

# Proceedings from the Invitational Meeting on Rural Surgical Services

Co-Chairs: Dr Stuart Iglesias and Dr Nadine Caron

June 22-23, 2007  
Hyatt Regency Hotel  
Vancouver, British Columbia

Edited by the Centre for Rural Health Research



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## **EXECUTIVE SUMMARY**

### **The Meeting**

The Invitational Meeting on Rural Surgical Services (July 22-23, 2007, Vancouver, BC) aimed to share research, policy, and educational initiatives among key stakeholders in rural surgical care. Hosted by the Centre for Rural Health Research, the participants included researchers, GP Surgeons, specialist surgeons, and other practitioners from rural communities, Heads of the UBC Departments of Surgery and Family Practice, the Associate Postgraduate Dean of UBC Medicine, as well as representatives from the British Columbia Health Authorities, the BC Reproductive Care Program, and the BC Medical Association's Joint Rural Committee.

The meeting focused on current research and policy discussions in order to address the present need for solutions to the crisis in small volume hospital sustainability. Poster presentations showcased during the opening reception and throughout the weekend covered interrelated, emerging topics in rural surgical services:

- models and standards of rural surgery;
- rural surgical innovations; hospital infrastructure;
- administrative and policy challenges;
- health human resources; and
- research methods and background.

Representatives from British Columbia health authorities provided "Think Pieces" on rural surgical services in their region. They outlined current challenges and suggested research avenues for developing best practices. Administrators with the BC Reproductive Care Program and BC Health Authorities prioritized the following rural surgical service issues and needs:

- patient outcomes;
- team competence and specialized training;
- regularity or consistency of service availability;
- safe and timely access to services;
- support for staff ensuring recruitment and retention;
- use of Telehealth;
- local fundraising;
- economic impact on the community; and
- sound physical infrastructure.

The meeting culminated in the sharing of a proposal for a new formal accredited training program in Rural Surgery for Family Physicians, housed in the UBC Departments of Family Practice, Surgery, and Obstetrics/Gynecology. Research presented at the meeting illustrates that a training program is urgently needed to ensure the sustainability of small-volume rural surgical programs.

## Background

Sustainable rural surgical care is an urgent priority. Surgical services are integral to the delivery of primary health care, maternity services, and to support trauma and acute medical services in rural communities.

The current research shows that rural surgical programs are closing rapidly:

- In 2000, out of 76 rural hospitals with surgical programs in western Canada, 20 were located in BC.<sup>1</sup>
- By 2004, only 15 rural surgical programs remained in the province.<sup>2</sup>
- This rural hospital attrition has occurred solely in the small-volume hospitals with GP Surgeons that serve populations of 5,000-15,000.
- Physicians supporting these programs are either
  - Canadian-trained family practitioners with international postgraduate training in surgery or
  - International Medical Graduates (IMG's) with a foreign fellowship (two-third of the GPS population).<sup>3 4</sup>

Rural communities face unique challenges to health care sustainability, causing stress for physicians and the community:

- Small volumes in the overall surgical program may cause professional dissatisfaction among highly-trained physicians.
- Where communities experience a reduction or loss in services, families face the social and financial difficulty of traveling significant distances for health care.

The sustainability of rural maternity care and surgical programs is closely linked:

- Hospitals that do not provide local cesarean section capabilities are unlikely to provide local maternity services.<sup>5</sup>
- Programs that do continue to provide local maternity care without access to local cesarean sections have a high maternity patient outflow<sup>6</sup> and are not likely to be sustainable.<sup>7</sup>

Procedure volumes in rural hospitals may be small, but there is a significant and growing body of evidence that outcomes for these hospitals are safe.<sup>8</sup> This includes cesarean section,<sup>9-16</sup> appendectomy,<sup>17-19</sup> gastroscopy,<sup>20-22</sup> colonoscopy,<sup>23-27</sup> and anesthesia<sup>28</sup>:

- The average procedure volume for individual BC rural surgical programs is 200 total procedures per year.<sup>29</sup>
- Studies show that GP Surgeons do not need a particularly high procedural level to maintain competency<sup>30</sup> and they are skilled at identifying and referring complicated patients, leading to good rural surgical outcomes.<sup>31</sup>

Rural surgical programs are dependent on skilled practitioners, but policy planning, training, and professional support do not address the current challenges for rural physicians.

- Rural surgeons in small volume programs are primarily General Practitioner Surgeons (GPS) working solo or with General Surgeons (GS) or specialist surgeons.
- There are few skilled practitioners in Canada able to replace this retiring workforce.

- The important role of GP Surgeons is largely misunderstood and ignored in large-scale surgical service delivery planning.
- GP Surgeons in Canada have no credentialing, training, or examination process that can be used to transport their credentials, conduct research, or formally maintain competence.
- Canada needs an academic program of training, evaluation, accreditation, and professional support for General Practitioner Surgeons.

The lynchpin holding rural surgical programs together is the GP Surgeon, who is the “human resource underpinning the maintenance of sustainable maternity services in rural Canadian communities.”<sup>32</sup>

New directions in research are necessary to support evidence-based decision making for rural surgical programs. Future studies may want to examine the following:

- Compare aspects of local surgical services with regional referral hospitals, including the outcomes of traveling patients and costs and benefits of local vs. regional service.
- Investigate rural health care programs other than maternity services to see if they are positively linked to sustainable surgical services.
- To determine appropriate rural service levels, determine the minimum volume and scope of service for a sustainable program and explore the role of itinerant surgery in rural surgical programs.
- For the successful implementation of a GP Surgery training and accreditation program, compare the outcomes of IMG’s and GP Surgeons who completed a 12-month surgical training program.

Current studies in health care planning allocation at the Centre for Rural Health Research examine the appropriate level of sustainable maternity service for rural communities in relation to population need. The centre has developed and is currently validating the Rural Birth Index (RBI). The RBI is a tool that

- looks at community characteristics such as size, isolation, and vulnerability, and
- estimates/predicts the appropriate level of maternity services for a population.

