

# Attending surgeon burnout and satisfaction with the establishment of a regional acute care surgical service

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**Background:** Establishment of the Acute Care Surgical Service (ACSS) has dramatically changed the management of acute, nontrauma surgical patients in Winnipeg, Manitoba. Its formation was partially driven by increasing strain on surgeons and surgical services. We sought to determine surgeon level of burnout and satisfaction with the ACSS.

**Methods:** All Winnipeg ACSS surgeons were mailed surveys. Burnout was established using the Maslach Burnout Inventory Human Services Survey. Satisfaction was ascertained with a series of questions.

**Results:** We attained a response rate of 76%. Most surgeons were married men with children. A burnout level of 61% was determined. Although most surgeons felt the ACSS was a positive change in their careers, they felt that operating room accessibility and teaching opportunities were lacking.

**Conclusion:** Although a high level of burnout exists among ACSS surgeons, most are satisfied with its establishment. Factors such as operating room accessibility and teaching opportunities must be addressed.

**Contexte :** La création du Service de soins chirurgicaux aigus (SSCA) a considérablement modifié la prise en charge des patients nécessitant une chirurgie aiguë d'origine non traumatique à Winnipeg, au Manitoba. La création du Service a été en partie une réponse aux pressions croissantes exercées sur les chirurgiens et les services chirurgicaux. Nous avons voulu mesurer le degré d'épuisement des chirurgiens et leur degré de satisfaction à l'égard du SSCA.

**Méthodes :** Tous les chirurgiens du SSCA de Winnipeg ont reçu un questionnaire par la poste. La mesure de l'épuisement a été établie à l'aide du questionnaire MBI (Maslach Burnout Inventory). Quant au degré de satisfaction, nous l'avons vérifié au moyen d'une série de questions.

**Résultats :** Nous avons obtenu un taux de réponse de 76 %. La plupart des chirurgiens étaient des hommes mariés qui avaient des enfants. Nous avons évalué le degré d'épuisement à 61 %. Même si la plupart des chirurgiens ont estimé que le SSCA avait amélioré leur qualité de vie professionnelle, ils ont dit déplorer certaines lacunes sur le plan de l'accessibilité des salles d'opération et des possibilités d'enseignement.

**Conclusion :** Bien que le degré d'épuisement soit élevé chez les chirurgiens du SSCA, la plupart se disent satisfaits de sa mise sur pied. Il faudra corriger les facteurs liés à l'accessibilité des salles d'opération et des possibilités d'enseignement.

The establishment of the Acute Care Surgical Service (ACSS) within the Winnipeg Regional Health Authority (WRHA) has dramatically changed the management of acute, nontrauma general surgical patients within the province of Manitoba. This has resulted in the delivery of nontrauma general surgical care to 3 hospitals within the city of Winnipeg (St. Boniface Hospital, Grace Hospital and Health Sciences Centre). Established in 1999, the Health Sciences Centre's Gold Service focuses care on both trauma and nontrauma patients. The Grace Hospital and St. Boniface Hospital ACSS, established in 2009 and 2008, respectively, now receive nontrauma-related general surgical patients for consultation from throughout the city and

province.<sup>1</sup> This has resulted in a dramatic increase in the volume of patients that pass through these facilities.

Prior to the establishment of the ACSS, general surgeons were required to balance a busy clinical practice with a rotating call schedule for surgical emergencies and consultations. The delivery of acute care surgery has undergone a radical change in many Canadian centres, where there is now a dedicated surgeon free from elective practice available for the week to focus his or her attention on emergency consultations and operations. In Manitoba, a single general surgeon, along with residents and medical students, covers the ACSS daily for 7 days, while another attending general surgeon covers overnight call with the assistance of a senior and junior surgical resident. The establishment of the ACSS was intended to improve delivery of patient care, permit surgeons greater control over elective practice and improve work-life balance.<sup>2</sup> This system has been shown to positively influence the timeliness of care and provide trainees a wealth of operative and consultative experience.<sup>3</sup> In addition, it has been shown to reduce after-midnight operating and result in more efficient use of operating room time.<sup>4</sup> However, despite these improvements, there is a paucity of research with regards to attending surgeon satisfaction and level of burnout with the recent changes.

