Ease of scheduling surgical procedures                                             | 1.86 (0.84)             | 1.95 (1.07) | 0.70    |

SD = standard deviation; CASC = clinical academic service contracts; RAD = reduced activity days.  
 \*1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent.  
 †Unless otherwise indicated.

most consultants in the UK voted in favour of a new consultant contract.

In Canada, even fewer studies have addressed these issues. In 1997, Duncan and colleagues,<sup>3</sup> at Queen's University in Kingston, Ontario, reported on a study, to determine whether the method of physician payment influenced the practice of anesthesia. They concluded that payment of physicians by nonfee-for-service techniques did not have a constructive influence on measures of anesthetic practice and that the goal of alternate payment arrangements, to free up time for academic pursuits, could not be achieved in their experimental model. In 2003, Rourke and others<sup>4</sup> reported on their study at the University of Western Ontario, which attempted to determine how family medicine residents and practising rural physicians would rate possible solutions for recruiting and sustaining physicians in rural practice.<sup>4</sup> They found that rural family physicians rated funding for learner-driven continuing medical education (CME) and limiting on-call duty as the most important education and practice solutions. In the same study, residents rated an alternate payment plan to include time off for attending and teaching CME and comprehensive payment plans with a guaranteed income for locums as the most important education and practice solutions. They concluded that both residents and physicians rated solutions similarly and that a comprehensive package of the highest-rated solutions could help recruit and sustain physicians in rural practice.

### Study limitations

There are several limitations to this study. First, despite 3 mailings, the response rate was only 59%. This was the same for both CASC and non-CASC members. However, although less than ideal, this rate is within the acceptable range (about 60%–70%) of most questionnaire-based studies.<sup>5</sup> Second, we did not stratify the analysis according to each division. Although

there may be inherent differences between divisions, the divisional response rate was even more varied (as low as 25%), making the analysis between divisions meaningless. Third, this was not a randomized study — it would be impossible to randomly allocate which divisions would receive a CASC agreement. Readers should appreciate that this was an observational study. Fourth, the self-reporting of hours spent on research, teaching or clinical activities is subjective and possibly inaccurate. However, we do not know of any other more accurate method of assessing hours worked. Despite these potential inaccuracies, CASC responders reported, on average, more time committed to research and teaching, and, most importantly, were more satisfied with this arrangement. Fifth, the development of CASCs is a dynamic process and the issue of follow-up adequacy may be raised. With time, the remaining non-CASC divisions may successfully negotiate their own CASC agreements. However, for comparative purposes, waiting until that time would negate the benefit of a cross-sectional survey of the CASC and non-CASC divisions. The data obtained from a survey of all divisions once they had mature CASC agreements would be subject to recall bias.

Finally, this paper was not intended to review the methods of negotiating CASCs, deliverables established or salary figures. Our intention was to examine the satisfaction of a group of surgeons still working in their present situation alongside a group of surgeons working within a CASC. In fact, each division negotiated separately for their CASC agreements. The contents, (i.e., deliverables, funding amounts) are held in complete confidence, with only the department head being aware of them. This has not been an open process for divisions to compare. The precise time that CASCs were being negotiated, the contents of each CASC and the current status of potential future CASC negotiations is unknown.

Our long-term goal is to study the effects of CASCs longitudinally, assuming that there is no change to the existing CASC agreements. In addition to sending out the the physician survey again, we are currently collecting objective data to determine whether there are differences in clinical productivity (number of procedures performed, hospital beds, operating room hours, etc), teaching (number of teaching hours, teaching ratings, number of students, residents) and research productivity (number of peer- and nonpeer reviewed papers, grants) between CASC and non-CASC divisions. Results from this longitudinal study should be helpful for physicians, funding agencies and other interested parties.

### Conclusions

CASC responders were significantly more satisfied with their professional activities and more optimistic in their divisional role than were non-CASC responders. Until further evidence is available, all departmental members who perform operative interventions should consider being on a CASC.

**Competing interests:** None declared.

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