### **Training and Support Programs**

Central to the meeting was a discussion for a proposed training program in GP Surgery. Current training models and ad-hoc advanced skills programs are insufficient to meet the demands of fragile rural surgical programs on the brink of closure.

A study through the Centre for Rural Health Research on GP Surgeons’ perspectives on training has determined that any formal program should have

- supportive mentors,
- a standardized curriculum for a portable skill set, and
- postgraduate support and training.<sup>33</sup>

Interviewees also stressed that a GP Surgery training program should be separate from the training programs for surgical Residents.



The proposed Training and Support Program for GP Surgery would be

- housed within UBC and UNBC, through the departments of Family Practice, Surgery, and Obstetrics/Gynecology,
- accredited by the College of Family Physicians of Canada, and
- have satellite training sites in Prince George and rural communities.

Core teachings would include

- the historical rural surgical skill set, and
- common elective, and diagnostic and screening procedures.

The annual cohort would be small, allowing for one-on-one mentorship with established GP Surgeons in rural communities. Different models, such as the GP Anesthesia Training Program or the Australia Rural Surgery Program, would provide templates for a GP Surgery program.

In order to make rural GP Surgery an attractive and sustainable career path, the Support Program would include

- structures for professional support;
- continuing education;
- ways to reduce professional isolation;
- workplace emotional support;
- a 'point person' for GP Surgeons – a Rural Surgical Program Director; and
- an academic home for GPS within the UBC Department of Family Practice.

For rural surgical programs at large, a Support Program would

- benefit other care providers, including nurses and support staff;
- assist with human health resource issues such as locums, credentialing, and recruitment and retention; and
- help create bridges and communication between small volume hospitals and referral centres.

One model for the Support Program would be the United Church Health Services on the BC Central Coast, which includes a support structure for rural care providers that offers moral and advocacy support at the local and Health Authority levels. The program would be funded by UBC, the Health Authorities, Ministry of Health, and the BC Medical Association's Rural Committee.

### **Recommendations**

The meeting culminated in a series of collective recommendations agreed to by all participants. These recommendations for rural surgical services in British Columbia address the current crisis in health human resources and state that the planning process for a training program in GP Surgery should include all key players, including rural family physicians and care providers, specialist surgeons, the universities, research community, Health Authorities, Ministry of Health, and community training sites.

The eight recommendations for rural surgical services include:

**1) Building Research Capacity**

All avenues should be explored to build an interdisciplinary team of stakeholders and clinical and academic researchers to articulate and implement a strategy to build capacity and infrastructure in rural surgery research. These new programs should be designed to include, within their formal structure, a capacity for audit and research in BC's small volume rural surgery programs. This reflects the need for an evidence base to inform policy and planning.

**2) Sustaining Services**

Based on the current evidence of safety and outcomes, and recognizing the linkages with sustainable rural maternity care and other local programs, small volume rural surgery programs, where they now exist, should be supported and sustained.

**3) Regionalization**

Rural British Columbia has been well served by both local surgery services for low risk patients/procedures and the availability of more advanced surgical programs for higher risk patients/procedures close to home in local regional centres. It is important that future planning and programs integrate these two delivery models in ways that are mutually supportive and sustaining in order to preserve the benefits of each to BC's rural communities.

**4) Scope of Practice**

Recognizing the threat to sustainability of low procedure volumes in these programs, specific policy objectives should include:

- supporting a scope of practice within the skill sets we know to be appropriate for rural GP surgeons,
- encouraging a low outflow of patients traveling for care when services are available locally, and
- providing recruitment and infrastructure support for itinerant surgery services.

**5) Teams**

Planning and programming activities should appreciate that

- safe and appropriate local surgical care is sustained by the successful recruitment, support, and retention of interdisciplinary teams of professionals including skilled nursing, lab, and transport personnel; and
- when most successful, these small volume rural surgical programs are supported within a regional surgical network of supportive specialist surgeons who provide training, consultations, and problematic case reviews. Without such mentorship from specialist surgeons, the small rural programs might not be sustainable.

## 6) Health Human Resources

Recognizing the current health human resource crisis in the supply of rural surgeons, UBC should offer a **formal accredited GP Surgery training program** for rural Family Physicians. This should

- provide a standardized core curriculum with a skill set that is portable between rural communities while allowing for a natural variation between communities in scope of practice; and
- include a formal attestation of the successful completion of the training program which will be suitable for the credentialing and privileging processes of the Health Authorities. Candidates for training should have demonstrated a strong interest in, and suitability to, rural practice. The training programs for Family Practice Anesthesiology have served rural Canada well and provide a template for this training program.

## 7) Curriculum for GP Surgery Training Program

Graduates of this program should have the following skills:

- Be able to competently assess, manage, and treat operatively, where appropriate, the surgical conditions that research has identified to belong appropriately to small volume rural surgery programs. These should include the newer diagnostic and screening procedures which might not otherwise be available in rural Canada.
- Be well trained in the substantial differences between rural and urban surgical practices. In particular, their case selection skills for local care versus referral to a regional centre should be excellent.

## 8) Professional and Program Support

Recognizing that the sustainability of BC's small volume rural surgery programs is linked to the successful resolution of continuing health human resource issues of recruitment and retention, on-call and vacation relief, continuing professional development, and a reduction in the professional isolation of its staff, UBC, the Health Authorities, Ministry of Health, and the BCMA's Rural Committee should fund a **formal support program** to address these issues on an ongoing basis. Recognizing the relationship between sustainability and local mentorship, where possible, efforts during the training program to link trainees with mentors should be promoted.

