The Sustaining of Small Rural Surgical Services in British Columbia

A report commissioned by the Joint Standing Committee on Rural Issues

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February 1st, 2013

Contents

Overview

Over the past 10 years many local perinatal surgical services in rural British Columbia have closed or reduced services. The purpose of this overview is to present recommendations for sustaining small rural perinatal surgical services in British Columbia in keeping with recommendations of the Joint Position Paper, Rural Maternity Care (SOGC, CFPC, CAM, SRPC, CAPWHN)., released in October 2012

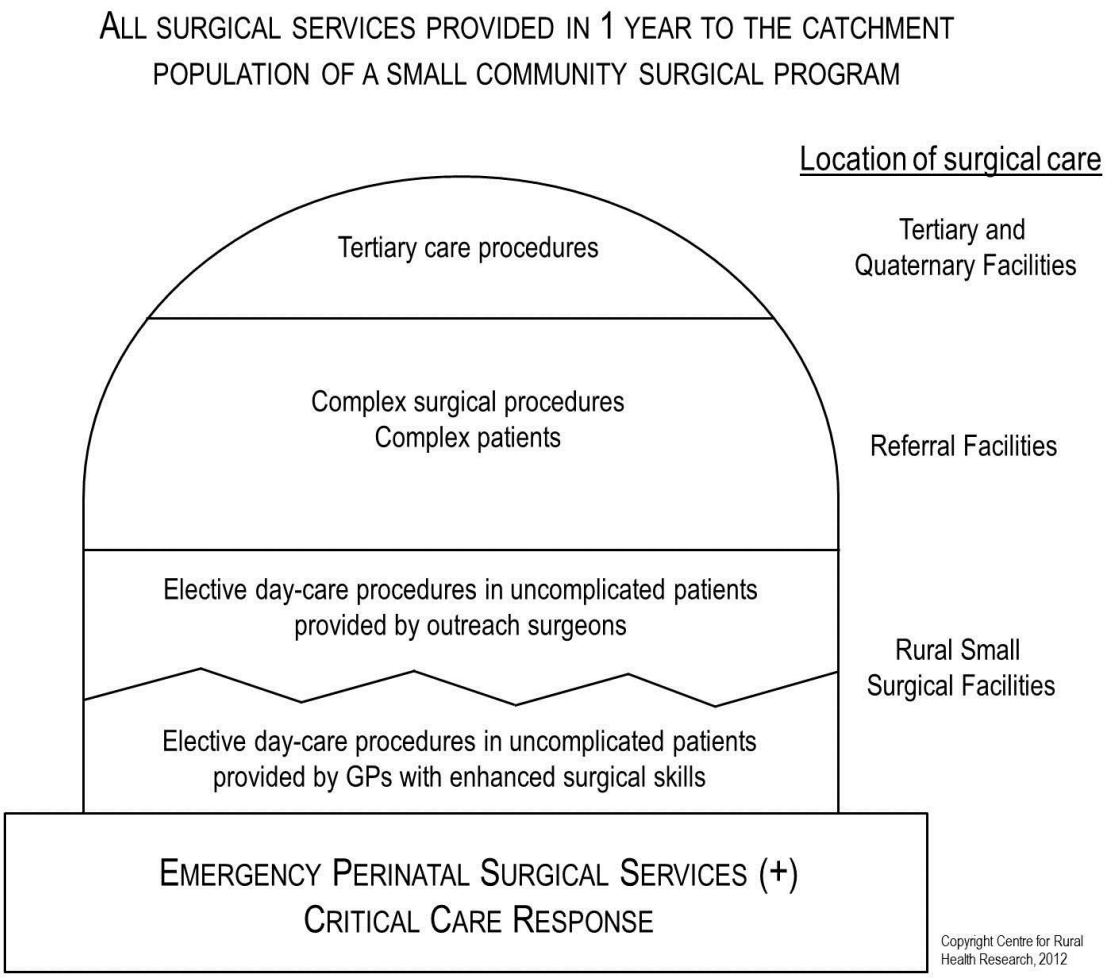
Sustaining small rural perinatal surgical services is based on the following principles:

- As a provincial health service, we need to sustain a 24/7 surgical perinatal program in order to provide safe and effective maternity services to small communities;
- In order to provide the on call program, we need a well-functioning local OR team and an appropriate local surgical infrastructure;
- Maintaining the skills and team morale of the community surgical providers necessitates a surgical program of adequate size;
- Efficient use of the local community surgical infrastructure also necessitates providing an expanded local surgical program beyond on-call perinatal surgical care. This enhances services to the local population and decreases patient travel;
- While a standalone surgical program is an option, where possible a program integrated with the referral community has many advantages including increased number of local procedures, increased surgical activity for the local team, and efficiencies associated with increased use of local surgical infrastructure. This may also lead to increased retention of local surgical providers.

Recommendations arising in response to this rationale are:

- The health care needs of community catchment populations should be met as close to home as possible and in the most efficient way possible;
- Defining small hospital geographic catchments and linking population outcomes to those catchments is the basis for continuous quality improvement in health services;
- The foundation of small surgical services is the provision of a 24/7 perinatal service program to support local maternity care and the availability of critical care services provided by GP Anesthetists in the emergency room;
- The provision of an elective surgical service on site is necessary in sustaining the skills and competence of local surgical providers;
- Where possible and practical, the scope of practice of the elective surgical program should be a blend of procedures provided by outreach surgeons from referral centres and local providers;
- Diagnostic and surgical equipment should be accessible in small surgical services relevant to the degree of clinical need;
- Surgical programs should ideally be organized regionally in an integrated manner encouraging close collaboration between referral hospital surgical teams and small rural hospital providers;
- Continuing Medical Education and Continuing Professional Development should be integrated into the quality management framework of small surgical serves such that outcomes across the system inform opportunities for education;
- When possible, education should be provided in an outreach and interprofessional manner in small communities and informed by outcomes data for the surgical system.

Conceptual Framework



Executive Summary

The Problem

Small rural communities with local surgical services have experienced increasing challenges to maintain services over the past 15 years in British Columbia.[1-6] Many have seen the range of surgical procedures provided at the hospital contract to the point where some facilities are primarily providing caesarean sections. A further challenge has been trying to provide 24/7 surgical coverage with a limited number of operating room nurses, General Practitioner (GP) anaesthetists, and GPs with enhanced surgical skills.[7] This situation only seems to be worsening as the current cohort of providers reaches retirement. The decline of these surgical services has created significant problems of access for the rural populations that live in the affected communities and even greater challenges for smaller satellite communities that naturally drain into these small hospitals. Recent population-based evidence on maternal and newborn outcomes demonstrates that outcomes are better for women and their newborns if they can access services in their home community and that local obstetrical surgical services make an important difference to the proportion of women who can be delivered in their home community (on average >75% vs. <30% if maternity services are provided without local caesarean section).[8] These findings align closely with recent policy initiatives that have stressed the importance of providing services as close to home as possible; the first recommendation put forth by the SOGC Joint Position Paper on Rural Maternity Care (2012) states "women who reside in rural and remote communities in Canada should receive high-quality maternity care as close to home as possible."[9]

The purpose of this report is to present findings from a consultative process that was undertaken with the communities in question and other regional stakeholders August 1, 2012 – November 15, 2012.

The focus of this work is on perinatal surgical services. Evidence clearly demonstrates that sustaining rural maternity services leads to better maternal – newborn outcomes for the population and that the availability of local cesarean section back-up is a key component to sustainability. The importance of sustaining rural perinatal services has been affirmed in a joint position paper by Society of Obstetricians and Gynecologists of Canada, College of Family Physicians of Canada, Canadian Association of Midwives, the Canadian Association of Perinatal and Women's health Nurses and the Society of Rural Physicians on Canada (October 2012). The

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[1] Hutton-Czapski P. Decline of obstetrical services in northern Ontario. *Canadian Journal of Rural Medicine*, 1999; 4(2): 72-76.

[2] Hutton-Czapski P. The state of rural healthcare. Presentation to the Standing Senate Committee on Social Affairs, Science and Technology, 31 May 2001.

[3] Nesbitt T, Connell F, Hart G, Rosenblatt R. Access to obstetric care in rural areas: effect on birth outcomes. Am J. Public Health, 1990; 80(7): 814–818.

[4] Church J, Barker P. Regionalization of health service in Canada: a critical perspective. Int J Health Ser; 1998; 28(3): 467-486.

[5] James AM. Closing rural hospitals in Saskatchewan: on the road to success? Social Sciences Medicine, 1999; 49(8): 1021-1034.

[6] Humber N, Frecker T. Delivery models of rural surgical services in British Columbia (1996–2005): are general practitioner–surgeons still part of the picture? Can J Surg, 2008; 51(3): 173-8.

[7] Kornelsen J, Iglesias S, Humber N, Caron N, Grzybowski S. GP Surgeons' Experiences of Training in British Columbia and Alberta: A Case Study of Enhanced Skills for Rural Primary Care Providers. Canadian Medical Education Journal. In press.

[8] Grzybowski S, Stoll K, Kornelsen J. Distance Matters: A Population based study examining access to maternity services for rural women. BMC Health Services Research, 2011; 11:147-153.

[9] Joint Paper on Rural Maternity Care. Co-authored by the College of Family Physicians of Canada, The Society of Obstetricians and Gynaecologists of Canada and the Society of Rural Physicians of Canada. Canadian Journal of Rural Medicine, 2012; 17(4).

recommendations to sustain local perinatal services in rural communities were based on a review of the evidence demonstrating better outcomes for mothers and newborns when local services are available. See *SOGC Joint Position Paper, Rural Maternity Care*

The Methods

Literature relevant to sustaining small surgical services was reviewed.
Local on-site consultations were done with key health care providers and administrators in the communities of Golden, Fernie, Creston, Revelstoke, Lillooet, 100 Mile house, Hazelton, and Fort Nelson. The consultations were framed by the questions, 'What are the challenges facing the survival of surgical services in your community,' and 'What potential solutions do you see to increase sustainability?' Small surgical service visits were supplemented by a visit to one regional referral centre, Cranbrook, to discuss evolving ideas related to an overarching East Kootenay's analysis of surgical services that had evolved from the discussions.

The Results

Analysis of the interviews was done by separating findings into general systems issues relevant to all small surgical services and potential solutions to sustaining individual sites. As potential solutions varied, we have presented recommendations for sustainability through a series of scenarios. As three of the sites are located in one health service delivery area, an additional set of scenarios was developed specifically for the East Kootenays.

Themes and Recommendations Related to General Systems Issues:

Section A: The health services management context for small surgical services

1. The effects of regionalization on rural surgical services
2. Relationships between referral community surgical services and surrounding small satellite surgical services

Recommendations

1. That a strong statement of support be made by the relevant regional health authority recognizing the valuable role provided by small surgical services for their communities, particularly the maternity programs.

2. That surgical procedures be provided in the closest operative facility to the patients' residence, respecting the complexity of the procedure, the risk status of the patient, and the availability of surgical providers with procedural competency.

3. That surgical care be viewed as a regional, rather than institutional, phenomenon; that Consequently, the scope of practice and resources needed to implement surgical programs be organized regionally; that small ORs become outreach extensions of core

referral hospital surgical programs; and that the organization of services respect the sustainability of both the regional referral services and the smaller services.

4. That the degree of integration of the program of regionalized operative care be dependent upon the degree of isolation of the smaller service. Broadly speaking, highly integrated communities would be relatively proximal to referral communities (e.g., Vanderhoof) and more isolated communities would be more challenging to access (e.g., Fort Nelson). Different outreach surgical models will apply.

5. That surgical providers and programs be used to the limits of their competencies, and operating room time be provided at the smaller sites, in response to the level of need of the population, where possible and practical.

Section B: Scope of practice and maintenance of surgical infrastructure

1. *Scope of practice of a small surgical service*
2. *Community resources available to support the surgical program*

Recommendations

1. That continuous perinatal surgical services (24/7 C-section backup) be maintained at the small community hospitals.

2. That small surgical services be structured to meet the procedural needs of the catchment population to the limits of the surgical competency of the local providers and local surgical resources. Optimally, services would be provided through a well-integrated and balanced surgical team, which includes outreach surgeons and local surgical providers. Surgical competency could be enhanced by regular rotation of small service team members through a larger referral centre,.

3. That in sites funded through alternative payment models, performance incentives be introduced to support enhanced skills service provision (obstetrics, surgery, anaesthesia, oncology, palliative care (e.g., Hazelton).

Section C: Training and maintenance of competence of small surgical service teams

1. Recognizing the differences between practice in a small rural and urban settings and the implications for training and maintenance of competence

2. Interprofessional care models in rural practice

Recommendations

1. That training programs for rural nurses be strengthened recognizing the broad skillset and multifaceted nature of rural nursing. Once in practice in a small rural community, the more education and skill building that can be provided on site the better. Potential pedagogical strategies include electronic distance education, and outreach interprofessional education provided on site.

2. That small service surgical team skills and competencies be built and maintained through an integrated educational program with local referral hospitals. This can be accomplished both through outreach and by rotating small service surgical team members through the referral community's surgical program. Potential strategies for program funding are outlined below

3. That the planning of educational opportunities be linked to the quality improvement monitoring program, at both the site and system level (i.e., when a significant issue arises leading to educational opportunity at one small surgical site this information could be networked across the sites.)

Section D: Data monitoring and quality management

Recommendations

1. That population catchment areas around each surgical facility for core surgical services be established, and that expanded catchment zones for more complex surgery and more complex surgical patients.be defined for the referral centres that overlap the smaller facilities' catchments

2. That surgical utilization and outcomes data be linked to service population catchments, and a performance monitoring system for each surgical service be established, using the population rather than the facility. The location where procedures are done becomes an outcome.

3. That timely and regular feedback is provided to the individual services within a quality improvement envelope.

4. That the feasibility of creating community advisory committees and tasking them with supporting the quality of care in the community service catchments is explored.

Section E: Potential funding mechanisms

Recommendations

1. That rural physicians with enhanced surgical skills and GPAs be informed about the potential of funding support through REAP for skill maintenance.

2. That the JSC consider creating a new program to support maintenance of skills of rural GPAs and GP/surgeons

3. That the potential for interprofessional outreach surgical educational and mentorship activities extended from the regional referral hospital to the small surgical sites on a regular basis (annually or semi-annually) is explored, and that the possibility of using RCME or reverted RCME funds to pay for this program is examined.

4. That an integrated system of opportunity is built for small surgical service OR nurses to rotate through referral centers in order to update skills and that this activity be funded through the health authority (including First Nations HA where relevant) or a public-private partnership with industry.

5. That the potential of accessing funding support for small surgical service infrastructure from public-private partnerships with rural industry be explored.

Section F: Managing the system of small surgical services

Recommendations

1. That the JSC examine the options for a provincial networking and coordinating structure to support small surgical services and implement the most appropriate solution.

2. That the interface between the existing RCCbc provider focused networks and a small rural surgical systems network be explored.

Introduction

Overview

This consultative report, commissioned by the Joint Standing Committee on Rural Issues (MoH/BCMA), set out to answer the question "What are potential mechanisms for sustaining small rural perinatal surgical services in British Columbia?" Through a series of on-site consultations with the target communities (Creston, Golden, Revelstoke, Fernie, 100 Mile House, Lillooet, Fort Nelson, and Hazelton) potential planning scenarios have been developed for each community, as well as for the East Kootenay region, and potential funding alignments have been proposed.

The focus of this work is on perinatal surgical services. Evidence clearly demonstrates that sustaining rural maternity services leads to better maternal – newborn outcomes for the population and that the availability of local cesarean section back-up is a key component to sustainability.[9-18]The importance of sustaining rural perinatal services has been affirmed in a joint position paper by Society of Obstetricians and Gynecologists of Canada, College of Family Physicians of Canada, Canadian Association of Midwives, the Canadian Association of Perinatal and Women's health Nurses and the Society of Rural Physicians on Canada (October 2012). The recommendations to sustain local perinatal services in rural communities were based on a review of the evidence demonstrating better outcomes for mothers and newborns when local services are available. See *SOGC Joint Position Paper, Rural Maternity Care.*

[10] Iglesias A, Iglesias S, Arnold D. Birth in Bella Bella: emergence and demise of a rural family medicine birthing service. *Canadian Family Physician*, 2010;56(6):e233–40.