It is well known that a career and training in general surgery is filled with many challenges that include juggling a busy elective practice, precision and care in the management of acute problems and keeping abreast of new surgical advances while maintaining a family and social life outside of surgical practice. Symptomatology of depersonalization, emotional exhaustion and reduced personal accomplishment is known as burnout. It is a serious area of concern, as it had been correlated with low morale, personal dysfunction, insomnia, physical exhaustion, personal problems, poor performance and deterioration in quality of medical care.<sup>5,6</sup> In addition, both depression and burnout have been associated with reporting a major medical error.<sup>7</sup> Studies have demonstrated that burnout develops as early as medical school and continues through residency.<sup>6,8</sup> Burnout is common among American surgeons, ranging between 28% and 40%.<sup>9-11</sup> It has been suggested that the balance between a busy professional career, including high patient volume, repetitive exposure to stressful events, administrative responsibilities, lack of autonomy and control, and personal life are high stressors in surgical careers.<sup>12,13</sup>

Given the recent changes in the delivery of surgical care in Manitoba, we conducted a local, cross-sectional analysis to ascertain whether the introduction of a regional ACSS has resulted in overall attending surgeon satisfaction and whether it is associated with a low incidence of burnout. In addition, we sought to determine to what extent the ACSS influences surgeon satisfaction with overall quality of life. We hypothesized that the ACSS has resulted in a low level of burnout compared with established medical occupation scores.

## METHODS

All practising general surgeons participating in the ACSS at both St. Boniface Hospital and the Grace Hospital within the WRHA were sent a self-report questionnaire. This 3-part questionnaire was distributed with the goal of determining overall level of satisfaction and burnout. First, basic demographic information was obtained. To establish a level of burnout among general surgeons, we used the Maslach Burnout Inventory Human Services Survey, 3rd edition (MBI-HSS), which is a well-validated 22-item questionnaire that evaluates 3 subscales in 3 areas of burnout: low personal accomplishment, depersonalization and emotional exhaustion.<sup>5</sup> The MBI-HSS has been shown to be an excellent measure for assessing burnout symptomatology. Both convergent and discriminant validity have been demonstrated by several methods.<sup>5</sup> The 3 subscales it measures reflect various manifestation of burnout symptomatology. A sense of depersonalization refers to impersonal responses and negative attitudes toward patients, whereas emotional exhaustion is a feeling of overextending one's emotional resources. Low personal accomplishment refers to negative views toward one's accomplishments.<sup>5</sup> A high score based on medical occupational subgroup analysis in any of the subscale fields was consistent with burnout symptomatology. We considered the manifestation of occupational burnout if the surgeon had a high score on the emotional exhaustion or depersonalization subscale or a low sense of personal accomplishment.<sup>5</sup> A final section of 11 questions focused on surgeon satisfaction with the ACSS to determine to what extent it has impacted on elective practice and workload, work environment and personal satisfaction. Responses were graded on a 5-point Likert scale.

The questionnaire took about 5–10 minutes to complete. The first mailing occurred in the spring of 2010, and a second mailing to nonresponders occurred 2 weeks later. Participation was voluntary, and informed consent was established. All surveys had a coded number to monitor response rates. These coded numbers were separated during data entry to preserve participants' anonymity. The Bannatyne Campus Research Ethics Boards at the University of Manitoba approved our study.

### Statistical analysis

Statistical analysis included descriptive analysis of demographic data. Measures of burnout were scored using the MBI-HSS scoring key and compared with MBI medicine occupational subgroup subscales of 1104 medical workers.<sup>5</sup> We used simple unpaired *t* test analysis to compare MBI subscale means to occupational subscale means. We considered results to be significant at  $p < 0.05$ . Questions regarding satisfaction with the ACSS were tabulated based on Likert grading into binary grouping, and comparisons were summarized.