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## Preface

The topic of sustainable rural surgical care is an emerging health planning priority, the urgency increasing in proportion to the number of closures of small rural surgical services. The discussion is precipitated in part by recognition that the role of rural surgical programs supported by General Practitioner Surgeons (GPS) either alone or with solo General Surgeons (GS) or obstetricians is foundational to maternity care and the delivery of other “primary” health care to rural communities. Just as rural surgical care intersects with the delivery of other health services in small communities, so too do the policy issues intersect with the overall rural health planning priorities of the provincial government. These include consideration of health care costs, recruitment and retention, and the ‘crisis’ in maternity care faced by both urban and rural jurisdictions Canada-wide. Given this, a focused discussion on the current state and future of rural surgical programs involving key stakeholders from relevant professional perspectives, decision makers, practitioners, and researchers was not only timely, but also crucial.

This gathering, co-chaired by a GP Surgeon and a General Surgeon, heralds a shift in the attention of policy makers from re-active to pro-active planning and a willingness on the part of academia to respond to the unique needs for service delivery of rural communities. In the past, both of these domains have been influenced by the unrelenting work of individuals dedicated to the needs of rural communities but lacking the infrastructural support to implement new policy directions. It is our hope that policy and planning can now be informed by the growing evidence base, development of curriculum, and thoughtful discussion represented in the proceedings that follow.

The sustainability of rural maternity care is irrevocably linked to the sustainability of rural surgical care and likewise rural surgical care relies in part on the procedural volume created by surgical deliveries. Beyond pragmatics, many care providers speak of the joy of being able to support local maternity care in rural communities in a safe context that, for many, requires immediate access to operative delivery. For these reasons, there are clear convergences between the Rural Maternity Care New Emerging Team (RM-NET), with its five-year mandate to develop an evidence base to support decision making regarding the allocation of rural maternity services, and a rural surgical research, priorities, and planning agenda. This relationship has been advanced recently through the collaboration on a study looking at the practice and training experiences of GP Surgeons, the results of which may contribute to the structural planning of a new GPS training and accreditation program.

Taken together, these theoretical and practical convergences have highlighted the need for collaboration between disciplines (and professions) to understand and plan for the challenges facing rural maternity – and health – care. To this end it has been our delight to support this symposium and collectively focus attention on this urgent topic.

Jude Kornelsen & Stefan Grzybowski  
Co-Directors, Rural Maternity Care New Emerging Team/  
Centre for Rural Health Research

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## A. Introduction

In June 2007, a panel of invited experts in BC rural surgical services met to address the role of General Practitioner Surgeons (GPS) in providing care to rural populations. The goal of the meeting was to support research into rural surgical services by providing a forum to encourage collaboration between practitioners, researchers, educators, decision makers, and health policy planners. The original objectives of the meeting were to

- share research findings, policy, and educational initiatives and promote discussion between key stakeholders on the topic of rural surgical services;
- explore key research themes that need to be investigated in the delivery of rural surgical services;
- discuss the development/submission of an infrastructure grant to investigate rural surgical services;
- provide a forum for the research community to hear from policy planners and the universities about the research agenda; and
- consider the issues related to educational programs for specialists and General Surgeons.

However, events affected the original research focus of the meeting and made it necessary to include opportunities for substantive policy discussions. These events were 1) the sense of urgency surrounding BC's small volume rural surgical programs, particularly health human resources, and 2) the possibility of an exploratory program initiative: a new formal accredited training program in Rural Surgery for Family Physicians with leadership from the UBC Departments of Family Medicine, Surgery, and Obstetrics/Gynaecology.

Due to the rising need for policy solutions in the area of rural surgical services the list of invitees was expanded to include policy makers in health authorities, as well as researchers and GP Surgeons. The dynamic list of panelists and participants thus included academics, practitioners from rural communities, Heads of the UBC Departments of Surgery and Family Practice, and representatives from British Columbia health authorities, the British Columbia Reproductive Care Committee, and the BC Medical Association's Joint Rural Committee (see Appendix 1 for full list).

The meeting was separated into three thematic sections on rural surgical services: "What We Know," the current research on rural surgery and GP Surgeons; "What We Need to Know," gaps in the knowledge and how to fill in such gaps; and "How Do We Get There," proposals for improving rural surgical services in British Columbia.

Poster presentations at the opening of the meeting illustrated the diversity and breadth of research taking place in rural surgical services, giving the participants the opportunity for animated discussion and a chance to encounter the work of other researchers involved in rural health care issues. Day two of the symposium consisted of presentations before the collected group and continuous dialogue about the existing research, gaps, and solutions for BC rural health services. In addition to presenting research, the agenda included an opportunity for substantive policy discussions in which the group unanimously agreed upon



a research agenda for improving General Practitioner Surgeons' accreditation and support, articulated through a mission statement and eight recommendations for change.

These proceedings reflect the thematic structure of the meeting – “What We Know,” “What We Need to Know,” and “How Do We Get There?” – including group discussion and slides from Power Point presentations included in the Appendix. The proceedings conclude with the participants' collective recommendations for the future of rural surgical services and training.

## **B. Presentations**

### **I. What We Know**

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#### **1. The Evidence Base for BC's Rural Small Volume Surgery Programs** *Stuart Iglesias*

##### **Overview**

*Maternity care is the lynchpin of rural surgical services. In order to make rural surgery sustainable and to meet the needs of communities, steps must be taken to turn existing research on rural health, and cesarean services in particular, into action. In his opening address to the invited participants, Dr Stuart Iglesias outlined the purpose of the Invitational Meeting on Rural Surgical Services and the current state of rural surgery in British Columbia. Dr Iglesias established the meeting's goals of confirming or invalidating the current research, brainstorming ways in which to fill gaps in the current knowledge, and coming up with solutions for improving the delivery of rural surgical services in British Columbia. While it may seem that we know very little about rural surgical programs, we in fact know a great deal. Dr Iglesias's presentation provided a detailed summary of the current evidence base for rural surgical programs. Key points include:*

- *GP Surgeons' outcomes in rural programs are comparable to those in larger centres;*
- *there is a health human resource crisis that requires an influx of new GP Surgeons to replace the retiring population;*
- *cesarean section capability is instrumental to rural surgery sustainability; and*
- *the training program for GP Anesthesia may provide a model for a GP Surgeon training program.*