[11] Lynch, N., Thommasen S., Anderson N., & Grzybowski S. (2005). Does Caesarean section capability make a difference to be a small rural maternity service? *Canadian Family Physician*, 51, 1238-1239.

[12] Kornelsen, J., Grzybowski, S., & Iglesias, S. (2006). Is local maternity care sustainable without general practitioner surgeons? Canadian Journal of Rural Medicine, 11 (3), 218-220.

[13] Chaska BW, Mellstrom MS, Grambsch PM, Nesse RE. Influence of site of obstetric care and delivery on pregnancy management and outcome. *J Am Board Fam Pract* 1988;1:152– 63.

[14] Rosenblatt RA, Reinken J, Shoemack P. Is obstetrics safe in small hospitals? Evidence from New Zealand's regionalized perinatal system. *Lancet* 1985;2:429 –32.

[15] Viisairen K, Gissler M, Hemminki E. Birth outcomes by level of obstetric care in Finland: A catchment area based analysis. *J Epidemiol Community Health* 1994;48:400 –5.

[16] Klein MC, Christilaw J, Johnston S. Loss of maternity care: the cascade of unforeseen dangers. *Can J Rural Med* 2002;7(2):120–121.

[17] Allen DT, Kamradt MS. Relationship of infant mortality to the availability of obstetric care in Indiana. *J Fam Pract* 1991; 33: 609– 613

[18] Nesbitt TS, Larson EH, Rosenblatt RA, Hart LG. Access to maternity care in rural Washington: its effects on neonatal outcomes and resource use. *Am J Public Health* 1997;87(1):85–90.

The context

Small rural communities with local surgical services have experienced increasing challenges to maintain services over the past 15 years in British Columbia.[1-8] Many have seen the range of surgical procedures provided at local community hospitals contract significantly, with, in some instances, caesarean sections being the last procedure keeping operating rooms (ORs) open. Local commitment to Caesarean sections (C-section) is due to the wide-spread recognition that community-based perinatal services are a cornerstone to positive health outcomes for rural women and their newborns and that it is difficult to maintain a maternity service without local backup to C-section.[20] However, these services present significant challenges to health service planners, including maintaining the requisite compliment of providers who feel confident with the currency of their skills (operating room nurses, GP anaesthetists [GPAs], and GPs with enhanced surgical skills.), providing appropriate and necessary opportunities for Continuing Medical Education (CME), Professional Development (CPD) and mentorship, and maintaining supportive links with specialist back-up in regional referral centers. If one of these pillars of sustainability atrophies, case examples have shown that the viability of the whole surgical mandate is compromised to the point of closure.[20] Closure of rural surgical services has been shown to not only compromise the perinatal outcomes of local residents but, significantly, creates even greater problems of access for smaller satellite communities that naturally drain into these small hospitals. A disproportionate number of these contiguous communities are First Nations, often creating an additional layer of complexity in the pathway to access services. .

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[1] Hutton-Czapski P. Decline of obstetrical services in northern Ontario. *Canadian Journal of Rural Medicine*, 1999; 4(2): 72-76.
[2] Hutton-Czapski P. The state of rural healthcare. Presentation to the Standing Senate Committee on Social Affairs, Science and Technology, 31 May 2001.
[3] Nesbitt T, Connell F, Hart G, Rosenblatt R. Access to obstetric care in rural areas: effect on birth outcomes. Am J. Public Health, 1990; 80(7): 814–818.
[4] Church J, Barker P. Regionalization of health service in Canada: a critical perspective. Int J Health Ser; 1998; 28(3): 467-486.
[5] James AM. Closing rural hospitals in Saskatchewan: on the road to success? Social Sciences Medicine, 1999; 49(8): 1021-1034.
[6] Humber N, Frecker T. Delivery models of rural surgical services in British Columbia (1996–2005): are general practitioner–surgeons still part of the picture? Can J Surg, 2008; 51(3): 173-8.
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[12] Kornelsen, J., Grzybowski, S., & Iglesias, S. (2006). Is local maternity care sustainable without general practitioner surgeons? Canadian Journal of Rural Medicine, 11 (3), 218-220.
[20] Kornelsen J, Grzybowski S, Iglesias S. Podium: Doctors Speak Out. Is rural maternity care sustainable without general practitioner surgeons? *Canadian Journal of Rural Medicine*, 2006; 11(3).

Recent population-based evidence on maternal and newborn outcomes demonstrates that outcomes are better for women and their newborns if they can access services in their home community and that local surgical services make an important difference to the proportion of women who can be delivered in their home community (on average >75% vs. <30% if maternity services are provided without local caesarean section).[8] These findings align closely with recent policy initiatives that stress the importance of providing services as close to home as possible.[9] The fiscal challenges of providing services in large, relatively sparsely populated regions often encourages planners to adopt apparent efficiencies of scale whereby smaller services are closed and resources are focused on expanding services in the larger referral communities.

The Rationale for Sustaining Small Surgical Services

Underscoring the need to consider scenarios of sustainability as opposed to alternative health service delivery models is recent data that demonstrates that a small rural community with a surgical program can meet the perinatal needs of between 75-90% of pregnant women resident in the hospital catchment. When no surgical program exists, even if local elective intrapartum services are in place, only 25-35% of parturient women birth locally,[8] *if* the program endures. The survival of perinatal operative services is interwoven with general surgical care and acute emergency care, the key service components of a robust rural surgical model.

The Approach and Process

The options for sustaining services at each site, based on data gathered from participants at the sites and the perspectives of regional administrators, are organized into a set of scenarios for each community. The scenarios range from relatively minimal intervention to more significant transformative opportunities. The report also includes thematic analysis of the information gathered relevant to sustaining and managing the *system* of small surgical services, and specific recommendations to be considered in responding to this analysis. Potential funding mechanisms are defined at the systems level. Categories of recommendation are presented by the key attributes of sustainability and include recruitment and retention of key providers (with consideration of access to training opportunities), the availability of appropriate surgical equipment and infrastructure, support from referral communities, and access to CME, CPD and

maintenance of competence. The report also includes a section specific to the East Kootenay region which outlines potential scenarios related to the re-organization of surgical services on a regional basis. A regional approach to the East Kootenays has been included to meaningfully acknowledge the integration of three of the eight sites (Creston, Golden, and Fernie) within a regional perinatal transport and support system and the reality that sustaining these smaller services necessitates consideration of regional systems options.

Presentation

The report consists of the methods for data collection, and the results, which are further divided into two main parts: an overview of common system issues pertaining to small rural surgical services, and scenarios for each individual site visited during this review. Detailed local data is presented for each community in the appendices, and are organized to provide:

1. A geographic and demographic overview of the service catchment population
2. An overview of the nearest referral centre(s) and its characteristics
3. An overview of current surgical services
4. The history of surgical services in the community
5. An overview of challenges to sustainability and gaps in service

Methods

Site visits for this review were carried out by Dr. Stefan Grzybowski between August 15 and November 1, 2012 involving over 100 participants and using an iterative approach which allowed a growing understanding of each community to inform precise questions in the consultation process. Data collected through the interviews were organized using the template provided in an appendix to this report (see Appendix A). Solutions that were expressed as working well to sustain surgical services in some of the small communities were included in the local scenarios and incorporated in the systems overview.

On-site interviews were supplemented by telephone discussions with participants who were unavailable at the time of the visit, including administrative managers and leaders with responsibilities related to the surgical programs. In order to ensure the accuracy of the data we collected, notes were taken during the interviews by members of the interview team and used to construct summaries of each community's surgical program. These preliminary summaries were circulated back to the participants to correct errors and define missing data.

During our community visits, we spoke with a broad range of stakeholders in each community. The details of each visit are provided in the appendices with the community data (Appendices B – J).

Results

In order to avoid redundancy in the individual scenario systems-relevant data have been thematically organized and presented in the first section of the results.

Part 1: Systems issues common to small surgical programs in British Columbia

Section A: The health services management context for small surgical services

1. The effects of health system change on rural surgical services

The regionalization process has been driven by efficiencies of scale, which in many cases have led to centralizing surgical services in designated referral communities, and prioritizing the sustainability of those services. This has led to the recruitment of specialist surgical providers to cover the call schedule for the service, and the upgrading of diagnostic and surgical equipment in the referral hospital to meet the evolving standards of surgical care (e.g., access to CT scanner, laparoscopic procedures). The emphasis has been on transferring patients from small satellite communities to the larger referral centres to access surgical services, taking advantage of the increased competence that comes with increased procedural volume. This has taken place not only for complex surgical procedures, but also for uncomplicated patients needing day care procedures. A rationale can be presented for the cost effectiveness of larger centres providing a larger volume of elective surgical procedures. The challenge for small community services is maintenance of competency without a sufficient volume of surgical procedures to ensure quality of surgical care for the occasional C-section. This has resulted in the current situation where small community surgical services are largely restricted to trying to providing 24/7 on-call coverage for C-sections and ambulatory procedural care (e.g., endoscopy).

Historically, surgical services in small satellite communities were provided not only by GPs with enhanced surgical skills, but also by specialist surgeons who would regularly provide outreach services (i.e., day care procedures for low-risk patients). This pattern of practice maintained the skills of the local surgical team, who participated and supported the surgery, as well as encouraged positive and respectful relationships between the community and referral centre

surgical teams. The relationships between referral communities and the small surgical services they supported were informally organized into a surgical network, which often worked surprisingly well, though not necessarily very efficiently. A consequence of prioritizing regional centre services has been the decline of outreach surgical services in many small communities. This change has challenged the integrity of the small service to the point that the ability of the local surgical team to cover 24/7 call for the perinatal program has been compromised. Once perinatal surgical backup is intermittent, it becomes difficult for parturient women and maternity care providers to effectively plan the management of a birth. Consequently, the maternity service often becomes less reliable; this eventually may result in the closure of the surgical program as well as the maternity program, which has happened in some communities. **During our visits, it was repeatedly stressed that a surgical program dedicated solely to providing perinatal surgical care would not be sustainable. Not only would the competencies of providers not be maintainable, but long periods of being on call without regular OR activity does not build the surgical team morale necessary to respond to an emergency.**

As care is increasingly centralized to referral hospitals, waiting lists have grown, particularly as urgent procedures are generally prioritized over elective surgery.

Another important issue of relevance to sustaining small surgical services relates to governance. Historically, pre-regionalization, each small community hospital was served by a local hospital board, which included individuals with interest and expertise in the health needs of the community, as well as the hospital administrator, nursing leadership, and the chief of staff of the medical service. Important issues related to the community's services were the agenda of the meetings, and innovative solutions to sustaining services were often found. While this governance structure provided local input into the scope of services, it was not always an efficient use of respources due to the community-centric focus on the priorities. Regionalized health care governance ended local hospital boards, and provided for significant efficiencies of scale, particularly related to access to regional specialized services and overall fiscal accountability. What was lost, though, was the social capital and expertise at the community level. Many of the problems now being faced by small surgical services, including low morale, were historically dealt with at the local level. Ideally, regionalized governance models would include a stronger community voice. This

could take the form of a community advisory board that would act in concert with the regional district to improve communication and provide local input into quality of care.
However, it is important not to oversimplify the impact of a regional governance model on rural services. Other influences have included the economic downturn and its impact on, for example, Federal Transfer payments, the increasing costs of health care, the aging of the population, and changing expectations around employment for new providers,

2. Relationships between referral community surgical services and surrounding small satellite surgical services

Ideally, regional referral centres would have a strong and collaborative relationship with small surgical services in satellite communities. Regional leadership would include responsibilities for education/mentorship, outreach service provision, and efficient use of resources, and would also recognize the commitment and expertise of practitioners at the front lines of small communities. Regular lines of communication would be established, and the system organized into a surgical network using a hub and spoke design. Currently, these qualities of a strong and collaborative relationship are missing between most of the visited small surgical services and their respective referral centres.

The qualities of the relationship between the services can be partially determined by the proximity of the satellite service to the referral community. Services can be organized into 2 broad categories: *isolated* or *integrated* services.

1. Isolated small surgical services (Revelstoke, Golden, Lillooet, Fort Nelson)

   Isolated small surgical services have a greater degree of independence necessitating a stronger local surgical program, and generally less outreach surgical involvement. An example of a well-functioning small surgical service in an isolated setting is Revelstoke, which is very focused on the needs of the community for surgical services. During our visit, we posed the question to participants of why the surgical practice in Revelstoke is doing so well when other communities are struggling? It was suggested that the practice functions at an 8

on a 10 point scale, primarily due to a strong interprofessional team ethos, which has been built up over time. The 10 doctors are working in one clinic and work closely together without much competition, and the doctors and nurses have forged a strong alliance through dealing with multiple difficult cases together over time. This is an important part of the effectiveness of the service. The doctors have gradually built their cohort though careful recruitment, choosing people who are like-minded about practice in the community; they have managed to recruit providers who want to participate in the emergency department, delivery schedule, and generally be a part of an active full-practice approach to the population. This approach has led to a great deal of stability and resilience of the Revelstoke program.

Another important issue related to the sustainability of small surgical programs is the proportion of the surgical program that is dedicated to providing perinatal surgical care in a well-functioning small OR. In Revelstoke, amongst the anesthesia group, perinatal surgery constitutes about 10-15% of their activities, and amongst the GPs with enhanced surgical skills around 30% of their surgical activity. In other words, it is a small proportion of the surgical program.

2. Integrated small surgical services (Creston, Hazelton, Fernie, 100 Mile House)

Integrated small surgical services are close enough to the referral centre to be within commuting distance, such that surgical providers from the referral centre can drive to and from the community in one day. Surgical services in Vanderhoof provide a good example of a well-functioning, integrated small surgical service. Prince George is 1 hour to the east of Vanderhoof, and the decision was made about 3 years ago to move one of the Prince George operating room slates to Vanderhoof. The surgical program in Vanderhoof expanded from 2 days per week to 5 days per week, and the majority of surgical slates were filled by day care procedures provided by outreach surgeons from Prince George to patients resident in the Vanderhoof catchment, or further west. The surgeons from Prince George are satisfied as they have more OR time, and can shorten their wait lists. The residents of Vanderhoof and the Burns Lake catchment have closer access to surgical care, and the surgical team resident in

Vanderhoof has a high morale because they are working in a well-functioning system. The Vanderhoof maternity care program is stable and 24/7 coverage is available.

Creston and 100 Mile House are two communities with geographic and demographic similarities to the situation in Vanderhoof. Cranbrook and Williams Lake, the respective referral communities, could engage in similar integrated surgical service models with these two smaller communities, provided this can be organized in a way that does not destabilize the regional anesthesia or surgical services.

Recommendations related to the health services management context for small surgical services

1. That a strong statement of support be made by the relevant regional health authority recognizing the valuable role provided by small surgical services for their communities, particularly the maternity programs.

2. That surgical procedures be provided in the closest operative facility to the patients' residence, respecting the complexity of the procedure, the risk status of the patient, and the availability of surgical providers with procedural competency.

3. That surgical care be viewed as a regional, rather than institutional, phenomenon; that Consequently, the scope of practice and resources needed to implement surgical programs be organized regionally; that small ORs become outreach extensions of core referral hospital surgical programs; and that the organization of services respect the sustainability of both the regional referral services and the smaller services.

4. That the degree of integration of the program of regionalized operative care be dependent upon the degree of isolation of the smaller service. Broadly speaking, highly integrated communities would be relatively proximal to referral communities (e.g., Vanderhoof) and more isolated communities would be more challenging to access (e.g., Fort Nelson). Different outreach surgical models will apply.

5. That surgical providers and programs be used to the limits of their competencies, and operating room time be provided at the smaller sites, in response to the level of need of the population, where possible and practical.

Section B: Scope of practice and maintenance of surgical infrastructure

1. Scope of practice of a small surgical service

The foundation of a small surgical service is the 24/7 coverage for the perinatal surgical program (C-section) and the critical care management provided by the GP Anaesthetists and surgical nurses to support the emergency room, particularly in instances of trauma or disaster management (e.g., MVA).