RESULTS

A total of 25 questionnaires were sent to all general surgeons who participate in either the Grace Hospital or the St. Boniface Hospital ACSS. A response rate of 76% (19 of 25) was attained. Incomplete responses were found in 1 survey, and we excluded it from our analysis of burnout.

Basic demographic and practice descriptions are summarized in Table 1. The median age of surgeons who par-

**Table 1. Characteristics of surgeons who participate in the Acute Care Surgical Service**

Characteristic	No. (%)*
Age, median (range) yr	44 (33–58)
Sex	
Male	18 (94.7)
Female	1 (5.4)
Relationship status	
Single	2 (10.5)
Married	17 (89.5)
Partnered	0
Widowed	0
Children	
Yes	17 (89.5)
No	2 (10.5)

\*Unless otherwise indicated.

**Table 2. Professional characteristics of surgeons who participate in the Acute Care Surgical Service, n = 19**

Characteristic	No. (%)*
Specialty training	
Community-based general surgery	9 (47.4)
Colorectal surgery	2 (10.5)
Minimally invasive surgery	4 (21.0)
Surgical oncology	3 (15.8)
Trauma/ICU	1 (5.3)
No. of years in practice†	
0–5	5 (26.3)
5–10	6 (31.6)
10–15	2 (10.5)
> 15	6 (31.6)
Hours worked per week‡	
< 40	0 (0)
40–49	1 (5.5)
50–59	3 (16.7)
60–69	8 (44.4)
70–79	3 (16.7)
> 80	3 (16.7)
No. calls per month, mean (range)	4.5 (3–10)
Weeks of ACSS attending per year, mean range	5 (0–11)

ACSS = Acute Care Surgical Service; ICU = intensive care unit.  
 \*Unless otherwise indicated.  
 †The categories below are those that were listed as options on the survey.  
 ‡18 respondents.

ticipate in the ACSS was 44, with 95% of surgeons being men. Most surgeons were married and had children. After assessing career characteristics of respondents, we found that community-based general surgeons were the group to participate most frequently on the ACSS (47%). The number of years in practice varied widely among general surgeons (Table 2). Most surgeons worked between 60 and 69 hours per week, and the average call burden was 4.5 calls per month. On average, participants acted as the ACSS attending surgeons for 5 weeks per year. Most surgeons participated in the daily coverage of the ACSS, whereas others did not participate in daily coverage (0 wk/yr) and only took overnight call.

Table 3 summarizes characteristics of burnout, emotional exhaustion, depersonalization and personal accomplishment among surgeons who participate in the ACSS. We found that 33% of surgeons had a high level of emotional exhaustion and 22% had a high degree of depersonalization. In addition, 28% felt a low degree of personal accomplishment. When compared with medicine occupational subgroup means and standards deviations, there was no statistical difference with regards to emotional exhaustion (95% confidence interval [CI] –5.33 to 3.55, *p* = 0.69), depersonalization (95% CI –2.66 to 2.20, *p* = 0.85) and personal accomplishment (95% CI –0.56 to 6.28, *p* = 0.10).<sup>5</sup> Aggregate data revealed a burnout level of 61% when considering a high score on emotional exhaustion and/or depersonalization and/or personal accomplishment.