\* \* \*

##### **Environmental Scan**

Rural Family Physicians with postgraduate training in surgery deliver surgical services for a significant proportion of the rural population in western Canada.<sup>1-4</sup> In a 2000 survey, there were 76 rural hospitals with surgical programs with the majority in Alberta (40) and BC (20).<sup>2</sup> These GP Surgeons (GPS) represent a mixture of i) International Medical Graduates (IMG) with a foreign fellowship and ii) Family Physicians trained either in Canada or internationally with 12 months or more of surgery. The IMG's with a foreign fellowship represent approximately two-thirds of the GPS population.<sup>1,3,4</sup>

Specifically in British Columbia, in 2000 there were 30 GPS in 20 rural surgical programs where a GPS was defined as a non-specialist physician providing appendectomy and/or cesarean section services. Together, these GPS provided 71.9% of cesarean sections and 61.8% of appendectomies performed in these 20 hospitals in BC. The only study in the literature that has measured their share of the surgical workload for rural citizens, after including all those who travel to a referral centre for care, is an Alberta study – GPS

performed 28% of appendectomies, 28% of carpal tunnel releases, and 21% of herniorrhaphy for the entire rural Alberta population.

It is unusual for communities with a population of less than 5,000 to have local surgical programs. For larger communities there are, in general, 2 models for the organization of local surgical services. For populations from 5,000-15,000, surgical services are provided locally by one or more GPS. For populations from 15,000-25,000 there is usually a specialist surgeon supported by one or more GPS (“mixed” model). In these larger communities the GPS provide call relief and often cover the operative delivery program. With populations greater than 25,000 there are usually groups of specialist surgeons without any GPS.<sup>2,4</sup>

### **Low Volumes**

The procedures commonly performed in these GPS-only rural surgical programs are, by order of frequency – endoscopy, hand surgery, herniorrhaphy, cesarean section, tonsils, anal surgery, D&C, appendectomy, and laparoscopic tubal ligation.<sup>1,5,6</sup> In a recent study of BC’s GPS-only programs, Dr. Humber found a procedure volume of approximately 200 total procedures per year in each rural surgical program.<sup>4</sup> These and other studies have measured the average number of procedures done each year in each of these rural surgical programs for many of these common surgeries – appendectomy (8/yr), herniorrhaphy (11/yr), cesarean section (17/yr).<sup>3-6</sup> The larger rural surgical programs with a specialist presence (“mixed” model) provide a larger volume of these services (2-3 times more) and a broader range of services (cholecystectomy).<sup>4</sup>

The small volumes of these programs are associated with important issues in the sustainability of GPS rural services:

- Small volumes generate maintenance of competency problems for the professional staff;
- Small volume practices might be less attractive to physicians and nurses wishing a more intensive application of their skills;
- Small volumes restrict the numbers of skilled providers who can be supported by the local service demand – this presents vacation and on call relief problems;
- Small volume programs are associated with high unit costs. The physical plant, anesthetic equipment, and on-call coverage must be maintained 24/7 regardless of the low utilization of the OR.

However, these small volume programs are not associated with poorer outcomes. There are no studies that document improved outcomes in surgical programs with larger volumes for the procedures usually performed in rural Canada. US data show that, for 9 specialized surgeries, better outcomes occur in larger volume centres.<sup>7</sup> In a Canadian study that attempted to replicate these findings only 3 of the 9 highly specialized surgeries actually showed improved outcomes for high volume centres. None of these surgeries are performed in rural Canada.<sup>7</sup>

## **Safety of Small Volume Programs**

There is a growing body of evidence to support the safety of GP Surgery. This includes cesarean section,<sup>9-16</sup> appendectomy,<sup>8,17,18</sup> gastroscopy,<sup>19-21</sup> colonoscopy,<sup>22-26</sup> and anesthesia.<sup>27</sup> Deutchman found the number of procedures to maintain competence in cesarean section to be low – between 5-23.<sup>10</sup> The safe outcomes of GPS in part reflect their inclination and ability to refer more complicated cases. Iglesias<sup>8</sup> compared outcomes for 4,587 appendectomies performed in rural hospitals by specialists and GPS. Most outcome measures were the same (mortality, length of stay, diagnostic accuracy rate, transfer rate). However, the patients operated on by specialist surgeons were older, more likely to have comorbid illness, more likely to have a perforation, and more likely to require a return to the operating room. The authors concluded that this reflected the ability of the GPS to identify and to refer the more complicated patients.

In addition, there is a widely held cultural perception that rural communities have been well served by their GPS. This was documented very clearly, first by Chiasson and Roy in their survey of rural hospitals in western Canada<sup>1</sup> and then repeated by Hayes in a similar Australian survey.<sup>28</sup>

Finally, there is no published evidence in the world literature that shows outcomes for GPS in these small volume rural surgical programs are less safe than for specialist surgeons in programs with larger volumes.

## **The Sustainability of Rural Maternity Care**

Without local cesarean section capability, many rural hospitals choose not to provide a local maternity care service.<sup>29</sup> Among those that continue to provide local maternity care without local cesarean section, patient outflows to referral centres range from 45-97% (median outflow is 80%).<sup>14</sup> These rural maternity care programs are not likely to be sustainable.<sup>30,31</sup> There is evidence from the maternity care literature in the rural US that high outflow communities (> 67% traveling for care) are at high risk of closure.<sup>32</sup> This puts at risk most, if not all, rural units attempting to offer local maternity care without local cesarean back up.

*Emerging evidence and experience suggests that GPS are an important, if not critical, human resource underpinning the maintenance of sustainable maternity services in rural Canadian communities.<sup>31</sup>*

While there is now a solid evidence base for linkages between rural maternity care and rural surgical programs, it is possible that other local health care programs are also dependent on the support of surgical services. For example, there are strong intuitive and theoretical reasons to identify critical care, trauma, emergency room, and the recruitment and retention of medical staff as linked to the presence of a sustainable rural surgery program.