Layered upon this foundation is elective and emergent surgical care provided to the population that is appropriate for the setting. This usually includes triaging complex emergency care and complicated elective surgery to a referral centre, leaving local day care surgery in uncomplicated patients as a potential pool of work done in the small community service. The scope of practice of the small surgical service is determined by the competencies of the local GPs with enhanced surgical skills and the cadre of outreach surgeons from surrounding referral centres, and the surgical resources available in the community. Elective procedures commonly provided in some small community operating rooms include plastic surgery, general surgery, orthopaedic surgery, ENT surgery, screening and diagnostic endoscopy, and gynecological surgery. In a number of small communities, dentists are a significant contributor to the operating room program. Outreach surgeons not only provide procedural care but also consultations to identify patients who need more significant surgery that will be undertaken at the referral hospital. The relationship between outreach surgeons and the local surgical team contributes to the stability of the small surgical service.

In the small surgical services, it is important to distinguish between the surgical program and the ambulatory endoscopy program, by reporting them on different utilization lines. The nursing resources needed are different, as is the involvement of GP Anaesthetists. It is important to recognize that competency in C-section and the surgical skills needed by the team to carry out that procedure are much more effectively maintained through regular involvement in surgical procedures, rather than ambulatory endoscopy.

2. Community resources available to support the surgical program

The capital costs of equipment, particularly related to the procedural scope of practice desired by the community can be significant. In most communities we visited, there was a history of community fundraising to support the purchase of core surgical equipment. This has historically been the case for almost all of these small surgical services.

In the past, hospital boards provided important support for sustaining small community surgical services. Innovative solutions related to recruitment and retention of providers, and surgical infrastructure were often forthcoming through the local governance process. Currently there is strong support for active fundraising to support equipment support and service delivery at a community and regional level. One of the challenges to effective fundraising is agreement on the funding priorities.

Recommendations related to scope of practice and maintenance of surgical infrastructure

1. That continuous perinatal surgical services (24/7 C-section backup) be maintained at the small community hospitals that currently have surgical services,

2. That small surgical services be structured to meet the procedural needs of the catchment population to the limits of the surgical competency of the local providers and local surgical resources. Optimally, services would be provided through a well-integrated and balanced surgical team, which includes outreach surgeons and local surgical providers. Surgical competency could be enhanced by regular rotation of small service team members through a larger referral centre.

3. That in sites funded through alternative payment models, performance incentives be introduced to support enhanced skills service provision (obstetrics, surgery, anaesthesia, oncology, palliative care (e.g., Hazelton).

Section C: Training and maintenance of competence of small surgical service teams

1. Recognizing the differences between practice in a small rural and urban settings and the implications for training and maintenance of competence

Small rural health services work differently from larger referral and urban centres. Practitioners, both physicians and nurses, have a broader scope of practice and less access to local resources than their urban counterparts. While standards of practice need to be applied across all surgical

services, it is important to recognize that in low-resource environments there is limited access to a full scope of diagnostic intervention and therapeutic opportunity. The question becomes what are the advantages and disadvantages to providing limited care in the small site as opposed to transferring patients to a referral centre. One of the participants we interviewed expressed the issue eloquently. He said “it’s almost like the flexibility and adaptability that are the life blood of a small hospital are not considered in the standardized approaches. It’s really a reflection of the differences in culture of small hospital and large hospital approaches.”

Physician training programs in Canada are generally not oriented toward rural practice, and in most cases rural practitioners supplement their training by experiential learning on the job under the guidance of senior colleagues. The most significant challenges exist in the training of GPs with enhanced surgical skills. While there is currently a program in Saskatchewan, which graduates 2 practitioners with enhanced surgical skills per year, there is otherwise minimal access to this training in Canada. GP Anaesthesia programs on the other hand are more readily available, and are accredited by the College of Family Physicians of Canada. Currently, the majority of rural GPs with enhanced surgical skills have been trained outside of the country, mainly in South Africa. This source of physicians with surgical skills for rural Canada is consequently becoming less available. However, there is renewed and expanded interest in establishing training programs in Canada for GPs with enhanced surgical skills. It is possible to look to other jurisdictions for guidance as to how to better prepare Canadian physicians for rural practice. In Australia, for example, the training opportunities for rural practitioners are better organized. Australians have established a separate College of Rural and Remote Medicine, which specifically trains physicians for rural practice, including enhanced skills programs.

Similar problems generally exist in the training of nurses for small rural hospitals, who, in most cases, will have responsibilities across a broad range of services, including acute inpatient care from paediatrics to geriatrics, emergency room care, and maternity care. Standard nursing curricula, in most instances, provide only a platform from which nurses can choose to specialize in a particular area.. While this curriculum makes a lot of sense for large volume urban settings, it does not recognize the realities of small community rural nursing. An innovate approach has been adopted by the University of Northern BC Nursing program through their comprehensive

rural nursing certificate program which provides distance education to facilitate the learning needs of rural nurses.

Maintenance of competence provides a different challenge. The more procedures that can be done on site within the reasonable limits of local competencies and equipment, the better for the rural service team, with benefits for not only the OR program but also an upskilling for the birthing program, the emergency program, and acute inpatient care. Most of the nurses working in the surgical programs are not just OR nurses, but are generally working in the emergency department, the acute care floor, and have a multiplicity of responsibilities, often doing OB as well. They have a wide range of responsibilities, and consequently their training may need to be oriented more to reflect that. For example, if there is overlap in skill sets in core nursing curricula that are part of an OR training program and similar skills that are part of an OB training program, due to the specialized nature of these programs, it is redundant for these nurses to acquire the same skill set from two different sources. If nurses were being specifically prepared for rural practice the training program needs to be different from that which is currently being offered to nurses specializing in narrow high volume service areas in urban settings.

Another challenge faced by small surgical services is the recruitment of young doctors to rural practice. Currently undergraduate exposure to small surgical services is limited and not well publicized. This could be addressed by encouraging GPs with enhanced skills to take up more mentorship activities, and giving a higher profile to the contribution of small surgical services in the undergraduate training program. Exposure to GPAs and GPs with enhanced surgical skills might act as a stimulus to encourage more medical students to consider a career as a GP with enhanced skills. If this integration of potential rural service opportunities was undertaken in an interprofessional manner with nursing, this might be even more effective.

2. Interprofessional care models in rural practice

Small surgical teams are interdependent, and are composed of surgeons, usually GPs with enhanced surgical skills, GP anaesthetists, and operating room nurses. At the smaller sites, if any of the providers are unavailable, the surgical program becomes dislocated. As the volume of need for emergency surgical procedures is relatively low (e.g., emergency C-sections), and the need to

be on call in case of emergency is relatively high, the surgical team often spends a great deal of time being on call. In many rural communities, the GPAs and the operative nurses have also been designated as backup for the emergency room in the event of serious trauma or other unstable clinical situations. These situations demand a high degree of commitment from the surgical team, and in order to maintain the relationships that underpin the effectiveness of the team, there needs to be an opportunity for the team to work together in a regular surgical program beyond the occasional cesarean section.

The obstetrical program similarly demands a high degree of interprofessional team function and the providers in both the surgical and maternity programs often include many of the same people. The backup of the surgical program means that most of the parturient women in the community will deliver locally, and that the nurses and physicians providing maternity care can work with the confidence provided by access to local surgical services to resolve unexpected problems in labour and delivery. If the local service is working well, team morale is generally high; recruitment and retention of providers to the community is thus facilitated (e.g., Revelstoke). On the other hand, if the services are struggling, the stress is compounded by the challenges of understaffing, locum coverage and patient diversion. In some communities, these challenges have compromised core services such as staffing the emergency department.

Retention of operating room nurses underpins the integrity of the surgical team. One of the funding issues that arose is that the extensive on-call demands on OR nurses are not well compensated. This could be partially addressed by adjusting existing contractual rates, such that there is a third level of compensation after 144 hours of continuous on-call. which is a particularly rurally relevant phenomena. In some communities, the nurses also get an isolation allowance of $70/month after serving a specific time in a small community, and in order to encourage retention, this could potentially be increased incrementally as well. All of the recommendations associated with this matter are related to the NBA collective agreement and would be matters that would require a labour relations lens and would need to be negotiated.

Another way of enhancing the interprofessional team in a small community is through an organized program of educational courses delivered in the community. This can be done through

one-off courses like ACLS or ATLS. MORE ^{OB} has been funded by both IH and NH is an important step in supporting maternity services and interprofessional practice in small and larger communities alike.

Recommendations related to training and maintenance of competency

1. That training programs for rural nurses be strengthened recognizing the broad skillset and multifaceted nature of rural nursing. Once in practice in a small rural community, the more education and skill building that can be provided on site the better. Potential pedagogical strategies include electronic distance education, and outreach interprofessional education provided on site.

2. That small service surgical team skills and competencies be built and maintained through an integrated educational program with local referral hospitals. This can be accomplished both through outreach and by rotating small service surgical team members through the referral community's surgical program. Potential strategies for program funding are outlined below

3. That the planning of educational opportunities be linked to the quality improvement monitoring program, at both the site and system level (i.e., when a significant issue arises leading to educational opportunity at one small surgical site this information could be networked across the sites.)

Section D: Data monitoring and quality management

A key element in measuring the effectiveness of surgical services is to establish population catchments around each surgical site, and monitor both the number and scope of surgical procedures provided to the residents of the catchment. Catchment data related to the rates of surgical procedures for the population, where the procedures took place, outcomes (including complications), and the service provider, would serve as the core measurement for both local quality improvement, as well as a regional approach to service monitoring. The goal of the system would be to create a non-judgmental learning environment driven by the needs of the population, and aspiring to excellence in surgical care.

In such a system of data monitoring and quality management, each surgical service would be encouraged to apply small rural surgical service competency-based guidelines for local surgical procedures based on standards of practice related to available infrastructure, diagnostic and therapeutic surgical technology, and provider competencies. The scope of practice of the service

could be built from this approach, and confirmed through the collaborative practice of the outreach surgical program and the surgical network.

Oversight could be provided at both the regional and local level, and ideally would include the input of members of the community from the service catchment with an interest in local services. This could take the form of a community advisory committee which would be an opportunity to funnel some of the enthusiasm and energy of the local population towards their own health services into a vehicle where data is collected. Outcomes are then systematically analyzed and presented for the population, including utilization patterns and outcomes. This would serve to enhance the community's voice in local health services. For example, information could be streamed in the area of maternity care such as: what proportion of pregnant women from the catchment delivered locally, what were the intervention rates, and where did women who left the community deliver. Patient and individual physician privacy would need to be accommodated and respected.

We recognize that this is an ideal situation which depends upon a mutually respectful partnerships as well as adequate community capacity. This is predicated on care provider involvement which may be difficult due to competing demands, and community engagement which may or may not be forthcoming,

Recommendations related to data monitoring and quality management

1. That population catchment areas around each surgical facility for core surgical services be established, and that expanded catchment zones for more complex surgery and more complex surgical patients.be defined for the referral centres that overlap the smaller facilities' catchments

2. That surgical utilization and outcomes data be linked to service population catchments, and a performance monitoring system for each surgical service be established, using the population rather than the facility. The location where procedures are done becomes an outcome.

3. That timely and regular feedback is provided to the individual services within a quality improvement envelope.

4. That the feasibility of creating community advisory committees and tasking them with supporting the quality of care in the community service catchments is explored.

Section E: Potential funding mechanisms

At the systems level there are a number of existing funding streams that can be accessed by provider groups to support training or retraining as well as maintenance of competence. There are also opportunities to repurpose existing streams and consider the development of new approaches.

For physicians, training opportunities for enhanced skills can currently be accessed and supported by funding achieved through the enhanced skills program, which is run by the Department of Family Practice at UBC.

Once trained, maintenance of competence can be supported by the Rural Education Action Plan (REAP), which is part of the physician support structure provided through the offices of the JSC and Rural Coordination Centre. Funding can be accessed to support visits to referral communities to refresh and update surgical and anaesthetic skills. While REAP funding is a well proven vehicle for occasional updates, accessing REAP funding can be cumbersome and the program may not be as well suited to supporting maintenance of competence activities implemented across the system and at relative high frequency.

Another option to consider is outreach education from the referral / regional centres to the small community services. This complementary form of CPD could be provided by a team from the closest referral centre including a surgeon, anaesthetist, and OR Nurse who could come and oversee a slate of procedures at the small site while providing educational support and mentorship for the small program. This program could be funded through the JSC or potentially through using Rural Continuing Medical Education (RCME) funds or reverted RCME funds. RCME funds are moneys designated to support CME for rural physicians.

Another strategy to consider for maintenance of competence would be a regular rotation of small site surgical team members through the referral centre and this program could be directly supported by the JSC through the creation of a new program.

For operating room nurses seeking support for updating and strengthening surgical skills, rotating through referral centres would probably need to be supported through the regional health authority.

A potential source of funding that may be forthcoming is funding dedicated to improving services for First Nations peoples. Currently, considerable costs are expended by the bands or by First Nations and Inuit Health (FNIH) in paying for patients' expenses to access services in referral communities. When birth is the clinical situation, sometimes the wait can go on for several weeks. The reorganization of health service governance through the creation of the First Nations Health Authority may open doors to efficiencies and solutions that have not previously existed to support small community services.

Additionally, there is a growing recognition among all sectors of the need and benefit of public – private partnerships. It is in the interests of many rural, resource-based companies to ensure regular health care options are available for their employees, particularly for maternity care when a young, child-bearing age workforce is the recruitment target. This common interest in local, continuous health care may be the starting point for discussions with such industry partners for discrete programs.

Recommendations related to potential funding mechanisms

1. That rural physicians with enhanced surgical skills and GPAs be informed about the potential of funding support through REAP for skill maintenance.

2. That the JSC consider creating a new program to support maintenance of skills of rural GPAs and GP/surgeons by supporting their rotating through regional referral centres on a regular basis

3. That the potential for interprofessional outreach surgical educational and mentorship activities extended from the regional referral hospital to the small surgical sites on a regular basis (annually or semi-annually) is explored, and that the possibility of using RCME or reverted RCME funds to pay for this program is examined.

4. That an integrated system of opportunity is built for small surgical service OR nurses to rotate through referral centers in order to update skills and that this activity be funded through the health authority (including First Nations HA where relevant) or a public-private partnership with industry.

5. That the potential of accessing funding support for small surgical service infrastructure from public-private partnerships with rural industry be explored.

Section F: Managing the system of small surgical services

There is the need to take a systems approach to supporting small rural surgical services across the province. The services themselves are too small to have the local resources to expend on supporting themselves, and since most of the services share the same challenges, there are natural efficiencies associated with collaboration. The activities of this network would include sharing best-practices ideas, engaging in collaborative problem-solving and sharing opportunities to grow and develop services. Ideally the organization would be interprofessional and include components dedicated to GPs with enhanced surgical skills, GPAs and OR nurses. Information could be shared on the recruitment of providers to small communities, locum service coordination, shared access to educational opportunities at referral centres through outreach to the community and on line, and quality of care support through a quality improvement framework. Collectively these small surgical teams could have a voice that would facilitate interprofessional solutions to common problems and a network of implementation. The Rural Coordination Centre has already established networks related to rural Obstetrics care, Surgical care, and GP Anaesthesia care. This could provide the foundation for a network to support small rural surgical teams.

Recommendations related to managing the system of small surgical services

1. That the JSC examine the options for a provincial networking and coordinating structure to support small surgical services and implement the most appropriate solution.

2. That the interface between the existing RCCbc provider focused networks and a small rural surgical systems network be explored.

Part 2: Scenarios for individual services

The themes and general approaches to sustaining small surgical services outlined above will be interpreted in the scenarios outlined below. The scenarios will range from proposing minor changes to more transformational models, based on the principles outlined above. The scenarios are based on the core values of providing the best surgical care to the residents of the rural communities as close to home as possible. Implicit in the presentation of transformative scenarios is an understanding that referral services must be sustained. Ultimately, transformative solutions

are seen as win-win-win scenarios, in which the rural population gets better access to excellence in surgical care, small surgical services are sustained to provide an essential foundation for the community's maternity program, and that the referral communities' surgical programs provide leadership for an integrated network of surgical care.

Isolated services

Revelstoke

The catchment of the Revelstoke hospital, including the community of Taft, has on average 70 births a year. The nearest larger hospital with General surgeons is in Salmon Arm, (1.5 hours by surface travel), and the nearest obstetricians are in Vernon (2 hours away). The catchment population is approximately 7,800 and is projected to increase to 8,400 by 2020. There is a general recognition that Revelstoke, which fits the model of a relatively isolated small surgical site, is working well. There is a relatively strong outreach surgical program in place, a solid cadre of local surgical team members including 3 GP Anaesthetists, 2 GPs with enhanced surgical skills, and 5 OR nurses, with two additional OR nurses currently in training.

