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Rural surgical programs in Western Canada

Stuart Iglesias, MD
Linda C. Jones, CCHRA(C)

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*Note: In this paper a specialist general surgeon is a Canadian-certified FRCS physician. All other physicians mentioned, including physicians with international fellowships not recognized in Canada, are referred to as "GP surgeons."

Surgical services in rural Western Canada are provided by a mixture of Canadian-certified specialist surgeons and family physicians with advanced training in surgical procedures. A questionnaire was sent to all rural hospitals in Western Canada that provided either cesarean section or appendectomy services. We identified 76 rural surgical programs staffed by 22 Canadian-certified general surgeons, 128 GP surgeons, and 174 family practice anesthesiologists. The mean catchment population of rural communities with specialist general surgeons (23 090) was significantly higher than that of communities staffed by GP surgeons (13 798). Of the 22 rural programs with specialist general surgeons, all but 5 included some support by GP surgeons.

Dans les régions rurales de l'Ouest du Canada, les services de chirurgie sont dispensés par un groupe mixte de chirurgiens spécialistes avec certificat canadien et de médecins de famille avec formation poussée en techniques chirurgicales. On a envoyé un questionnaire à tous les hôpitaux ruraux de l'Ouest du Canada qui offrent des services de césarienne ou d'appendicectomie. Nous avons repéré 76 programmes ruraux de chirurgie dotés par 22 chirurgiens généraux avec certificat canadien, 128 omnipraticiens chirurgiens et 174 médecins de famille anesthésiologistes. La taille moyenne du bassin de population des communautés rurales desservies par des chirurgiens généraux spécialistes (23 090) était significativement plus grande que celle des communautés desservies par des chirurgiens omnipraticiens (13 798). Tous sauf 5 des 22 programmes ruraux dotés de chirurgiens généraux spécialistes pouvaient aussi compter sur le soutien d'omnipraticiens chirurgiens.

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> "One of the greatest challenges is the provision of surgical services to rural and remote areas of Canada." — William Pollet, 1999 President, Canadian Association of General Surgeons1

> Surgical services in rural Western Canada are provided by a mixture of "specialist" general surgeons* and family physicians (FPs) with advanced training in surgical procedures.2,3

These FPs with advanced surgical skills include doctors with a wide scope of training backgrounds. Among them are the international medical graduates (IMGs) with a surgical fellowship obtained internationally but not recognized in Canada. Also included are the rural physicians, trained either outside Canada or Canadian-trained, with 12 months or less of formal postgraduate surgical training. This training might have been provided through a third year of a family medicine residency program, an incomplete surgical residency, or a mentorship.

Faced with a shortage of Canadian-certified specialist general surgeons,4 the public policies appropriate to meet rural surgical needs have been the subject of some controversy. The 1999 Report of the Working Group on Postgraduate Medical Education for Rural Family Practice, College of Family Physicians of Canada, recommended that rural FPs continue to be trained in advanced skills, including general surgery.5 However, the Canadian Association of General Surgeons remains deeply sceptical of major surgical procedures, such as appendectomy and laparoscopy, which they believe should remain the province of full time certified surgeons.1

The issues in this debate are several and complex, and it is clear that resolution of these issues requires detailed documentation of existing delivery systems for rural surgical services. This study is designed to provide a part of that documentation.

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Methods

We identified 76 rural hospitals in Western Canada (i.e., Manitoba, Saskatchewan, Alberta and British Columbia) that provided surgical services that included cesarean section (C-section) or

appendectomy. As in earlier papers in which one or both of us were coauthors,3,6 we designated a hospital to be rural if most or all of the medical services were provided by general practitioners (GPs). This eliminated from the study group all of the regional centres that, while sometimes considered rural by urban centres, enjoy a complement of first-line specialists, including surgeons, internists and pediatricians. At the other end of the spectrum, by restricting the definition of surgical programs to the capability to perform C-sections or appendectomies, we excluded some smaller centres that might perform procedures such as dilation and curettage and closed fracture reductions.

Those 76 hospitals were identified from our earlier study, which selected rural FPs providing appendectomy or C-section using the National Physician Database at the Canadian Institute for Health Information.3 Telephone communication and emails to these hospitals confirmed their surgical services. These same communications helped us identify any rural surgical sites that might not have been included in our database.

Between May and September 2000, we used email and/or telephone to contact either an administrator or a member of the surgical staff in each of the 76 hospitals. We explained the content and context of our study and we obtained a commitment to complete a questionnaire. The questionnaires asked for catchment population, distance from a regional centre, geography and transport issues, the specialist and non-specialist anesthetic and surgical staff, and the type of surgical services provided. We also inquired about the length and nationality of surgical training and about whether there existed any opportunities for the establishment of local specialist surgical services were they to become available. Finally, we asked whether the responders expected that local surgical programs would be continued in the future.