### **Attrition of Rural Surgical Programs and Services in British Columbia**

In 2000 there were 20 rural surgical programs in BC.<sup>2</sup> By 2004, there were only 15 remaining.<sup>6</sup> Over the same time period there were significant reductions in service level in many of the remaining programs.<sup>5</sup> All of this attrition has occurred in the small volume GPS-only programs serving populations of 5,000-15,000. Research in progress has identified serious instability in many of the remaining programs.<sup>33</sup> Only 3 of the remaining GPS-only programs seem to have a secure future (see Map 1 – Rural Surgical Services in BC). It is possible that we are witnessing the unraveling of the infrastructure of rural health care.

These rural surgery programs are the cornerstone of rural hospital-based care. There have been large scale studies that link the presence of these programs to the sustainability of rural maternity care.<sup>7,30,31</sup> The availability of surgical services plays an important role in the economic development and sustainability of rural communities. These are often strategically situated astride important, and vulnerable, transportation corridors, and are networked to agriculture, resource, tourist, and industrial economic activities. It is reasonable to expect there to be important health, economic, and social consequences to the erosion of these services.

### **The Health Human Resource Crisis in BC's Rural Surgical Programs**

There is currently a human resource crisis in the supply of GPS to staff BC's rural surgical programs. While BC has no formal training program for GP Surgery, the Advanced Skills program in UBC's Department of Family Medicine has offered ad hoc training programs in surgery to candidates sponsored by rural communities that have identified a need for local services. Over the past 15 years, there have been 7 rural physicians trained to perform cesarean section of which 3 continue to perform these services in rural BC (Smithers, Revelstoke)<sup>2</sup> and 1 in rural Alberta (Hinton). There have been 4 rural physicians trained in a 12 month program to do both general surgery and operative delivery. Only 1 of these continues to be a full practice rural GP Surgeon (Lillooet).<sup>33</sup>

With an aging workforce of GPS,<sup>6</sup> the imminent retirement of several BC GPS has put in jeopardy several small volume rural programs.<sup>33</sup> As presently constituted, the BC training programs do not appear to have sufficient capacity to replace these GPS. Equally problematic, without any mechanism to evaluate and credential surgical training acquired overseas by IMG family physicians, the historically predominant source of supply for GPS is much more difficult to access.

Ongoing research has identified significant problems with present training models which have restricted practice opportunities for GPS and, potentially, have discouraged new applicants (there have been no applications for ad hoc training in surgery or operative delivery since 2003). In a large current research project, funded by the Michael Smith Foundation, a research team has visited 10 GP Surgery communities, plus interviewed by telephone a further 18 GPS in BC and Alberta. Their findings, still to be published, have identified several issues which could be addressed by a new GP Surgery training program<sup>33</sup>:

- Training has been more successful where there is no competition from surgery residents;
- Without supportive surgery mentors, the trainees find themselves in hostile training environments;
- Without a standardized curriculum in a formal accredited training program, the Health Authorities have faced serious problems with credentialing and privileging the trainees;
- Without a standardized curriculum in a formal accredited training program, the skill set is not portable between rural communities;
- Without any postgraduate programs for professional support and continuing professional development, the trainees are isolated when they leave their training programs.

### **Lessons Learned from GP Anesthesiology**

Rural surgery programs in Canada are supported by approximately 540 GP Anesthesiologists (50 in BC) trained in a 12 month Family Medicine postgraduate program at several of Canada's medical schools (UBC has 3 spots). There are more GPA than GPS because the GPA support the rural, and sometimes regional, specialist surgical programs.

Serious concerns over the sustainability of GPA services began to be raised in the mid 1980's.<sup>27,34</sup> There were reductions in the number of training positions and the available positions were undersubscribed. There were controversies about curriculum and length of training. Morale amongst Canada's GPAs was low. They felt isolated without either professional support or opportunities for continuing professional development. One study measured the average practice life of a GPA to be five years.<sup>35</sup>

Two invitational conferences – 1988<sup>36</sup> and 2001<sup>37</sup> – were convened to address these problems. Out of these have come a Joint Position Paper<sup>27</sup> and the present cooperative working arrangement – the Collaborative Committee on Anesthesiology (CCA) – between the Canadian Anesthesiology Society, the Society of Rural Physicians of Canada, and the College of Family Physicians of Canada. The CCA believes it can best support practicing GPAs through four main mechanisms:

- Supporting the development of national standards of training and accreditation;
- Supporting the development and promotion of continuing medical education opportunities that are appropriate for rural GPAs;
- Supporting the development of rural-appropriate clinical practice guidelines; and
- Developing ways to reduce the professional isolation of rural GPAs.

### **Summary**

Currently in rural BC, there is an erosion of surgical services in the small volume programs serving communities of 5,000-15,000. This is happening at the same time as we are witnessing an accumulation of evidence that supports the safety and outcomes of these programs. The loss of these services is important. The presence of local surgical services, in

addition to the direct benefits of comprehensive and continuous care, sustains local maternity care and, possibly, other local programs.

A significant factor in the loss of local services is the lack of a formal accredited program to train rural Family Physicians in surgery in any of Canada's medical schools. Historical training efforts to deliver surgical training to meet specific community needs have not resulted in the standardized curriculum with a portable skill set that is required to attract suitable candidates to a career path in rural GP Surgery. Equally problematic has been the professional isolation of the GPS practicing in rural BC.

There is both a need and evidentiary support for a new formal accredited training program for rural Family Physicians in surgery. To be successful, this program needs

- to offer a standardized core curriculum with a portable skill set suitable to the processes of credentialing and privileging with the Health Authorities, and
- to include a postgraduate program of professional support and continuing professional development.

A template for a successful program for GPS would be the GPA program.