Scenario A:

Goal: to strengthen an already well-functioning program with minimal investment:

- Increase scope of outreach surgery (e.g., plastic surgery, orthopedic surgery, ENT, and urology), and enhance utilization of the current operating room time. This could be done by increased responsiveness to the surgical needs of the local population, within the limits of appropriate local care and further complemented by supporting outreach surgeons to alleviate waiting lists in their home communities by bringing patients with them for day care surgery.
- The competency of the local surgical team could be enhanced by an opportunity to rotate through a higher volume setting. For example, anesthesia in Kelowna, and OR nurses and GPs with enhanced surgical skills could be accommodated in Kamloops subject to support from the referral centre.

Scenario B:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.
- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Golden

The catchment of the Golden hospital includes the communities of Blaeberry and McMurdo, and the average number of births from this catchment annually is approximately 65. The nearest referral hospital is in Cranbrook, which is about 3 hours away. The catchment population is 6,900 and is projected to increase to 8,400 by 2020.

Scenario A:

If we assume that the surgical sites in the East Kootenays will continue to function relatively independently, with no increase in resources, then some minor changes could be made that would enhance surgical care at the Golden site.

Specifically:

1. Recognizing the surgical experience of Dr. Descoteaux, the current constraints on day care surgery on uncomplicated patients from the catchment area of Golden could be relaxed without increasing the amount of time dedicated to surgical slates. The potential impact on the surgical and anaesthetic workload in Cranbrook would need to be considered.

2. There is some potential for the delivery ward in the hospital, which is adjacent to the OR, to be converted to a pre-operative area, which would allow a flow through the OR as opposed to the PAR being used for both entry and exit from the OR. This would facilitate OR function and the movement of patients through the surgical suite.

3. A possible means of expanding the surgical program through enhancing existing outreach surgery exists. Dr. Heard, an orthopaedic surgeon from Alberta, currently comes once per month to provide arthroscopic procedures in the operating room. Many of his patients are from Alberta, and follow him to Golden in order to avoid a lengthy wait time. Each procedure done on an Alberta patient brings money into the Golden hospital budget (apparently $800/patient). The potential expansion of this program needs to be fiscally evaluated to see if the added revenue justifies the expansion. Apparently this is currently underway. As well as enhancing the surgical program in Golden, orthopaedic care for the population of Golden would be enhanced.

4. There are two approaches for maintenance of surgical competence for the nurses, with respect to providing emergency C-section support.

    a. One option is to provide funding to rotate the nurses through the Cranbrook surgical program on a regular basis (e.g., every 2 years).
    b. An alternative approach would be to explore training nurses in Golden, which would involve bringing in an educator and ensuring adequate exposure to surgical procedures, either through an outreach surgeon or by expanding the scope of practice of local general surgeon Dr. Descoteaux.

5. Concerns were voiced about the inadequate on-call compensation for OR nursing staff. Recognizing that there are significant constraints on adjusting payment schedules set by the BCNU, a potential solution might be to initiate a third level of payment that would commence after 144 hours of being on call.

6. The interprofessional team could be strengthened by enhancing the access to local CME through the delivery of outreach programs like ACLS, PALS, TNCC, and ENPC. This would have spin offs strengthening the surgical team.

Scenario B:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.
- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.

- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Lillooet

The catchment of the Lillooet hospital includes some services to the communities of Lytton and Ashcroft, and various surrounding First Nations communities, and the average number of births from this catchment annually is approximately 60. The nearest referral hospital is in Kamloops, which is about 2 hours away. The catchment population is 4,500 and is projected to increase slightly to 4,700 by 2020. This is one of the smallest community catchments in the province with local surgical service. The service is led by a dedicated team that includes 1 GP with enhanced surgical skills, 1 GPA, and 2 OR nurses. This core team has been stable for about 10 years. The service does experience frequent interruption due to the absence of any one of the core surgical team. In spite of its small size, the team has been very effective at supporting the local maternity program, as well as meeting some of the surgical needs of the community.

Scenario A:

The current surgical team favors maintaining surgical services at the current level, where there is 1 GPA and 1 GP with enhanced surgical skills and 2 OR nurses. The optimal nursing structure would be to continue the 2 nursing lines, a 0.4 and a 0.5 line, but spread the work over 4 half days per week, which would leave a half-day for OR nursing administration. If the current casual position could be regularized by adding another nurse to the rota, this would provide greater stability for the service. These could be blended lines (i.e., lines that have partially OR and partially ER function). There could also be an LPN position at 0.4 or 0.5 to do some of the cleaning that needs to be done on OR days, and OR support, such as stocking. If the scheduling of the OR was adjusted to 4 half days per week, this would more efficiently use the small PAR and allow for less backup related to the cleaning of surgical equipment and the processing of patients through the unit, and could potentially be used to support outreach surgeons 1 to 2 days per week, while providing OR time for the GPs with enhanced surgical skills on the other 2 days.

Historically, outreach surgery was an important component of the surgical services in Lillooet, with most of the surgeons coming from Kamloops. Re-establishing outreach surgical services would be

an important part of strengthening the service, and if Kamloops surgeons are no longer interested, potentially alternative sources could be explored.

As with many other small services, regular opportunities for maintenance of surgical competence on a regular basis for all members of the surgical team would be an important quality of care initiative. This might involve rotating members of the surgical team through the larger surgical centres like Kamloops.

Scenario B:

If the potential exists for a more significant transformation of the surgical program, then this could be guided by the development of a Lillooet population catchment quality improvement framework for surgical care. Once this is defined, a pathway to the next steps in the development of the surgical program would be evident following the principles outlined above in the systems approach to small surgical services.

The optimal surgical program according to the group would be 2 GPs with enhanced surgical skills and 2 GPAs, and this would provide more seamless coverage of the on-call maternity backup program. There are some surrounding small communities from which patients could come to access services in Lillooet (e.g., Lytton, Ashcroft) as this may be a more efficient means of accessing surgical services than centrally through Kamloops.

One capital cost issue in Lillooet is the number of procedures that can be done in a day is limited by the PAR. Increasing the size of the PAR by renovating some of the adjacent space could solve this problem.

Participants flagged a concern about the current relationship between the surgical program in Lillooet and the surgical consultants in Kamloops. They feel they need more support from the regional referral centre. Ideally, this would include education, mentorship, and a regular schedule of outreach surgical services provided in Lillooet. Currently, communication between Lillooet and Kamloops is strained. The staff at Lillooet do not have designated regional contact in Kamloops,

which affects support for the nursing and medical staff. Ideally, OR nurses would be able to contact staff in Kamloops for any needed support: having a specific regional contact at the referral centre may better facilitate this. Education and mentorship opportunities, provided either at the Kamloops or Lillooet sites, would allow the nursing and physician staff to hone skills and maintain competencies while working in low-volume settings. The provision of service should better address population needs of the communities. For example, the population of Lillooet and the surrounding communities that drain into its hospital is quite vulnerable. Travel to referral centres like Kamloops is not always easily available to the patient requiring care. While bus transportation is available between Lillooet and Kamloops, for instance, traveling by bus after a bowel preparation is not ideal, nor is incurring costs by staying overnight in Kamloops. Finally, efficient use of resources in a regionalized health care system is important. The Lillooet OR and the resources designated to support it, could be more cost-effectively utilized.

Fort Nelson

There are a number of First Nations communities that surround Fort Nelson, and the average number of births from this catchment annually is approximately 95. The catchment population is 6,500 and is projected to slightly increase to 6,700 by 2020. This community is one of the most isolated small surgical services in British Columbia. It is located more than 4 hours away, by road, from Fort St. John, the nearest referral centre, and not infrequently is subjected to severe winter conditions. Currently, surgical services have been challenged by loss of a key member of the surgical team in April 2012, when Dr. Kassa retired from active hospital practice. Overall, there is a shortage of physicians in the community. Ambulatory care needs of the population have overwhelmed the office practices of the remaining physicians, and consequently, the emergency room has been utilized for primary care services. Northern Health is in the process of implemented a comprehensive primary care plan for the community, and the scenarios outlined below need to be integrated with this plan.

The surgical program has been recently supported by 1 GPA and 1 locum GP with enhanced surgical skills who returned to South Africa at the end of October. There are currently 4 surgical nurses, who work in a flexible capacity, as there are no specific OR lines funded. The Fort Nelson municipal council has been actively involved in recruiting physicians to the community, and supporting health services for the population.

There are a number of challenges to sustainability. The shortage of providers (GPs with enhanced surgical skills and GPAs) makes it hard for those who are still trying to provide services. The shortage of providers makes it harder to recruit more providers, and harder to sustain services, and the lack of services makes it less attractive for new providers to come in. The likely solution needs to be a large solution; this will not be tweaked back into existence. These issues apply to both the medical and nursing staff.

If the goal of the management team is to gradually rebuild the surgical service in a step wise manner then it is important to review how the service has been functioning. The pattern of practice over the past 5 years has been of a very limited surgical service that has managed to back up the maternity service most of the time.

The intermittent nature of the surgical backup has created a lot of uncertainty for parturient women in the community about where they're going to birth, and whether there will be surgical backup or not. The recent loss of core members of the team has closed the service for most of the past 6 months The costs of running the service (MOCAP), the stress on providers associated with a very low volume program, and the need to maintain the surgical infrastructure have placed significant demands on the system and the returns, in terms of improved health services, are modest. In order to revitalize the service it is probably necessary to enhance the utilization of the surgical infrastructure and personnel to a level that more effectively supports the needs of the community, by maintaining a scope of practice that is appropriate, including the day care surgical procedures, the endoscopy and most importantly, the 24/7 maternity call.

Scenario A:

Scenario A would be designating 2 days per week as surgical days, and recruiting 1 or 2 GP anesthetists to complement Dr. Mostert (the current GPA), and 1 or 2 GPs with enhanced surgical skills. One more nurse would need to be recruited to the OR, and 2 part time nursing lines would be created to support the 2 days per week. Local surgical activity provided by the resident staff would need to be complemented by a stronger outreach surgeon program, which would likely consume 1 day per week, and could involve surgeons from Fort St. John, ideally.

The re-establishment of 24/7 C-section backup is an essential component of support for the birthing program. This would be of particular importance for the First Nations women as well as the other vulnerable residents of the North. The overall elective scope of practice would need to be defined by the surgical and scoping procedural needs of the population. The scope of practice would likely include endoscopy, as well as minor surgical procedures such as carpal tunnels, hernias, tonsillectomies, dilation and curettage, and therapeutic abortions.

The presence of a strong service profile at the Fort Nelson hospital is seen by the municipality as an important determinant of the community's stability. Strong healthcare services will encourage families to potentially relocate, rather than just having the breadwinner of the family come and work in the oil patch and return home. Estimates of the size of the oil patch workforce vary from

3000 to 6000. Another dimension of this scenario would be considering the OR in Fort Nelson to be part of the Fort St. John operating room slate, such that procedures for residents of the Fort Nelson area would either be done in Fort St. John or Fort Nelson depending on the complexity and urgency of the procedure, The surgical providers in Fort Nelson would be local GP's with enhanced surgical skills complemented by specialist surgeons from Fort St. John providing out research services on a regular rota (e.g., every 2 – 3 months). The important point is that it should be a coordinated OR program that includes the Fort Nelson site as one of the operating rooms for the North.

Funding the purchase of surgical equipment could be generated through the community and local industry, which has been successful in the past, particularly from the very active oil and gas industry in the region.

Scenario B:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.
- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Integrated services

Hazelton

There are a number of First Nations communities that drain directly into Hazelton, and the average number of births from this catchment annually is approximately 85. The nearest referral hospital is in Smithers, which is 1 hour away from Hazelton. The catchment population is about 5,700, and is not projected to change dramatically by 2020. The surgical program in Hazelton is currently struggling to stay afloat. The strengths of the program are a long-standing outreach surgery program, which that continues to function relatively well, and the commitment and vision of the United Church Health Services, which provides a pathway for local community voices to sustain services. Currently, there is 1 part-time GPA resident in the community, as well as a second part-time GPA resident in the neighbouring community of Telkwa. There is a GP with enhanced surgical skills who commutes from Smithers, and 2 recently trained OR nurses, 1 resident in Hazelton and 1 living in Smithers. There are other nurses in Hazelton with OR nursing skills, but they are only available on a casual basis. The operating room underwent significant renovation this year, and was closed for 6 months.

Scenario A:

If the goal of proposed changes is to strengthen the surgical service in Hazelton without transformative changes, some strategic recruitment needs to take place, as well as minor changes to the scope of service.

Currently, in order to effectively sustain perinatal surgical services in Hazelton, the surgical team needs to be strengthened. This could be accomplished through the recruitment of 1 GPA and 1 GP with enhanced surgical skills to the Hazelton program. If both these providers also managed obstetrical patients, this would greatly enhance local services, as well as sustaining the OR program. Perinatal surgical services augmented by an ambulatory scoping clinic does not provide sufficient surgical activity to maintain a local surgical team. The long history of outreach surgical services and the good collaborative relationships with visiting specialists could support enhanced surgical activity to meet the needs of the local population for day care procedures in

uncomplicated patients. The currently funded 2 OR slates per week could be more effectively used to provide this procedural scope.

A problem was identified by one of the participants in the way the OR slates are organized and staffed. It was suggested that it would be useful if the person currently doing the booking for the OR slates for patients should also be charged with organizing the staffing for that same slate, so there would be increased efficiency in the process.

Maintenance of competence for the OR team could involve regular rotations (e.g., semi-annually to bi-yearly) through the Terrace operative program.

Scenario B:

As Hazelton is 1 hour from Smithers, and over the past few years a number of the surgical team in Hazelton have relocated to Smithers while continuing to serve Hazelton, the possibility exists for a more integrated approach to surgical care across these 2 communities. If the two operating rooms were considered as sister suites, in which procedural scope and OR organization are coordinated, this might lead to significant efficiencies. Access to outreach surgical services might be strengthened over the larger, combined population and this would lead to stronger surgical programs. The larger population would also be seen as a more attractive opportunity for potential outreach surgical specialists.

Scenario B has not been explored with Smithers staff or administrative leadership, and it would not be appropriate to carry this idea further until that had been done.

Scenario C:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.

- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

100 Mile House

The catchment of the 100 Mile House hospital includes the communities of Lac La Hache, Clinton, 70 Mile House and the Interlakes area, and the average number of births from this catchment annually is approximately 105. The nearest referral hospital is in Williams Lake, which is 1 hour 20 minutes away from 100 Mile House. The catchment population is approximately 14,000 and is projected to slightly increase to 14,100 by 2020. The surgical team in 100 Mile House consists of 3 GPs with enhanced surgical skills, 1 GPA, 2 experienced OR nurses, and a third nurse who is newly qualified and will begin practice shortly. Two of the GPs with enhanced surgical skills look after all of the perinatal surgical call, while the 3rd GP with enhanced surgical skills provides a range of day care surgery, as well as endoscopy. There is currently no outreach surgery taking place, and most of the surgical needs of the population are met in Williams Lake or Kamloops. The local obstetrical program waxes and wanes in conjunction with the presence of the entire surgical team. Recently, there has been a several month stretch during which almost all of the obstetrical cases were diverted to Williams Lake.

Scenario A:

If the surgical program continues to be supported at the current level of service, there are some initiatives that would improve the service.

Due to the proximity of 100 Mile House to Williams Lake, it is well suited for the establishment of a more integrated surgical service. Outreach surgical care could be provided by surgeons from Williams Lake to the population of the 100 Mile House catchment. The local surgical team in 100 Mile House would be very receptive to this development. The advantage would be that GPs with enhanced surgical skills could scrub in and expand their surgical scope while also engaging with one or more of the specialists.

The current utilization of the OR could be expanded without incurring increased nursing costs. The nurses are currently funded for 2 days per week, but the low-volume activity of the OR leads to under-utilization of funded nursing support.

The GPA, in an ideal world, would like to see her practice evolving to a primary focus on obstetrics and GP anesthesia, and better utilization of the surgical program would make this possible. There does need to be recruitment of more general practitioners to the community, as currently it is underserved. The community could also accommodate 1 more GP with anaesthetic skills.