Responses to questions pertaining to satisfaction with the ACSS are summarized in Table 4. Overall, 90% of surgeons felt the ACSS to be a positive change in that it allowed them the freedom to focus on their elective surgical practices. In addition, 84% of surgeons felt that it allowed their elective work schedules to become more predictable. Furthermore, the monthly call workload was felt

**Table 3. Burnout among surgeons who participate in the Acute Care Surgical Service\***

Burnout subscales	Mean (SD)	No. (%)
Emotional exhaustion	21.3 (8.8)	
High		6 (33.3)
Moderate		6 (33.3)
Low		6 (33.3)
Depersonalization	6.9 (4.5)	
High		4 (22.2)
Moderate		7 (38.9)
Low		7 (38.9)
Personal accomplishment	39.4 (6.1)	
High		9 (50.0)
Moderate		4 (22.2)
Low		5 (27.8)
High degree of burnout†		11 (61.1)

SD = standard deviation.  
 \*Using occupational subgroups.  
 †High level of emotional exhaustion (≥ 27) and/or depersonalization (≥ 10) and/or low level of personal accomplishment (≤ 33).

by 90% of surgeons to be manageable. Less than half of surgeons felt that the addition of the ACSS had improved operative room accessibility (42%). Also, many felt that it was difficult to set aside time for teaching medical students and residents while working on the ACSS. In light of this, most surgeons felt that they were adequately remunerated for their work on the ACSS (74%), were satisfied with the variety of clinical cases (90%), had an improved overall quality of life (84%) and were able to spend more time with their families (79%).

## DISCUSSION

The overall landscape of general surgery is in a state of flux in Canada. Recent changes in the delivery of acute surgical care were undertaken with the intended goal of improving the delivery of timely and high-quality care. The optimization of the work environment for general surgeons was intended to allow greater control of their personal/family lives, elective practices and call requirements. Since lifestyle is often touted as a deterrent from general surgery,<sup>14</sup> there is a paucity of research on how surgeons have been affected by the recent changes in surgical care. The implementation of the ACSS in 2 centres in Manitoba provided a valuable opportunity to ascertain to what degree it has affected surgeons.

A response rate of 76% was deemed to be adequate in determining overall burnout and ACSS satisfaction. This response rate is higher than those often reported in other studies.<sup>9,13,15</sup> In Canada, about 15% of practising general surgeons are women.<sup>16</sup> In our study, there are a disproportionate number of male compared with female surgeons. This

trend is noted among American surgeons as well.<sup>9</sup> Studies looking at practice patterns and career satisfaction among female general surgeons have shown that job satisfaction was rated highly, although alternative practice models to allow for improved lifestyle was an area where improvement was desired.<sup>16</sup> The greater control of lifestyle associated with the ACSS may result in increased recruitment of female surgeons over time. In addition, there is a large proportion of surgeons who have children, reinforcing the importance and influence of family life on career. The number of hours worked per week by surgeons at the ACSS were similar to those reported in other studies.<sup>15</sup> Community-based general surgeons were the group to participate most frequently on the ACSS. In at least 3 Canadian centres there are acute care surgery fellowships being developed.<sup>1</sup> With such changes, over time it is possible that acute care surgery may become its own subspecialty.

The greatest predictor of career satisfaction among surgeons is burnout.<sup>9</sup> We determined a burnout level of 61%, which is high compared with that reported in other similar studies.<sup>9-11</sup> Associations of burnout with patient satisfaction, quality of care and medical errors make the development of strategies to decrease its prevalence an important area of work. Although the levels of personal accomplishment, depersonalization and emotional exhaustion experienced by surgeons participating in the ACSS are each comparable to those reported among surgeons in established systems,<sup>5</sup> the overall level of burnout is concerning.

Like other studies, we have shown that, although there exists a high level of burnout among general surgeons, most are satisfied with their careers.<sup>11,15</sup> It is known that there is a strong association between balance among family,