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**Power Point Presentation**

**Rural Surgical Programs – What We Know**

- Environmental scan
- Low Volumes
- Safety
- Linkages-maternity care
- Attrition of services
- Health Human Resource Crisis
- Lessons from GP Anesthesiology

11/19/2007 1

**Environmental Scan**

- 76 rural surgical programs in western Canada(2000) Alberta(41);BC(20)
- Specialist Surgeons(22) and GP Surgeons(128)  
-2/3 IMG
- C/S (71.9%) Appy (61.8%) by GPS

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**Environmental Scan**

**Delivery Models**  
no local surgery

- < 5000
- 5-12000 GP Surgeons only
- 12-25000 Spec + GP Sx (Mixed Model)
- > 25000 Spec Sx only

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**LOW VOLUMES**

TOTAL SURGICAL PROCEDURES FOR ALL GP-SURGEON HOSPITALS PER YEAR

11/19/2007 4

**SCOPE OF PRACTICE**

11/19/2007 5

**Procedure Volumes - BC**

Procedure	Total	# of Hosp	Volume/hosp/yr
Hand Surgery	1035	8	26
C/S	917	11	17
Hernia	738	11	13
D&C	582	11	11
Appendectomy	347	9	8

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### Safety of GP Sx

- Outcome Studies
  - appendectomy, cesarean section, endoscopy
- Perception of Safety
  - Chiasson and Roy 1995
  - Hayes 2005

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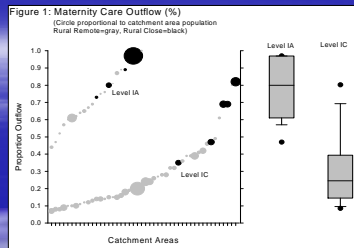
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### Linkages

- Maternity Care- sustainability is linked to local C/S
- ER/ICU ?
- Recruitment and Retention ?
- Ability and Inclination of Hospitals to Care for the moderately ill patients ?
- Community sustainability ?

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8



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9

### Linkages

"If we are able to provide surgical skills we also provide anesthetic skills. We have an operating OR, we are able to do that many more things and when you do more things, you're better at more things. And the more you do, the more you can handle and the better your medicine is."

11/19/2007

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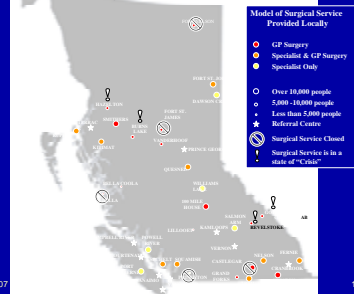
### Attrition of BC's Rural Surgery Services

- Program closures (Fort St James, Bella Bella, Princeton, Castlegar)
- Reduction in services (Hazelton, Burns Lake, Bella Coola, Golden, Nelson, Revelstoke, Grand Forks, Creston)
- Only a few without sustainability issues

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### Rural Surgical Services in BC



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### Human Resource Crisis

- U of Alberta closed its R3 GP Sx program(2004)
- No similar accredited program in any of Canada's medical schools
- Very difficult to credential surgical training of IMG's

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### Grande Prairie 1992-2002

- 16 Graduates
- 10 currently in full service rural surgery
  - Alberta (8)
  - BC(1)
  - Sask(1)

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14

UBC 1992-2002

28 Trainees

7-- learned C/S  
4 still providing C/S  
Hinton, Revelstoke(2), Smithers

4 – 12month surgery plus OB  
1 still in rural surgery

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What the GPS Told Us

- Hostile training environments
- Importance of mentors, relationships with referral hospitals
- Credentialing and privileging is difficult
- Skill set isn't portable
- No CME
- Professional isolation

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Lessons Learned-GP Anesthesia

- Standardized curriculum
- Portable skill set
- Certificate of successful completion
- CME
- Professional support

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## Discussion:

*Following Stuart Iglesias' presentation, participants posed a number of discussion questions on the subject of deteriorating rural surgical services, highlighting in particular the costs of regionalization, community fragmentation, cultural impact, and the importance of preserving rural maternity care:*

### *Financial costs*

- Has any research been done on GPS and reducing wait lists in regional areas or on the cost effectiveness of doing surgery locally versus sending patients to referral centres?
- What is the impact of taking work away from regional centres? What are the key negative impacts of high outflow centres?
- A study conducted by the Northern Health Authority considered the cost of appendectomies in the rural community of Vanderhoof compared to its regional centre, Prince George. The study found that appendectomies were more cost effective when performed in Vanderhoof than in Prince George, and that wait times were also shorter when the procedure was performed locally.

### *Social costs*

- In addition to financial costs, expectant mothers and their families and communities are affected by rural surgical and referral programs. A study by the Centre for Rural Health Research found that stress and other psychosocial costs were

- experienced by pregnant women and their families traveling to referral centres for access to maternity care services.
- Expectant mothers are advised to leave their communities for the referral centre 4-6 weeks before their expected due date placing unreasonable financial burdens on families due to lost work opportunities, living expenses, and costs for family and labour support.

#### *Cultural impact*

- Jude Kornelsen expressed that First Nation communities experience a deep cultural impact as a result of taking birth out of the community. This causes the community to experience only death locally. Therefore the traditional circle of life, which is evidenced in many First Nations cultures, is not witnessed.

#### *Health impact*

- There are health outcomes that cause women greater stress, leading to increased rates of cesarean section services and social inductions.
- Patients are reluctant to have elective or urgent surgeries outside of their communities and tend to put off such procedures because they do not like the experience of traveling and waiting at a hotel in preparation for a surgery.

#### *Sustainability*

- For the rural community's medical staff, high outflow prevents building confidence and local surgical skills. From the physicians' perspective, it is stressful to try to decide who should stay and who should be transferred.
- When a rural community's service is already fragile, all it takes is one care provider to say, "I don't want to do this," and maternity services end. Once the program is closed, it is difficult to reopen.

Michael Klein concluded the discussion with a general observation that when you start losing maternity care you lose what it takes to make a town. Though the medical community is not responsible for the community's integrity, there are consequences to medical decisions.