Scenario B:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.
- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Creston

The catchment of the Creston hospital includes the communities of Boswell, Crawford Bay, Riondel, Erickson, Lister, Kitchener, Yahk, Wynndel, and Canyon, and the average number of births from this catchment annually is approximately 115. The nearest referral hospital is in Cranbrook, which is 1 hour 15 minutes away. The catchment population is about 14,000 and is projected to increase slightly by 2020. The surgical service in Creston has experienced significant contraction in the past 10 years. Currently, there is 1 GP with enhanced surgical skills, 2 GPAs, and 3 OR nurses. Recruitment has been successful recently, for a GP with both anesthesia and enhanced surgical skills, as well as a second GP with enhanced surgical skills. There has been a strong maternity program, and the average number of births in the Creston valley is approximately 100. There are 4 GPs who deliver babies, and 1 midwife who works closely with the doctors. The OR is currently open 3 half-days per week, and the outreach surgical program is not active. Historically, outreach surgical capacity was drawn from Cranbrook, 1 hour and 15 minutes northeast by road, and Trail, which is 1 hour 35 minutes to the west. This travel time is increased significantly during the winter months. Local providers are unclear as to whether Interior Health and surgical providers in Cranbrook are supportive of the continuation of surgical services in Creston. Consequently, there is a great deal of uncertainty about any planning around surgical services for the Creston facility. In discussions with participants in this review, several issues were identified that could be considered in plans to sustain and strengthen Creston's surgical services.

The most important issue would be a strong statement of support for surgical services in Creston, which would provide a foundation for planning. It would go a long way towards building morale on the site.

<u>Scenario A:</u>

If Interior Health and the Cranbrook referral program are supportive of surgical services in Creston, then a number of issues can be explored. As recently as 10 years ago, Creston had a robust and well integrated surgical program as recently as 10 years ago. Three days of surgical slates were offered, with the collaborative involvement of a number of outreach surgeons. Rebuilding surgical services in Creston could take place in an incremental and data-driven

manner. The numbers of procedures currently being performed on residents of the Creston valley that could be brought back from referral operating rooms could be defined. This volume of procedures could dictate the first logical steps in expanding the procedural scope in the Creston OR. Initial choices of procedural foci could also be dictated by the length of waiting lists for procedures in the referral surgical programs.

Coverage for the perinatal surgical program has been enhanced by the recent recruitment of a couple with enhanced skills. Soon, Creston will have 3 physicians who provide anesthesia, and 3 who perform C-sections. There is also an International Medical Graduate (IMG) practicing in the community who has accumulated anaesthesia experience during his prior clinical practice, before immigration. He has expressed a commitment to the Creston community, and he may potentially contribute to enhanced skills services in the community.

The GP with enhanced surgical skills, Dr. Le Roux, currently provides services in Creston, and has a scope of practice that includes C-section, hernia repair, carpal tunnel release, minor lumps and bumps, and dilatation and curettage. He is the only physician who has been providing C-section services in recent years. Three other physicians in Creston have expressed a willingness to go through an enhanced skills program should further provider support be needed to maintain the program. This demonstrates the depth of commitment present in the community provider workforce which bodes well for sustaining the service.

The operating room is currently staffed by OR nurses 3 days per week. As the OR slates do not always fill this time the recruitment of new providers should enhance the surgical service profile.

<u>Scenario B:</u>

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.

- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Fernie

The catchment of the Fernie hospital includes the Elk Valley communities of Sparwood and Elkford, and the average number of births from this catchment annually is approximately 115. The nearest referral hospital is in Cranbrook, which is 1 hour 15 minutes away from Fernie. The catchment population is about 12,000 and is projected to increase slightly to 12,600 by 2020. The surgical service in Fernie has contracted in scope of practice over the past 10 years. The surgical program is led by Dr. Colm Nally, a general surgeon, who has been in the community for over 20 years. There are currently 2 GPAs, and 5 OR nurses on defined nursing lines. The Elk Valley hospital has confirmed the addition of 2 GPs with enhanced surgical skills with C-section capability, one of whom has anaesthetic certification, who will begin work in Fernie in January of 2013. Fernie also has the benefit of a gastroenterologist, who has been resident in the community for 20 years, and provides consultative and procedural services to not only the residents of the Elk Valley, but also draws patients from southeastern British Columbia and from Alberta. The operating room is currently open 4 days per week (1.75 days for elective procedures and 2.25 days for scopes), and the majority of the booked activity is endoscopy.

Collaborative relationships between the surgical team and the regional East Kootenays surgical leadership in Cranbrook have been strained. Lack of effective collaborative planning has had several consequences, including: diversion of patients needing surgical care to surgical facilities in Alberta, difficulties in recruitment of GPs with enhanced surgical skills and GP anaesthetists to back up the perinatal surgical program in Fernie, absence of an outreach surgical program serving the Elk Valley, and difficulties in accessing educational opportunities for nurses at the regional centre.

<u>Scenario A:</u>

If the plan to sustain the surgical services in Fernie is to improve efficiencies in the existing structure, then:

1. The recently announced recruitment of 2 GPs with enhanced surgical skills will be an important step in strengthening the perinatal surgical on-call program and providing for continuous, 24/7 coverage.

2. Strategies to improve collaborative relationships between Fernie and Cranbrook and the implementation of outreach surgical services from Cranbrook could be adopted. Funding support for outreach surgical services exists and is currently not being optimally utilized.

3. The potential for an integrated East Kootenay surgical service could be explored (see the East Kootenay surgical service scenario below).

4. The Cranbrook surgical staff is apparently very willing to provide opportunities for nurses and GPs with enhanced skills from Fernie to rotate through regional maternity and surgical programs to enhance opportunities for ongoing education and maintaining competency. Establishing a program of this nature would be a significant benefit for the staff at the smaller surgical site.

Scenario B:

Goal: a more significant transformation of the surgical program to optimally meet the needs of the local population by developing a catchment population quality improvement framework for surgical care.

- Define the geographic catchment of each surgical service.
- Link the appropriate population to the geographic catchment and define the demographic characteristics of the population.
- If recent data are available on all surgical procedures received by the population of each catchment, then organize this material as baseline data. If data are difficult to access, then use the demographic characteristics of the population and national rates of surgical procedures to project the appropriate surgical volume for the population.
- Estimate the volume of procedures that could be done at the small surgical service site over a year based on the competencies of the surgical team, level of outreach surgery, and available technology, and dedicate adequate OR surgical time at the small facility to meet this need.
- Monitor utilization, outcomes, including surgical complications, to monitor service activity and provide the foundation for continuous quality improvement.
- Partner with the community advisory committee in this quality improvement activity.

Services at the Fernie hospital would ideally be part of an integrated East Kootenays surgical program, and the following section explores the potential for a more comprehensive approach.

Scenarios for an integrated surgical model in the East Kootenay region

While this review has been focused on how to better sustain perinatal surgical programs in small communities, it is clear that services across rural regions are interrelated and interdependent. Meeting the surgical needs of the population of the East Kootenay region has benefited from the designation of Cranbrook as a regional centre and the strengthening of surgical services at that site. This not only provides the East Kootenays population with better access to a broader scope of services, but also allows more complex patients to be managed closer to home. Aside from the surgical service at the Cranbrook hospital, there exists 3 other smaller surgical programs in the East Kootenays in Golden, Fernie, and Creston. There is currently very little procedural outreach being provided to the smaller programs by the specialists surgeons from Cranbrook. Also, there are significant constraints on the scope of the smaller surgical programs, as patients are often diverted to Cranbrook for the purpose of maintaining surgical volume at the regional centre.

The population of the East Kootenays is about 80,000 in total. The population is distributed over a number of communities (see map of East Kootenay region): Cranbrook (approximately 25,000), Creston (14,000), Fernie (12,000), the Elk Valley (3,000), Golden (7,000), and Invermere (3,000). Consequently, there is significant sociodemographic resistance to centralizing services in one community, even if it has the largest population. The birthing programs in the communities of Fernie (115 annual catchment births on average), Creston (110 annual catchment births on average), and Golden (65 annual catchment births on average) need the support provided by local surgical perinatal services, and this coverage needs to be provided 24/7, 365 days per year. In order to sustain the skills of the surgical teams, there needs to be more than just a perinatal on-call surgical program. The elective surgical program provided in these communities underpins the overall competency of the team, and contributes to the morale and retention of surgical team members. The elective surgical programs need the support of the regional referral surgical program provided through outreach procedural and consultative care as well as support for small site maintenance of skills during rotations at the referral centre .

The East Kootenay Surgical Services committee provides a potential vehicle for increased communication and understanding amongst the surgical services. Sitting on the committee are

representatives, including 1 administrator and 1 physician, from Cranbrook, Fernie, Creston, and Golden.

Scenario A:

If the goal is incrementally strengthening the existing system, then some minor modifications could be made to the surgical system to contribute to sustaining the smaller sites. Specifically:

1. Rotating the smaller site surgical team members through the Cranbrook program, or other referral sites, in order to strengthen skills and maintain competence. This would apply to OR nurses, GPs with enhanced surgical skills, and GPAs. This program is already under development for the Golden surgical team. A similar arrangement could be made with the surgical teams from Creston and Fernie.

2. The general surgeon, Dr. Descoteaux, located in Golden, is interested in providing a broader scope of services in Cranbrook, should there be a need. This would be an opportunity to strengthen relationships between the community surgeons and provide locum services for the Cranbrook general surgical team. This would also strengthen the incentive to recruit a GP with enhanced surgical skills to the Golden program to provide coverage for the on-call maternity program, which is in progress.

Scenario B:

This scenario is put forward with the recognition that its implementation would necessitate significant reorganization at the regional centre, Cranbrook, which is likely currently not possible and not consistent with overall planning in the region. The stability of the regional anesthesia services is critical and although this scenario may be of interest in future, it is currently not a good option. It is included here as a model which may be useful to the long term strategic planning process.

If an integrated organization of surgical services was to be implemented for the East Kootenay region, then the overall complement of surgical specialist providers needs to be organized to respond to the distributed nature of the population. The scope of practice of elective surgical services in each community should be defined by the needs of the local population, the competencies of the surgical team both local and outreach, and the availability of surgical

resources at the facility. Recognizing that general surgical services are the backbone of the surgical program, then:

1. A more distributed integrated organization of general surgical services could be undertaken in the East Kootenays. A population of 80,000 can support the activities of 4 or 5 general surgeons. One approach would be to support 2 or 3 general surgeons in Cranbrook, 1 in Golden, and 1 in Fernie, integrated into one regional call system. The surgeons from Golden and Fernie would rotate into Cranbrook on a regular basis (e.g., 1 week in 5) to cover general surgical call for the region.

2. The scope of practice of the Creston, Golden, and Fernie surgical programs would be increased to meet the uncomplicated surgical needs of the catchment populations of the 3 catchment populations. Services would be provided by both outreach and local surgeons.

3. The rotation of the general surgeons from both Golden and Fernie through the Cranbrook call rota and the strengthening of the surgical programs in all 3 satellite operating programs would support the recruitment of GPs with enhanced surgical skills, OR nurses, and GP anaesthetists to the smaller communities. This would enhance their stability and provide 24/7 coverage for the perinatal surgical programs.

4. The model of outreach surgery would be different in each of the communities. In Golden, an isolated community with a resident general surgeon (e.g., 4 weeks in 5), the breadth of day care surgery provided by the local surgical team would be determined by local competencies and local surgical resources. In Creston, a highly integrated outreach surgical model could be patterned on the Vanderhoof / Prince George model. The model of services in Fernie would be in between these 2 models.

5. Surgical wait times could be balanced for patients in the East Kootenays by having multiple points of access. This might have the added effect of decreasing the long-standing patterns of diversion of surgical patients to Alberta by creating a more attractive option of staying home and accessing services in the East Kootenays.

6. if the overall surgical capacity of the East Kootenays is integrated, stabilized, and well organized, the potential exists for attracting outreach surgery and patients from Alberta, like Dr. Heard

(orthopaedics, Banff), to enhance the volume of procedures done in sites like Golden, which might provide additional benefits.

Conclusion

Small surgical services have experienced significant challenges in the past 10 years and their capacity to provide 24/7 backup for the local obstetrical program has been compromised in many communities. In some communities, surgical services are not currently functioning and the local maternity programs are diverting all patients to the nearest referral centre. A number of actions can be taken administratively that will sustain small surgical services, including policy statements, service reorganization, and repurposing of data streaming.

Appendix A – Community Data Structure

The community data is organized as follows:

1. Geography and population characteristics

- Overview of resident population (demographic characteristics/population projections)
- First Nations population
- Outreach population which might need surgical/critical care services
- Map (1-hour catchment map [and extended natural catchments], map of community/referral centre)

2. Nearest referral centre(s) and its characteristics

- Specific referral centres, geographic/service details
- Outreach surgery
- Relationships between referral surgeons/community docs
- Transfer patterns overview (what goes to which centre)

3. Analysis of current services

- Human resources (physicians, nurses, GPs with enhanced surgical skills, GP Anaesthetists, OR nurses, OB program)
- Current outreach surgical support
- Number of OR days, scope of services
- Number of cases
- Physical infrastructure (hospital, number of beds, diagnostic capability)

4. History of surgical services

- 5, 10, 20-year surgical service patterns
- Patterns of past outreach surgery (scope of practice)
- Patterns of local surgical providers (scope of practice)

5. Challenges and gaps in service

- Gaps in providers
- Gaps in infrastructure/resources
- Challenges in relationships with referral communities
- Other gaps/challenges specific to community

Appendix B - Revelstoke

The visit to Revelstoke took place on August 30th, from 8:00-2:00. People who were interviewed or attended meetings include:

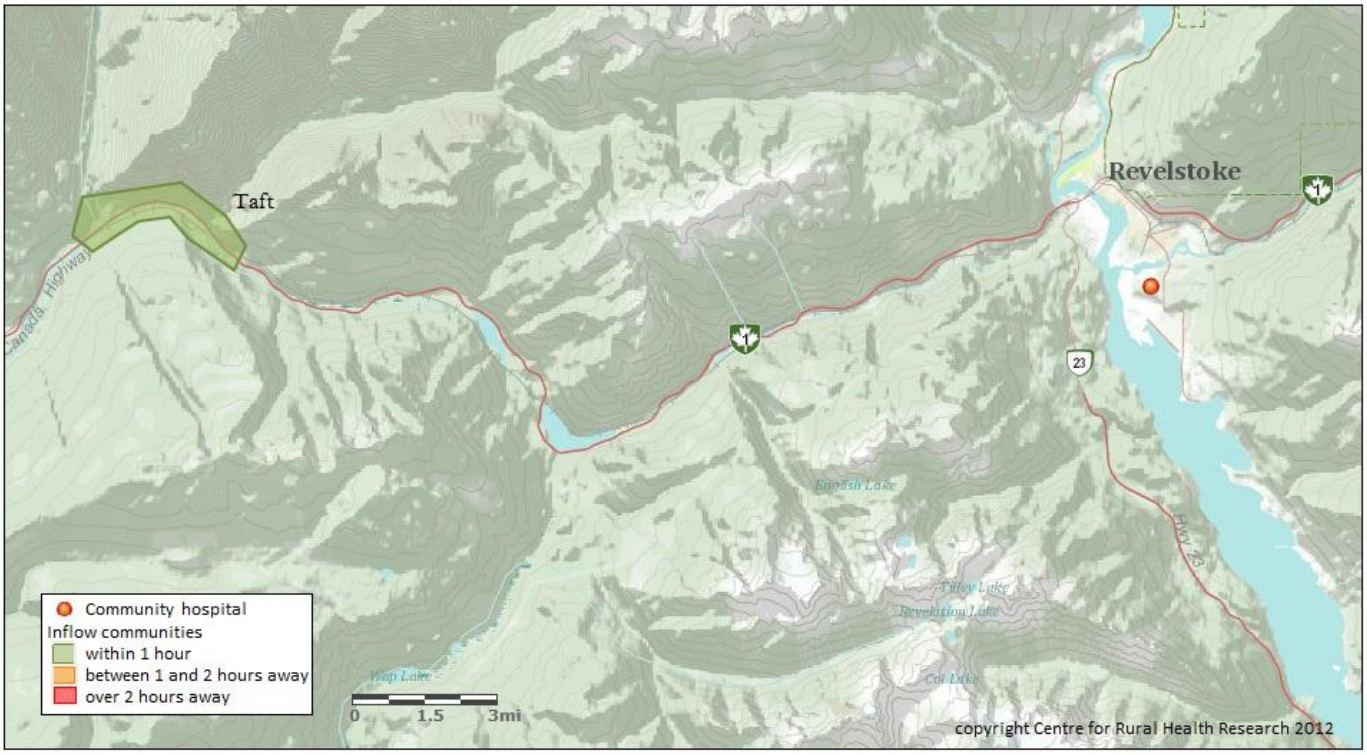
- Deena Crane, Nursing coordinator for the past 10 years
- Dr. Christopher Macdonald, Chief of staff
- Dr. Cameron Macleod, MD
- Dr. Alexandra Farrugia, GP Anaesthetist
- Dr. Courtney Rennie, MD who runs a sigmoidoscopy screening clinic
- Dr. Andreas Mostert, GP with enhanced surgical skills
- Dr. Neil Leslie, a GP Anaesthetist
- Gina Klevorick, OR Nurse
- Karen Urquhart OR Nurse
- Mardi Syrnyk, OR Nurse
- Peter DuToit, Area director for the Thomson Caribou Shuswap Region.