If questionnaires were not returned, follow-up telephone calls encouraged their completion and return. By November 2000, all 76 questionnaires had been returned.

Results

In the 4 western provinces we identified 76 rural surgical programs. Of these 76 programs, all offered a local C-section capability and all but 5 offered a local appendectomy capability. These 76 hospitals relied on 22 Canadian-certified specialist surgeons, 128 GP surgeons, and 174 family practice anesthetists. There were no specialty anesthetists in any of these 76 hospitals (Table 1). Of the 128 GP surgeons, all offered C-section services and 95 offered both C-section and appendectomy services.

We divided the rural surgical programs into 2 models (I and II). Model I represented surgical programs that relied exclusively on FPs with advanced skills and without local certified specialist surgical services. Model II represented surgical programs where there was local certified specialist surgical skills, either exclusively, or in some combination with FPs with advanced skills. Of the 76 programs, 54 relied exclusively on FPs and 22 had some local specialist participation (Table 2). Of the 22 with specialist services, only 5 relied exclusively on specialist services and 17 included some support from FPs with advanced skills. In all 5 exclusively specialist programs, these represented a single specialist surgeon in solo practice.

Of the 76 programs, only 13 were within 80 km of a regional centre. Of these 13, 8 relied exclusively on FPs and 5 enjoyed some specialist services (Table 2).

In Table 3 we analyzed the training background of the 95 FPs who provide a local appendectomy service. More than half (48) were IMGs with extensive surgical training. Approximately one-third (32) were Canadian-trained, and most (21) had 12 months or less of formal surgical training. Interestingly, of the 32 Canadian-trained FPs providing appendectomy services, most practised in Alberta (21).

For all the rural surgical programs without specialist services it was determined whether they could support a specialist service, either alone or in cooperation with other rural hospitals in reasonable proximity. Of the 54 programs, 23 responded positively (Manitoba, 5; Saskatchewan, 3; Alberta, 13; BC, 2).

The respondents for all 76 programs were asked to explain their difficulties with geography, climate and patient transport. In addition, they were asked to estimate the proportion of time when urgent transport might not be available. In BC, 7 of the 20 rural hospitals, representing communities isolated by mountain passes, reported serious transport problems (5%–10% of the time). In Manitoba, 2 Rural Isolated (i.e., more than 400 km from a regional centre) hospitals reported transport difficulties (5%–10% of the time). In the rest of Manitoba and BC, and in all of Alberta and Saskatchewan, patient transport was not considered to be a problem.

When asked to describe the issues related to the future of their surgical services, the respondents described a chronic struggle with manpower (nursing, anesthesia, surgery) and budget. So it was somewhat surprising that most felt confident that their programs would survive. Respondents from only 15 of the 76 programs thought that surgical services would probably not survive in their hospital. In many responses there was a serious commitment to ensure that these programs did survive. With a few exceptions, this commitment to local surgical services does not seem to be related to issues of geography, climate or transport. Rather, there seems to be a widely held perception that care and outcomes are better if they can be provided locally.

The catchment populations for surgical sites staffed by FPs (54) ranged between 5000 and 30 000

with a mean of 13 796 and a median of 12 750. Thirty-one (57%) of catchment populations were between 9000 and 15 000 in size. The catchment populations for surgical sites staffed by specialist general surgeons (22) ranged between 4000 and 100 000 with a mean of 23 090 and a median of 17 500. Twenty-six (81%) were between 12 000 and 25 000. The mean catchment population for the specialist general surgeon sites was statistically significantly higher than that of the FP sites (Student's t-test = 2.125; p = 0.019). However, 10 (19%) FP site catchment populations were larger than the median specialist general surgeon catchment areas.

Discussion

The 76 programs in our study represent the communities in 4 western provinces with much at stake in the current debate about the appropriateness of training rural FPs in general surgery. Each of these programs delivers a level of surgical services that would support an operative obstetrical service as well as a significant general surgical program. Yet only a few of these communities have been able to attract a specialist general surgeon.

The survey data documents a considerable need and opportunity for the expansion of rural specialist general surgeons. It was felt that 23 of the 54 rural surgical programs without specialist support could support, either within their own community or in cooperation with other rural communities, a specialist surgical service. This represents a large challenge to the general surgical training programs. It represents an equally large challenge to government planning and funding programs. A specialty surgical program, even in rural Canada, includes bowel, breast, and head and neck surgery. This would mean a significant step up in terms of equipment, staff and dollars from a surgical program staffed by FPs.

However, it is also clear that even if we were able to staff every reasonable rural surgical site with a certified specialist surgeon there would continue to be a significant, continuing need for GP surgeons. Of the 22 rural programs with specialist service, all but 5 included some support by GP surgeons. The role of the GP surgeon, in the presence of a specialist service, takes 2 forms. First, the specialist surgeon is relieved of the obligation, either real or perceived, to be available 24/7/365. Second, in many of these Model II communities, the GP surgeons provide most or all of the operative delivery services in obstetrics. This provides significant after-hours relief for the specialist surgeon.