**Table 4. Questions regarding surgeon satisfaction with the Acute Care Surgical Service**

Statements regarding satisfaction with the ACSS	Level of agreement with statement, % of surgeons				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<b>Elective practice and workload</b>					
1. The ACSS allows me to better focus on my elective surgical practice when not on call.	5.3	0	5.3	42.1	47.4
2. Since the introduction of the ACSS, I find that my elective work hours are more predictable.	0	0	15.8	57.9	26.3
3. I find the number of ACSS calls I perform monthly to be manageable.	0	0	10.5	84.2	5.3
4. I find the workload while on call for the ACSS to be manageable.	0	5.3	52.6	42.1	0
5. I feel adequately equipped to deal with the cases I encounter on ACSS.	0	0	15.8	73.7	10.5
<b>Work environment</b>					
6. While on the ACSS, I find that there is time during the day to teach residents and medical students.	10.5	31.6	36.8	21.1	0
7. The ACSS provides for improved operating room accessibility.	5.3	10.5	42.1	42.1	0
<b>Personal satisfaction</b>					
8. I feel adequately remunerated for my work on the ACSS.	0	0	26.3	68.4	5.3
9. I feel that the introduction of the ACSS has had a favourable result on my overall quality of life.	0	0	15.8	57.9	26.3
10. I am satisfied with the variety of clinical cases seen on the ACSS.	0	0	10.5	68.4	21.1
11. The ACSS allows me to spend more time with my family.	0	5.3	15.8	57.9	21.1

ACSS = Acute Care Surgical Service.

personal growth, career and burnout.<sup>13</sup> Shanafelt and colleagues<sup>9</sup> theorized that even in light of great occupational demands, surgeons still find their practices enjoyable. This finding is echoed in our data. Interestingly, a study from the Netherlands determined that among all Dutch residents, general surgery had the lowest incidence of burnout and had dedicated and vigorous residents.<sup>17</sup> Despite a high level of burnout in our cohort, most surgeons were content with the establishment of the ACSS: it has been shown to be a positive lifestyle change and to improve individuals' work-life balance. The diversity of cases, the call requirements, remuneration and freedom in elective practice have all been positive changes. The ability to spend more time with one's family is also seen as a benefit. A concern expressed by most surgeons is the lack of formal teaching time for medical students and residents. This finding was also echoed in our study of general surgery resident evaluation of the ACSS.<sup>18</sup> In addition, only a minority of surgeons believed that the establishment of the ACSS resulted in improved operating room accessibility. There is no doubt that general surgeons face specific challenges, and improvement to optimize quality of care, coping skills and surgeon satisfaction is a must. It has been recommended that to decrease burnout there must be greater institutional support, increased surgeon autonomy and more opportunities for professional development among surgeons.<sup>10</sup>

### Limitations

Limitations of our study include our small sample size and an incomplete response rate. Our small sample size may limit the ability to detect differences between participant scores and published medicine occupational subgroup means. A total of 6 surveys were not returned and thus may result in potential bias. Lack of participant response is an inherent shortcoming in survey research. In addition, although the intent of the study was to determine overall satisfaction with the establishment of the ACSS, it is difficult to determine to what extent overall career satisfaction is the result of its implementation compared with elective practice. As well as the survey being limited by recall bias, several surgeons were involved in trauma surgery coverage in addition to ACSS coverage. Assessment of pure trauma service surgeons was excluded from this study. The strength of our paper was its ability to determine surgeon level of burnout and satisfaction with a newly established ACSS service. Given that many centres across Canada are in the process of establishing similar services, our data may be used to improve their services.

### CONCLUSION

Burnout is still prevalent among general surgeons who participate in the ACSS. Since there is a strong association between lack of autonomy and control with burnout,<sup>13</sup> we

hypothesized that the introduction of the ACSS and surgeons' associated ability to elicit greater control over their practices would be associated with a low level of burnout. This theory was not supported by our data. Although most surgeons viewed the ACSS as a positive change allowing them to improve the balance among their elective practices, emergency practices and personal lives, other factors, such as formal teaching opportunities and operating room accessibility, need to be addressed and improved.

**Competing interests:** None declared.

**Contributors:** All authors designed the study, reviewed the article and approved its publication. R.M. Helewa and R. Kholdebarin acquired the data. R.M. Helewa analyzed the data and wrote the article.

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