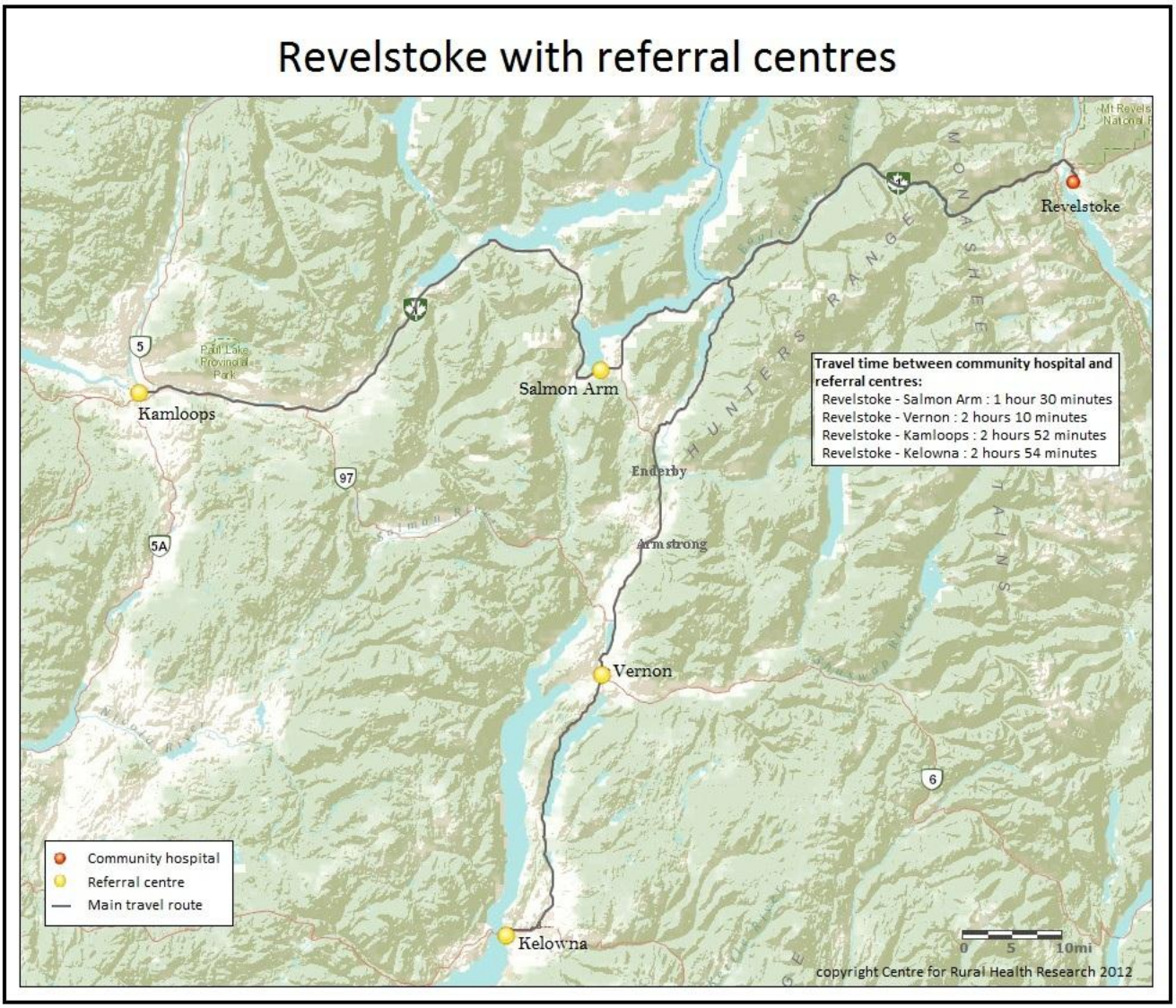
1. Geography and population characteristics

There are between 7,000 and 8,500 residents in the 1-hour catchment of Revelstoke, and the LHA population is approximately 3.1% First Nations. The total population swells to 11,000-12,000 during the ski season due to a large recreational transient population. The town is a popular destination for many outdoor activities, such as heli-skiing, sledding, and bus tours in the summer months; an estimated 100,000 people visit Revelstoke every year through bus tours. Augmenting this population inflow is a busy highway, the Trans Canada, which runs through Revelstoke. The Ministry of Transportation reported the summer (July and August) daily average traffic volume to be between 10,500 and 14,200 vehicles in 2007. The roads in and out of Revelstoke, East-West, are fairly frequently blocked due to heavy snow in the winter. On average, Revelstoke receives 14 feet of snow per year.

Historically there were up to 200 deliveries per year in the population, but this is now about 100 deliveries. There is some natural population drainage into the Revelstoke hospital from the communities of Taft, Nakusp, and Golden.

Revelstoke with inflow community





2. Nearest referral centre(s) and its characteristics

Referral patterns vary based on condition. In the area of cardiac care, for example, patients tend to go to Kelowna, whereas trauma tends to be referred to Kamloops. Salmon Arm and Vernon are closer referral communities where patients requiring less intense care are generally transferred. There are onsite lab services with additional lab support provided by Vernon. There is some referral pattern outside of Interior Health (IH); for example, orthopaedic skiing injuries may to go to Banff, as there is a surgeon there who specializes in skiing accidents.

Relationships with the communities of Salmon Arm, Vernon, Kamloops and Kelowna have been very strong over the years, with good support for the surgical program in Revelstoke. The outreach surgery program has varied over the years, but has generally been a significant part of the town's surgical services. There is still a good relationship with the outreach surgeons who come into the community, although there is reportedly some competition among them for time in providing care in Revelstoke. Deena Crane, who organizes the OR, tries to accommodate the

surgeons on a first-come-first-served basis, while ensuring surgical cases take priority over endoscopy. This seems to work well to maintain the interest of the surgeons who come to provide outreach surgery in Revelstoke.

The long history of outreach surgery in the community includes Dr. Knight, a plastic surgeon, who came every 2 weeks for 30 years from Kelowna. He would perform many plastic procedures including trigger fingers, tendon surgery, and occasionally an amputation. Currently, there are a number of surgeons from Salmon Arm who come to Revelstoke regularly to provide services: Dr. Christopher Parfitt, an orthopaedic surgeon, comes twice per month to perform arthroscopies; Dr. Janice Journeau, a general surgeon, comes once per month; Dr. Johannes Schneider, a general surgeon, comes once per month and performs scopes and hernias; Dr. Kevin Wiseman, a general surgeon, comes twice per month; and, Dr. Danny Myers, an internist, comes once per month and provides scopes.

3. Analysis of current services

The overall impression is that surgical services in Revelstoke are working well. The OR functions 2 days per week. There are 2 GPs with enhanced surgical skills, with a third beginning practice soon, and a strong outreach surgery program, with general and orthopedic surgeons coming from Salmon Arm and Vernon. The level of morale and teamwork on site is very strong; the GPs all work together in one clinic, and have a long history of working well with the nurses. There has been high continuity of providers, both physicians and nurses. The nurses are trained to be able to staff across the acute care spectrum of the hospital. The GPs are full service, and tend to be involved in all aspects of family practice. There are some GPs who have enhanced skills in the area of surgery or anesthesia. Four of the GPs work as GPAs, and supplemental to their support in the operating room, they provide a lot of the critical care and emergency case consultative support.

The current complement of GPs with enhanced surgical skills includes Dr. Cameron Molder and Dr. Andreas Mostert, who came here from Saskatchewan but was trained in South Africa. There is a new GP with enhanced surgical skills that has been recruited to the community, Dr. Vikki Vogt, and she will be starting in the next few months. The 4 GPAs serving Revelstoke are Dr. Alexandra Farrugia, Dr. Neil Leslie, Dr. Sara Brown, and Dr. Cameron Molder. One of the GP's, Dr. Rennie trained to do flexible sigmoidoscopies in Kelowna and now provides that service for the local population as a screening clinic.

Turnover amongst the physicians has been very low. Dr. Farrugia and Dr. MacDonald are partners, and they have been in Revelstoke for 16 years. Dr. Molder has practiced in Revelstoke for over 20 years, Dr. Leslie for 30 years, and Dr. Rennie, Dr. Jarmula, and Dr. Brown have been in Revelstoke for 6 years. One other member of the practitioner community who has come on board in the past couple of years is Birte Pachen, who is a midwife; she does sit on the medical staff committee and will be more active in the community. There is one specialist working in Revelstoke, a psychiatrist.

Currently there are 10 doctors working together in 1 clinic. They are mutually supportive and provide cross-coverage for each other. They provide a similar scope of practice, but some have enhanced skills in specific areas. The new GP with enhanced surgical skills, Dr. Vogt, has a wide

scope of practice and has trained in procedures that will supplement current procedures. This foundation is part of the reason the hospital functions so well, as there is little dissonance amongst the doctors.

As far as the contingent of nurses, there are 13 lines for nurses, of which 4 are half-time, and 11 are full-time equivalents. There are 8 casual positions, which rises to 12 at certain times of the year. Deena Crane, the nursing coordinator for the Revelstoke hospital, oversees emergency, acute care, and the surgical suite, and has been doing so for about 10 years. Currently there are 5 OR nurses who share the call, and 2 who are completing their final training, which will increase the OR nursing staff to 7 nurses, meaning the nurses will be on call for 1 week per month. Generally, two nurses are needed in the OR and one is needed in the PAR for the elective slates, but on nights with emergencies 2 nurses work to support the PAR. The nurses are on call for the emergency room trauma as well as the OR, as trauma is not an infrequent occurrence, either from the sleds, skiing accidents, MVAs, or bike accidents. The OR personnel are used for the surgical elective cases. After hours care in the OR is generally C-sections or trauma. The on-call is 24/7, with two nurses assisting each other as needed.

The only regular shut down of the OR is for statutory holidays, when the OR day falls on a holiday and the OR team is not available. The OR personnel provide over 500 procedures yearly, a significant proportion of which are scopes. In 2010, there were 400 scopes, 200 surgical procedures, and 24 C-sections. All the caesarians were performed by the GPs with enhanced surgical skills. The scope of practice of the GPs include: C-sections, appendectomies, laparoscopic tubal procedures, both therapeutic and clinical dilation & curettage, umbilical hernia repairs, lumps and bumps, perianal abscesses, tonsillectomies, and adenoidectomies.

The OR, which requires 2 nurses to operate, is open for elective procedures on Tuesday and Wednesday. One nurse works from 7:00-3:00, the other from 8:00-4:00. Surgeries are performed between 8:00-3:00. There is also a third staff member in the PAR. The OR nurses also support the maternity and the emergency services. The nurses and doctors participate in a lot of local educating. One of the GPAs has been certified as an ACLS trainer, so she provides that course in Revelstoke. They don't rely on just the program for cardiac arrest management but all nurses are trained and certified in ACLS as well as the physicians.

As far as maternity care is concerned, in the 1990s there were about 130 deliveries per year at the hospital, and it gradually declined until 2010, performing about 70 deliveries, but has built up over the past couple of years to approximately 100 deliveries. There have been very few diversions due to lack of surgical support for the delivery suite, and there was only 1 birth so far this year that had to be diverted. An important point illuminated through discussion was the proportion of the surgical program that is dedicated to providing perinatal surgical care. Amongst the anesthesia group, it's about 10-15% of their activities, and amongst the GP surgeons it's around 30%. It's a small proportion of the program, of the 2 days per week of elective time, and of the emergency time, that's dedicated to the perinatal program.

The stability and resilience of the Revelstoke program benefits from its focus on meeting the surgical needs of the community. The nurses and physicians work well together, and there is not a sense that people need to compete to provide services. The overall management structure of the

hospital works well. Lab services are regionally managed, and the rehabilitation department will be reporting to the newly formed Allied Health structure.

For the catchment of Revelstoke, it is crucial to be able to respond to trauma on the highway; the surgical team actually doubles as a trauma team, which is not necessarily consistent with other small surgical services. There are always 2 nurses on call for the surgical team, and they will be mobilized by the emergency nurse if there is significant trauma requiring care. There have been some dramatic and traumatic events in the past years, including a big avalanche and a bus accident that are recalled in detail by the staff.

Importantly, when the group was asked if they would support the recruitment of a general surgeon, they replied it wouldn't be the right level of service for the hospital and the community and it would probably disturb the sustainability of the practice. The population is too small to support a general surgeon, and the needs of the population should determine the service level. Consequently, it is probable that GPs with enhanced surgical skills are a good surgical model for this population.

The current staffing pattern is fairly lean for the hospital structure, which is on 2 floors. The ER and OR are on the first floor, and there is 1 nurse staffing the ER. Upstairs there is one nurse and one LPN staffing the acute care beds. In the ER there are 4 bays, 1 treatment room and 1 trauma room. The delivery suite is located on the second floor and has facilities for 2 women at one time, if they are coincidentally in labour. There are 2 monitored beds, and all physicians manage the monitored patients.

Some of the equipment has been outdated and is gradually breaking down. However, Revelstoke is well supported financially through the hospital auxiliary which is able to raise funds to support the purchase of some equipment. The instrument assembly stations for the medical device reprocessing unit, which went down in 2011 were replaced by IH. The hospital does provide some WCB and private surgical services, which do generate some funding.

4. History of surgical services

The 100th anniversary of the original Queen Victoria hospital building was recently celebrated by the community, and the surgical program has been present for a significant portion of that time. There was a very active presence of general surgeons up until 1990, and also a strong outreach surgery program which continues to this day. The GP surgery complement 10 years ago included Dr. Sydney McKnight, Dr. Geof Battersby, and Dr. Cameron Molder. Dr. Battersby and Dr. McKnight, both GPs, provided surgical services in Revelstoke for many years. Dr. Neil Leslie has been a GPA for many years in the community as well, and is still in practice today; however, both Dr. McKnight and Dr. Battersby have recently retired.

The development of the one clinic approach began in the 1970s; at that time it was 6 doctors, and now there are 10. It has succeeded in bringing all the doctors under one roof, which makes for a homogenous and well-integrated approach to providing care for the population. At one time, 22 years ago, the OR ran 5 days a week. It was then downsized to 15 hours per week, to run only 3-4 hours per day. This was consolidated into 15 hours over 2 days about 10 years ago. There were 25 acute care beds, and a general surgeon living in the community in the 1990s. There was

also strong involvement of a plastic surgeon from Kelowna who came twice per month for 30 years. Around the year 2000, the number of beds was reduced to 10. The last general surgeon left in the early 1990s, and there was significant erosion in the overall program of services.

Prior to 2000, there were 3 charge nurses, for 8 hours per day each (which would cover the full 24 hours), and a larger complement of nurses. There was a period of time when the hospital went through 7 different managers. Many of these changes occurred in the early years of the regionalization process, when Revelstoke was part of the North Okanagan Health Region (NOHR) between 2001 and 2004. Regionalization was revised in 2004, which is when Interior Health was created. The GP surgery complement 10 years ago included Dr. McKnight, Dr. Battersby, and Dr. Molder. Dr. Battersby retired and Dr. McKnight ceased practice a couple of years ago. These services are now provided by Drs. Cam Molder and Andreas Mostert. There is also a new GP with enhanced surgical skills that has been recruited to the community.

5. Challenges and gaps in service

There are not many challenges to the sustainability of this program, nor many gaps in services. There could be greater utilization of OR time, potentially, which could come from enhanced outreach surgery or through recruitment of the 3rd GP with enhanced surgical skills who will have an interest in providing services as well.