## II. What We Need to Know

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### 1. What We Need to Know

*Nadine Caron*

#### Overview

*In the first of her two presentations on rural surgical services, Dr Nadine Caron articulated the gaps in current evidence through a list of research questions. Although the research outlined by Dr Iglesias in the previous discussion demonstrates that there is a knowledge base, particularly in maternity service, from which to advance future research in rural surgical services, Dr Caron shows that there is a need for evidence regarding outcomes of patients who are required to travel for specialized surgeries to show the importance of local, rural care. She also states that researchers need to analyze the outcomes of procedures based on different training levels of GP Surgeons, the procedure volumes of rural practices, and itinerant surgery. These findings would lead to better evidence-based decision making for improving training and services for rural surgical programs.*

\* \* \*

#### Research Questions

- **Outcomes** – How do outcomes compare between programs in which all patients are obliged to travel for care (no local surgical services) and those in which low risk patients receive surgical services in local programs? There is evidence from the maternity care literature that the worst outcomes are found in those rural programs where all women are obliged to travel out of their community for care. Similar studies have not been done for surgical services.
- **Linkages** – Are there rural health care programs, other than maternity care, where positive outcomes are linked to the presence of a sustainable local surgical program? There are intuitive reasons why we might expect rural emergency, trauma, and critical care programs, as well as recruitment and retention programs for professional staff, to be related to the presence of local surgical services.
- **Training** – Are the outcomes of procedures performed on a similar patient population by rural Family Physicians with a 12-month training program in surgery comparable to outcomes of procedures performed by rural specialist surgeons or by the international medical graduate (IMG) surgeons with foreign fellowships? Because of methodology and privacy issues associated with small numbers, and because the information on level of training has not been available in Canada's administrative databases, this crucial comparative data is not available.

- **Economics** – What are the costs and benefits of a local surgical program when compared to the costs and benefits of regionalizing surgical care?
  - **Volumes and Scope of Practice** – What are the formulae that translate scope of practice and population base into an expected procedural volume for a rural surgical program? Is there a minimum scope of practice (procedure volume) below which a rural surgery program becomes unsustainable? A corollary question is whether a stand-alone cesarean section program, representing an effort to support local maternity care, is sustainable?
  - **Itinerant Surgery** – What role does itinerant surgery play in the sustainability of rural surgery programs?
- 

## **Discussion:**

*The discussion following Nadine Caron's presentation highlighted the group's interest in improving support and training for GP Surgeons. The participants first addressed the current relationship between general practitioners and the surgical specialist community, and then turned to the challenges faced by Family Physicians in becoming GPS. Some of the themes discussed were:*

### *Surgical community*

- What are some of the obstacles that specialists pose and what is the critical mass or tipping point for creating a push back on the part of GPS and others?
- Some members of the surgical specialist community hold concerns and/or negative perceptions regarding GPS (length/level of GPS training, responsibility for poor surgical outcomes, reducing specialist procedure volume, financial loss). Such perceptions have been addressed in part by Dr. Humber's work detailing the actual scope of surgery for GP Surgeons and educating people on what a GP Surgeon does.
- GP Surgeons have demonstrated judiciousness in referring to specialists; there is no desire on the part of GP Surgeons to deal with complex cases.

### *Regional centre relationships*

- Some of the benefits of having strong relationships between regional centre specialists and GPS include a clear understanding by the specialists of the capacity, skills, and training of the GPS, thereby engendering confidence.
  - It would be advantageous to see the outcomes and costs of transfers from GP Surgeons versus keeping a patient in the rural surgical setting.
  - We could also explore the quality of relationships and interactions between GP Surgeons and their referral communities, for example between Prince George and Vanderhoof surgeons.
-

#### *GPS training*

- If a GP Surgeon training program was created, sustainable networks of potential recruits would be needed to support rural surgical programs. Are there prospective recruits to training programs? If we build a surgical training program, is anyone interested?
- Are there general surgeons who are prepared to support this? In Prince George, the UNBC surgical club's most recent info session was on GP Surgery and medical students expressed an interest in the potential program.
- A training program for GP Surgeons could be offered as a re-entry for GP's. However, it would be difficult for the individual and her community if she were to leave to do the training. Recruits may have concerns about the impact on their lifestyle.

#### *Keys to GPS success*

- To facilitate the entry of trained GP Surgeons into rural communities, physicians should be given a clear understanding of the challenges and lifestyle of rural practice. We need examples of functional communities that have GP Surgeons.
- In order to create successful GP Surgeon training programs, there needs to be a dynamic of confidence in the medical community that rural surgical services work effectively. The current system works because of dedicated individuals.
- The challenge is to build a program that is attractive to the average practitioner and average community, not just the "superhero," and that has an infrastructure that will be sustainable in the long term.

#### *Challenges*

- System influences and system forces from regional health authorities have affected rural surgical services.
- In historical and anthropological contexts, North America has had an unfettered love of specializations.
- There is a perception that GP Surgeons are only a temporary solution filling the gaps until a specialist is available.
- There is a need to show that GP Surgeons provide good care and benefits are gained from the continuous relationship that GPS have with their patients.

#### *Teamwork*

- Beyond GP Surgeons, rural surgical services depend on an entire team, including anesthesiologists and nurses, all of whom need to be included in the discussion.
- Support is also needed from Health Authorities.

## Planning Allocation and Level of Maternity Service for Rural BC Stefan Grzybowski and Jude Kornelsen

### Overview

To date, decision making for maternity care services in BC has not relied on systemic planning and has often responded to a local or regional sense of crisis. Drs Grzybowski and Kornelsen presented their findings from two projects: 1) Planning Allocation and Level of Maternity Service for Rural BC, and 2) GP Surgery within Regionalized Health Care. The first presentation introduced the Rural Birth Index (RBI), a tool designed to estimate/predict the appropriate level of maternity services for a given population based on population characteristics and isolation score. With the goal of providing a benchmark for rural maternity health service planning, the RBI is based on intensive research in 21 rural BC communities and was designed using an iterative, mathematical approach theoretically informed by complex adaptive systems theory. This research links with the issue of GP Surgery by attempting to predict the appropriate level of sustainable maternity service for a rural community based on population need. The second presentation, on regionalization, follows the RBI Power Point slides below.