There are still 31 rural communities in Western Canada which, in the opinion of the local medical staff, are unsuitable for a specialist surgical service. All are an hour or more from a regional

referral centre (Rural Remote or Rural Isolated; see Table 2 for definitions). These include the 7 BC communities that face significant transport issues.

There appear to be 2 distinct training backgrounds for the GP surgeons in our survey. Approximately one-half (48 of 95) represent IMGs with extensive surgical training. Some of these have a "specialist" practice pattern, concentrating exclusively on a referral surgical service. Others have a family practice service integrated with their surgery. Of the remainder, the largest group (21) represents Canadian FPs with 12 months or less of formal surgical training. Most of these practise in Alberta and BC. This is not surprising when we appreciate that there are only 2 formal Canadian training programs for advanced skills in general surgery: the University of Alberta and the University of British Columbia. Undoubtedly, these 2 programs have played an important role in the staffing of these rural surgical sites.

For the majority of the rural surgical programs there is a long and successful history and a deeply held commitment to their survival. Although the research envelope on these programs is thin, recently some evidence has emerged that these programs do achieve outcomes comparable with care in regional centres (Dhillon D, Johnston S, Spooner D, unpublished observations, 2000; Iglesias S, unpublished observations, 2002).6,7

Comparison with other studies

In 1995, Chiasson and Roy reported the results of a questionnaire sent to administrators in 56 rural hospitals in BC, Alberta, the Yukon and the Northwest Territories.2 They identified rural hospitals by excluding communities with catchment areas over 15 000 (mean = 8280). Of these 56 hospitals, only 29 provided a level of service that included appendectomy. Clearly, this study included many small hospitals that did not provide general surgery and it excluded other hospitals that, although their catchment areas were greater than 15 000, provided general surgical services either exclusively or almost exclusively by non-specialist surgeons. Chiasson and Roy included itinerant surgical and anesthetic personnel in their study; our study excluded all surgical staff that were not residents in the community.

While appreciating the smaller surgical programs included in the Chiasson and Roy study, there are considerable similarities with our own results. Of their 63 physicians with surgical training, 46% (29) were trained in Canada and the remainder were IMGs. The mean length of postgraduate surgical training (and range) was 17 months (2–48). The mean distance to a regional centre was 216 km (Rural Remote).

An earlier study, of which we were coauthors, used the National Physician Database (NPD) at the Canadian Institute for Health Information to identify all non-specialist surgeons performing appendectomy in rural Canada.3 The NPD is the national repository for services and billings provided by Canada's fee-for-service physicians. The methodology to identify "rural" was identical to this paper's methodology. The results, for 95/96, identified 109 non-specialist surgeons providing appendectomy in the 4 western provinces and Ontario. Of these, 38.5% (42) were Canadian-trained. These results are very similar to those provided by this survey.

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Limitations of our study

An accurate and reproducible methodology to identify rural hospitals is problematic. There is some consensus8 that an operational definition of these hospitals requires that most or all of its specialist services provided locally be provided by non-specialist medical staff. Other researchers, such as Chiasson and Roy,2 have restricted the inclusion criteria to size of hospital (50 beds) and catchment area (15 000). Our own methodology, developed in an earlier paper,3 used a network of FPs to identify each community in Canada in which, in most circumstances, there were 2 or fewer specialist physicians on the active medical staff and residing in the community. Our results are specific to these communities, and we may not be able to generalize to larger rural surgical programs which, with a larger incumbent specialist staff, are difficult to distinguish from regional centres.

Any questionnaire study is exposed to the choice of respondent and the care with which it was completed. Our questionnaire was sent to a mixture of administrative and medical personnel. It is possible that this would weaken our results if we have reason to believe that the background of the respondent might influence his or her report of the demographics and content of local surgical programs. Our questionnaires were sometimes accompanied by telephone and email conversations, either before or after receipt and completion of the questionnaires. Although this facilitated their understanding of our purpose and their completion of the questionnaire, it is possible that those communications biased the reports.

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Conclusion

Rural surgical services are provided in Western Canada both by certified specialist surgeons and GP surgeons. These GP surgeons are a mix of IMGs with extensive surgical training and Canadian FPs with advanced training in general surgical skills. While there is considerable opportunity for the expansion of specialist services in these communities, current delivery models would require that GP surgeons who are trained in appendectomy and C-section support these rural specialists. There remains a large number of rural surgical sites where the only appropriate delivery system for local surgical services is the GP surgeon.

Stuart Iglesias, MD, Rural family physician, Hinton, Alta.; Linda C. Jones, CCHRA(C), Working Leader, Medical Records, Hinton General Hospital, Hinton, Alta.

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Correspondence to: Dr. Stuart Iglesias, Box 5202, Hinton AB T7V 1X4; stu.iglesias@hintonmedical.com

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