Deena Crane commented that adequate staffing is problematic because acute services are spread out over 2 floors, and could be reorganized to 1 floor. However, the renovations to do this are expensive and it lies in the future planning.

Another interesting aspect to the relationship with referral communities is that, for the purposes of their own place in Interior Health, Salmon Arm, Vernon, and Kelowna have all claimed Revelstoke at different times to be part of their surgical sphere of activity. Unfortunately when it comes time to recruit outreach surgeons to come and help in Revelstoke, it is not always forthcoming, despite these programs' desire to be seen as covering Revelstoke.

Appendix C - Golden

The Golden visit took place on August 31st, from 8:00-2:00pm at the Golden Hospital. During the visit several individuals were interviewed, including:

- Christine Bailey, Site Manager
- Dr. Trina Larsen Soles, MD who provides Obstetric Services
- Dr. Rob Drysdale, GPA who provides ER care
- Dr. Kirk McCarroll, GPA who provides ER and OR.
- Dr. Rob Wilson, Chief of Staff and Pediatrician
- Dr. J. G. Descoteaux, General Surgeon
- Virginia Clark, provides OB and ER services
- Jen Stronge, Susan Dukelow, and Kim Fowler, OR Nurses
- Marc Hadford, OR Nurse and Critical Care Coordinator,
- Gail Orr, OR Nurse and provides Acute Care services
- Erica Phillips, Health Services Administrator

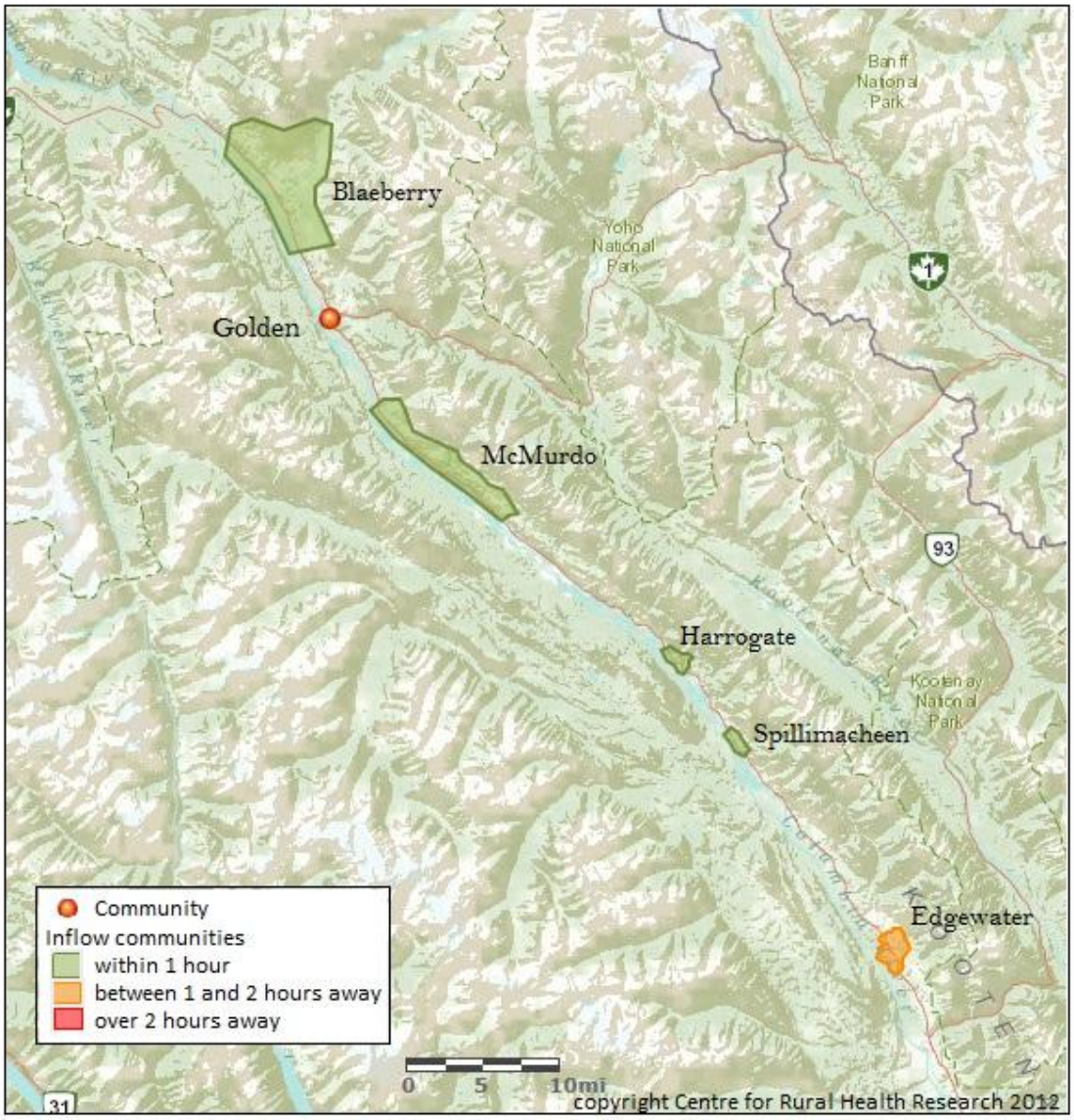
1. Geography and population characteristics

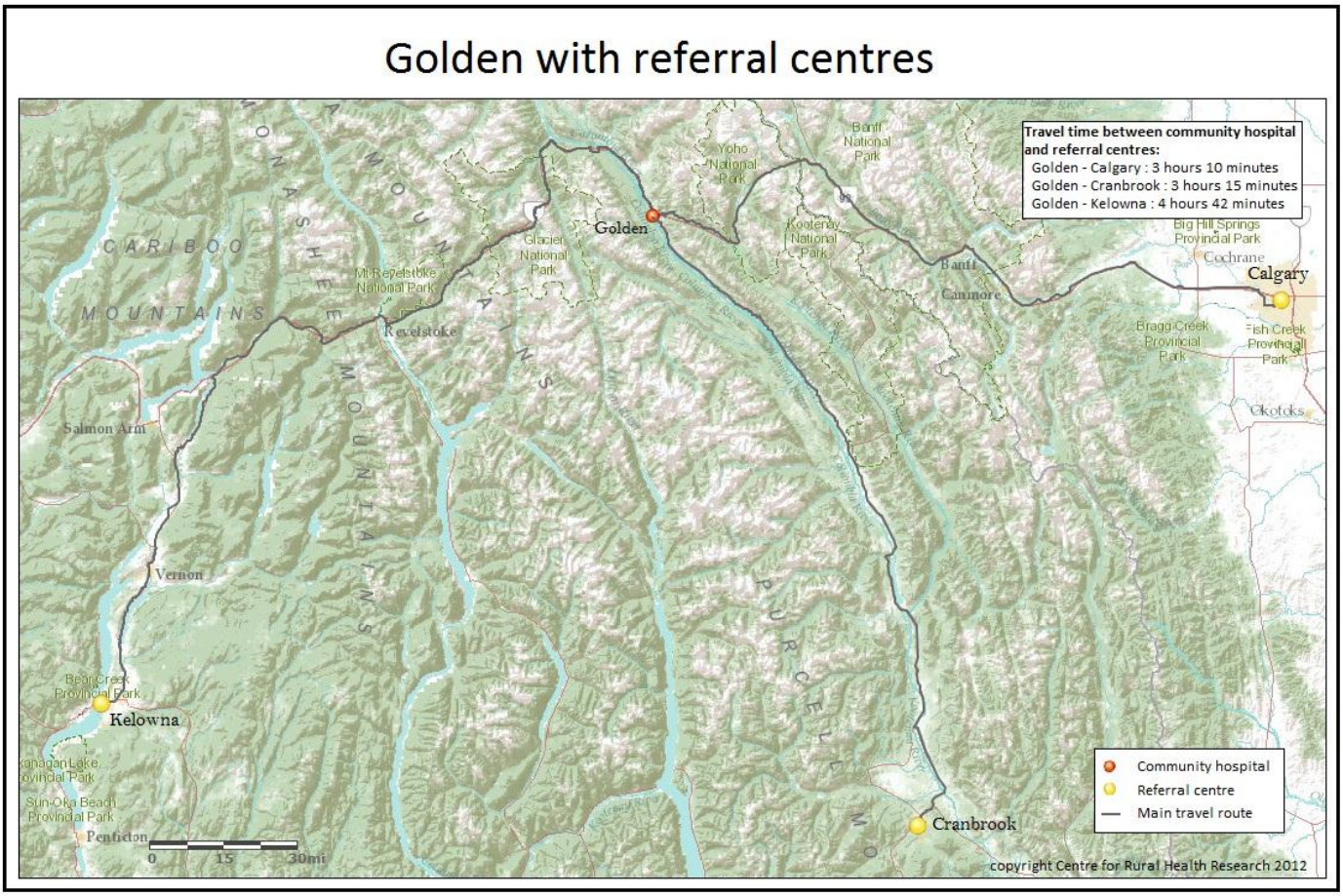
The catchment population in Golden is approximately 7,000-8,000, and the population projection is predicted to slowly increase over time. On a given day, Golden may have an additional 10,000 seasonal workers of the transient population in the catchment area of the hospital. Due to a recreational population, Golden may have close to 3,000 people on the ski hill. The general population is young and active, with the population of First Nations insignificant in numbers. Besides long-term residents in the community, Golden has not attracted a retirement community. There is a continuous volume of trucks and vehicles, creating a high influx of traffic on the Trans-Canada highway. Data from the Ministry of Transportation estimated the summer average for daily volume of traffic to range from 8,000 – 10,000, with the annual daily traffic average of 4,500 – 5,500 vehicles. All motor vehicle collisions (MVCs) end up at the Golden hospital.

Current estimates show a total of 100 pregnancies per year in the catchment area. The main economic driver in the Golden region is tourism and the service industry. With a new ski resort (Kicking Horse Resort) developed, the site has been successful in attracting the interest of tourists. Additionally, there is a CP rail in place. The forestry industry, which used to be mostly logging, is now mostly secondary manufacturing (plywood plant), and has diminished. Golden is surrounded by national parks, which attracts alternative sports such as skiing, backcountry, paragliding, mountain biking, mountain climbing, river rafting, and snowmobiling. These activities can pose risks such as avalanches and result in an increased number of injuries.

The population's need for surgical services is related to the level of trauma. This includes mountain bike injuries and MVCs on the road. MVCs are more common in winter, with narrow roads and treacherous winter driving. The broad range of extreme sport and high volume traffic leads to a significant number of injuries, and constant need for emergency service through the hospital and ER. While most trauma does not end up in the surgical suite, the GPAs are often called in for the management of critical care.

Golden with inflow communities





2. Nearest referral centre(s) and its characteristics

Referrals generally go either south to Cranbrook or east to Calgary, depending on the type of need. Both communities are approximately 3 hours in distance. In the last few years, Alberta has more resistant to accept BC patients in Calgary, due to the increasing volume of Alberta patients. This is reflective of the dramatic population growth in Alberta related to the oil industry.

Until 5-10 years ago, 90% of the referrals went directly to Alberta. As well as Calgary which is 3 hours away, a proportion of patients travel to Banff to see an orthopaedic surgeon, or to Canmore, where they can access plastic surgical services. Kelowna, which is 4 hours away, provides a destination for referrals in the areas of neurology, neurosurgery, and cardiology. Cranbrook is the major site for referrals for general surgery, gynecology, orthopaedics, and ENT. As far as outreach surgical support Dr. Jewett, the ENT surgeon, is available once per month, but generally provides consultative rather than surgical services in Golden. Dr. Leah Mortimer, a dentist, provides dental surgical services every 3 months in Golden. Dr. Mark Gale, a FRCP anaesthesiologist , lives in Golden and Calgary and works at the Alberta Children's Hospital and provides occasional locums in anaesthesia in Golden. There is a plastic surgeon, Dr. Tom Sinclair, living in Canmore who might be interested in providing surgical services in Golden should there be an opportunity.

Dr. Mark Heard, an orthopaedic surgeon from Banff, currently provides consultative and surgical services (knee arthroscopies primarily) 1 day per month at the hospital. Dr. Heard brings some Alberta patients with him, as well as providing services for residents of Golden. Each of the Alberta patients brings dollars from Alberta into the Golden program. There is potientail for this service scenario to be expanded.

Currently, the interprofessional relationship between Cranbrook and Golden in the area of surgical services is improving. Dr. Descoteaux, the general surgeon living in Golden, is interested in contributing to the Cranbrook surgical program, potentially by doing locums.

Historically, there has been a preference amongst some Golden residents to go to Alberta to access health services, as Calgary's facilities are much larger in scale than Cranbrook's. The change in services provided in Cranbrook, as well as the increasing resistance met by BC patients trying to access care in Alberta, has led to changing referral patterns.

3. Analysis of current services

For over 30 years, Golden has continued to provide surgical services in the community. Historically within the last 10 years, there were as many as 4 GPs with enhanced surgical skills. It is only in the last 3 years that a general surgeon has established a presence in the community.

Currently there are 3 active GPAs in the community, and a 4th, Dr. Bruce McKnight, who is currently in training. In terms of obstetrics volume, there are nearly 100 deliveries per year, which is down from the 150 per year of ten years ago. Currently, the majority of parturient women from the catchment deliver locally.

Other physicians in the community include:

- Dr. Trina Larsen Soles, MD who provides Obstetric Services and has been in the community since 1987
- Dr. Rob Drysdale, a GPA and GP surgeon, has been in the community since 1982, and provides minor surgeries only, including circumcisions, vasectomies, and excision of lumps and bumps.
- Dr. Kirk McCarroll, a recent GPA graduate, has a strong interest in critical care. He has been in the community for 1 month with his wife, who is a GP.
- Dr. Rob Wilson, a pediatrician and current chief of staff, has been in the community for 31 years,
- Dr. J.G. Descoteaux, a general surgeon, has been in the community for 3 years. He has gradually been forging the surgical program into a program that more effectively meets the needs of the population. He does travel away to do locums at times in Yellowknife and other parts of Northern Canada.
- Dr. Nick Tan, who is a new recruit, has recently upgraded his surgical skills by doing an enhanced skills program in Surrey. Since his return in June, he has been providing C-section coverage.
- Dr. Virginia Clark, a family doctor who provides obstetrical care, has been in the community for 6 years. She travels back and forth to Calgary on a fairly regular basis.
- Marc Hadford, the patient care coordinator and nursing supervisor for acute care services, has been in the community for 2 months.

- Christine Bailey, the acute and residential site manager, has been in the community since March 2012.

Currently, the balance between outreach surgery and local surgery is 50-50, with the biggest block of outreach surgery being orthopaedic surgery from Banff provided by Dr. Mark Heard. The OR is currently open 5 days per month – one day for Dr.Mark Heard's slate, and the other 4 days for Dr. Descoteaux. Typically, it is 1 day of surgery and 3 days of scopes for Dr. Descoteaux per month.

Overall, the volume and number of procedures are low. The current nursing rota is 2 nurses in the OR, and 1 nurse in the PAR and prep area. The scope of practice includes elective endoscopy, elective C-sections, and some general surgery including hernias: open and laparoscopic, inguinal, and incisional. There are also hemorrhoids, fistulas, breast lumps, and other lumps and bumps, perianal repairs, and dilation and curettage. Emergency surgery is primarily C-sections.

Staffing levels for nurses during the daytime shift include 2 RNs and 1 LPN on at the hospital. There is 1 LPN during the evening shift and 2 RNs during the night shift. Overall, there are 12 full time lines of nursing, and currently there are 2 vacancies being filled by casuals. It's generally not that hard to attract nurses to the Golden area, because of the attractiveness of the area, and all of the opportunities for recreational activities.

The most significant challenge for the OR nurses is to maintain competency. It is likely that the most efficient way to do this will be to rotate the OR nurses through a larger referral centre on a regular basis.

There is a 3 bed post-operative/anesthesia recovery room to support the operating room. There are 2 delivery rooms. Over the past year, the continuity of the on-call perinatal surgical program has been well maintained by local staff. When Dr. Descoteaux is out of the community doing surgical locums, a locum GP with enhanced surgical skills has been found.