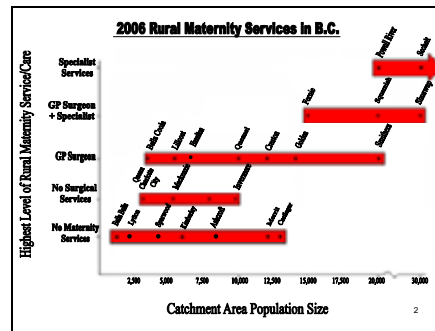
### Power Point Presentation

**Planning allocation and level of  
maternity service for rural B.C.**

DFP 2007

Stefan Grzybowski MD & Jude Kornelsen PhD  
Centre for Rural Health Research,  
UBC/VCHRI

Logos for the University of British Columbia, Centre for Rural Health Research, and other affiliated organizations are visible at the bottom.



### The RBI Model

A health service delivery tool to determine where maternity care services should be placed in rural British Columbia.

3

### Methodology

- Complex adaptive systems modeling recognizing that small rural maternity health services are at the edge of the complexity of health systems
- Privileging the dominant nature of population need and degree of isolation in predicting level of service for small rural populations
- Comparing service levels for rural BC hospitals to RBI scores to establish the phase transition points (the derivation sample)

4



### Birth rate

The Birth rate is transformed into a Population Birth Score (PBS).

**Population Birth Score (PBS):**

Average # of births in catchment area of hospital over 5 years divided by 10.

5

### Adjustment for Population Vulnerability (APV)

Social vulnerability is represented by a score derived from a BC stats composite score (range -1 to +1) of several social indicators\* and is weighted in the RBI between:

0.8 (advantaged) to 1.4 (disadvantaged)

\* Overall regional socio-economic index including levels of: human economic hardship, crime, health problems, education concerns, children and youth at risk.  
[www.bcstats.gov.bc.ca/data/sep/1\\_lha/lha\\_main.asp](http://www.bcstats.gov.bc.ca/data/sep/1_lha/lha_main.asp)

6

### RBI Model: Proximity to nearest cesarean section service

**Measured by an Isolation Factor (IF):**

Surface travel time is weighted as follows:

- < 30 minutes = -3
- 31-45 minutes = -2
- 46-60 minutes = -1
- 61-90 minutes = 1
- 91-120 minutes = 2
- 2-4 hours = 3
- > than 4 hours = 4

\* If cesarean section provided locally then distance to next service is calculated as if existing local service was closed.

7

### RBI Formula

$$RBI = (PBS \times APV) + IF$$

RBI: Rural Birthing Index  
 PBS: Population Birthing Score  
 APV: Adjustment for Population Vulnerability  
 IF: Isolation Factor

8

### What does the RBI Score mean?

The calculated score corresponds to the appropriate level of service for a given rural service catchment population:

- 0-6.5:** No local intrapartum services
- 6.5-9:** Local intrapartum services without operative delivery
- 9-14:** Local GP Surgical Services
- 14-27:** Mixed model of specialists and GPS
- >27:** Specialist service

9

### RBI Model: Limitations

- Intended for application to rural populations of under 25,000 and has been developed within the context of British Columbia's geography and health policy structure.
- Population and Birth data is reported using Local Health Area mapping rather than 1 hour surface travel time.
- The adjustment for population vulnerability is an average across the LHA and may underestimate the degree of vulnerability of the women who will make up the parturient population.

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### Summerland



11

### Summerland

**Data:**  
 Average # of births (5 years): 71 →

**RBI Factors:**  
 PBS: 7.1

Socio-economic Status: -0.79 → Adjustment for Population Vulnerability (APV): 0.84


Travel Time to cxion: 17 minutes → Isolation Factor (IF): -3

**RBI = (7.1 X 0.84) - 3 = 3.0**

**Recommended level of service: No Local Intrapartum Services**

12

### Merritt



13

### Merritt

**Data:**  
Average # of births (5 years): 105 → **RBI Factors:**  
PBS: 10.5

SIV: 0.87 → Adjustment for Population Vulnerability (APV): 1.35

Travel Time to cxion: 53 minutes → Isolation Factor (IF): -1

**RBI = (10.5 x 1.35) - 1 = 13.2**

*Recommended level of service: Local intrapartum services with operative delivery*

14

**Communities with Surgical Services Provided by GP Surgeons**

	Hospital Catchment Population	FBS	APV	Nearest C-Section Service	Travel Time	Isolation Factor (IF)	Rural Birthing Index (RBI)	Predicted Level of Service
Meridonke	6,393	7.6	0.95	Sakoue Arm	2hr 25m	1	8.1	B
Nelson	7,014	6.4	0.93	Chastford	2hr 05m	3	9.9	C
Grand Forks	10,992	7.2	1.01	Trail	2hr 45m	2	8.2	C
Lillooet	4,600	7.4	1.21	Kootenay	2hr 55m	3	9.8	C
White Knobs	3,594	6.6	1.23	Williams Lake	~80m	4	6.9	C
Kilmer	11,721	10.1	0.97	Sumas	2hr 05m	1	11.1	C
Vanderhoof	6,000	10.1	1.20	Prince George	2hr 15m	1	11.2	C
100 Mile House	14,045	10.2	1.05	Williams Lake	2hr 25m	1	11.7	C
Brew Lake	7,889	8.9	1.18	Vanderhoof	2hr 25m	2	12.3	C
Crosby	12,961	12.0	0.98	Chastford	2hr 25m	2	11.8	C
Fort Nelson	6,742	9.3	1.06	Fort St. John	~80m	4	11.9	C
Smithers	18,085	22.4	0.97	Timber	2hr 45m	3	24.8	D

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- ### Three-stage planning process for Rural Maternity Care Services
1. Projecting the appropriate service level to meet the needs of a given community based on size of birthing population and degree of isolation using the Rural Birth Index (RBI);
  2. Assessing the feasibility of implementing the proposed model of care based on community characteristics;
  3. Considering potential implementation within the planning priorities of the Health Authority.
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