The need for emergency surgical services is primarily to back up the obstetrical program allowing women to labour and deliver in the community with confidence. There is a strong understanding amongst the Golden staff that maternity services would not survive without the backup of local surgical services. This is particularly important in the winter, when the roads out of Golden are frequently impassable. On occasion, having an active surgical program has supported other emergency surgical services responding to a range of conditions, including hemorrhage, appendicitis, and perforated ulcer. Timely local access for critical care support has been lifesaving at times.

GP anesthesia is an important component of the surgical program in Golden. This included anesthesia backup for difficult airways, difficult trauma or injuries, or any critical care issues. The operating room nurses also provide backup for the emergency room. As far as transfers, the nurses use the Alberta STARS program 4-5 times per month to move people from emergency to the Edmonton or Calgary area, whom require transfer to higher levels of care.

4. History of surgical services

Prior to regionalization, Cranbrook (with a catchment population of about 25,000 people) used to be more of a community hospital than a central referral hospital. Twelve years ago, there was only 1 general surgeon, Dr. Abdul Aleem, and now there are 4 general surgeons based in Cranbrook. There used to be 1 obstetrician in Cranbrook but now there are 3. The increase in surgical providers in Cranbrook has had an impact on the scope of surgical services provided in Golden and other East Kootenay communities.

In the late 1990s, training for OR nurses was provided on site, and most of the current OR nursing staff went through that program. This was a convenient and efficient system for building the surgical team in Golden. Training programs for OR nurses are now more demanding.

As far as physicians, Dr. Don Lewis Watt, a GP with enhanced surgical skills, was in the community from 1988 to 2008. Dr. Stark and Dr. Drysdale provided the anesthetics during that time period. Dr. Mistry, a GP with enhanced surgical skills, was also present in the community from the 1990s until 2010, and performed C-sections, gynecological procedures, advanced obstetrics including forceps, repair of 3rd and 4th degree tears, appendectomies (open, not laparoscopic), lumps and bumps, some plastics, and other minor procedures. He still returns to locum on an occasional basis. Dr. Gui DuToit, a GPA and GP with enhanced surgical skills, provided obstetrics as well.

5. Challenges and gaps in service

Some of the OR nurses feel that the OR program needs to be expanded both in scope and volume in order to sustain the team. The scoping, which is currently the mainstay of the OR, is not enough to maintain the surgical competencies of the team. There is clearly potential for enhancing outreach surgery in the community, and this could include other surgical specialty areas beyond orthopaedics and dentistry.

Enhancing the scope of local surgical practice could mitigate the difficulties some of the older vulnerable residents have experienced in having to travel to access basic surgical services. The approximate 3 hour travel time to access surgical services when the procedure is done in a day care setting, can create substantial stress on some of these patients, particularly when a bowel preparation is involved.

The challenges to sustainability and gaps in services are primarily related to the volume of surgical practice. There are enough people in the catchment to justify a busier operating room. Procedures are being referred that could be appropriately done in the community. There is certainly the surgical skill set to deal with the problems, and the OR infrastructure is adequate to do more on a regular basis. This community is one that could justify increased opportunity to undertake local surgery for the local population.

Another related challenge is maintaining obstetrical competency for the nursing staff.

Appendix D - Lillooet

The visit to Lillooet took place on September 27th, from 9:00 to mid-afternoon. During the visit, 7 individuals were interviewed at the hospital. They are:

- Bev Grossler, Patient Care Coordinator
- Jennifer Thur, Site Manager
- Dr. Karl Mascher, GP Anaesthetist
- Dr. Terry Miller, GP who provides obstetrics services
- Dr. Nancy Humber, GP with enhanced surgical skills
- Maria Mascher, Head OR Nurse
- Jan McIvor, Circulating (Casual) Nurse

Dr. Ian Routley, the Chief of Staff, was interviewed through a phone meeting early in September.

1. Geography and population characteristics

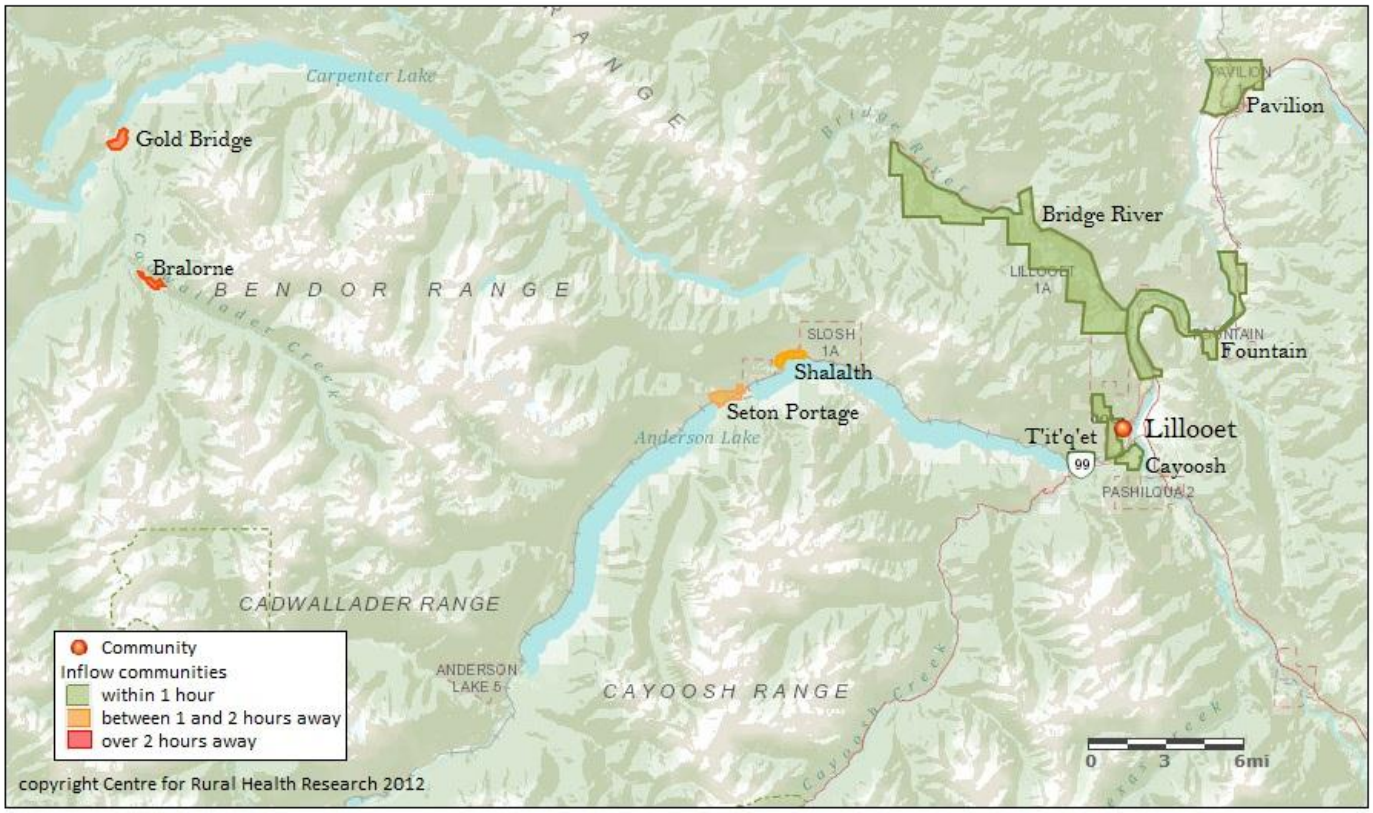
The 1-hour catchment population and inflow population is between 5000 and 6000, with 50% of the population First Nations. The communities that drain into Lillooet are scattered, some from as far away as 2 hours: Gold Bridge (100 people) and Bralorne (50 people). There are 5 bands surrounding the Lillooet hospital scattered into 7 communities: Bridge River (20 minutes away in optimal road conditions), Cayoosh (3 km away, around 5 minutes from town), T'it'q'et (in town), Pavilion and Fountain (around 45 minutes away, across the river), Seton Portage (1.5 hours from town), and Shalalth (1.5 hours from town). There is some additional drainage into the Lillooet hospital from Ashcroft (1 hr 10 minutes), Cache Creek (about 1 hour away), and Lytton (about 45 minutes) where 3 bands reside.

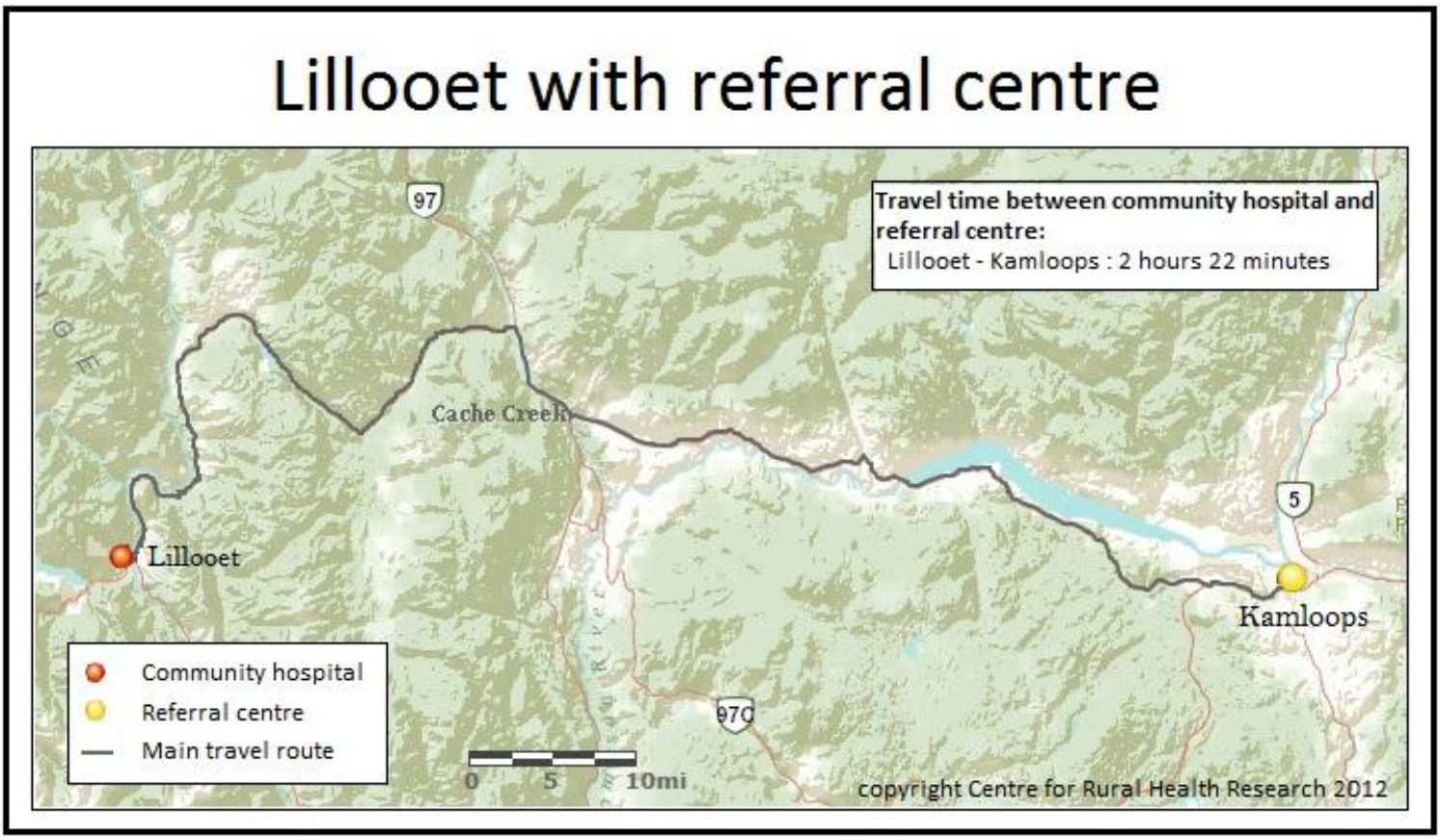
The birthing rate for the population served by the Lillooet facility has varied between 40 and 60 births per year over the past 5 years. There is a fairly high rate of teen pregnancy, 42.2 per 1000 teens, and it appears to be rising. Overall the population is stable and fairly young; the First Nations population is growing, and is apparently the fastest growing sub-population in Interior Health. Population projections produced by BC Statistics suggest that the Lillooet area will grow from 4,548 in 2012 to 4,919 by 2020.

The transient population seeking care at the Lillooet Hospital consists of individuals involved in MVAs traveling on the Duffy Lake Road as well as tourists and campers recreating in the area. The Ministry of Transportation estimated that the summer daily average for 2007 was 3,200 vehicles for the Duffy Lake Road; based on local expert opinion, traffic volume appears to have increased from the 2007 estimate, and is likely around 3,500-4,500 in summer, and 2,000-3,000 in winter.

It is important to remember that access to services for residents in the immediate catchment of the Lillooet Hospital includes not only those individuals living within the community of Lillooet, but also individuals who have to travel a considerable distance just to get to Lillooet, which is the closest hospital. For example, Seton Portage, which is 1-2 hours away from Lillooet.

Lillooet with inflow communities





2. Nearest referral centre(s) and its characteristics

The nearest referral hospital with C-section capability is Kamloops, which is 2 hours driving time. For routine consultation, another option is Whistler, which is 2 hours drive across the mountainous Duffy Lake Road. Whistler is very well supplied with specialists, including orthopaedic surgeons, ENT, sports medicine, and plastics, who visit on a regular basis, and equipment (CT scanner), although there is no hospital or operating room there. Generally, emergencies from Lillooet go to Kamloops, and interventional cardiology goes to Kelowna or Vancouver.

Since regionalization, a bus service was implemented between Lillooet and Kamloops for a minimal fee of $5. This service has facilitated access to specialist care and ensures a ride home for patients, but does not work well with the preparation needed for certain surgical day care procedures. The advice to the patient is to arrive the night before and stay overnight in a motel, which places an increased financial burden on Lillooet residents.

Royal Inland Hospital in Kamloops supports nursing continuing professional education, including the nursing shadowing program. Interprofessional relationships between local GPs in Lillooet and specialists in Kamloops have met some recent challenges. Some of the local physicians feel a sense of isolation. This sense of isolation is at least partially based on the suspicion that the specialists in Kamloops are not supportive of Lillooet surgical services.

Emergency transport by helicopter is only available during the daylight hours, but casualties can be transported directly from the site of injury to a secondary or tertiary hospital (most often Kamloops). At night time patients need to be transported by road, which usually involves coming to the Lillooet hospital. Generally code 3 emergencies (lights and siren) come in approximately 6-8 times per month, and approximately half of these are MVAs.

3. Analysis of current services

There are 5 doctors in Lillooet: Drs. Terry Miller, Ian Routley, Adriaan Kellerman, Karl Mascher and Nancy Humber. The maternity program serves a catchment of about 40-60 deliveries per year. The number of deliveries done in Lillooet has decreased in the past year, as Dr. Humber, the principle accoucheur, was absent from the hospital between June and November of 2011. Birthing services have still not recovered from Dr. Humber's absence.

Currently there is on average 3 half days of surgeries perfomed per week, provided by the local GPs with enhanced surgical skills, or locum physicians who have supported the surgical program during Dr. Humber's absence. The OR is funded for approximately 60 half-days per year; the OR is closed in the summer, and intermittently for 1 week every 5 weeks due to absence of one or another of the core surgical team. The limited capacity of the PAR also dictates the OR program's structure.

The only other surgery taking place in Lillooet is dental surgery, with procedures being done 1 day per month. Most of the dental patients are First Nations, as First Nations funding covers the cost. As of September 1st 2012, there are increased outreach nursing and physician services to Seton Portage from Lillooet, which will strengthen care for the catchment and potentially identify surgical patients who could receive care in Lillooet.

There are 2 OR nurses: Maria Mascher, who has been working at Lillooet Hospital for about 12 years, and Jan McIvor, who has been working in Lillooet since the mid-1970s. For the OR to be functional, both nurses need to be present. Currently, in terms of OR nursing duties, Maria works 24 hours per week and fills a majority of the OR nursing duties, which include equipment cleaning, OR bookings, and all the other clerical work. The support position is covered by Jan (who is casual) through contingency funding of up to $50,000. Both are on call whenever there is an obstetrical case that might proceed to Caesarian section. There are 2 other casuals who occasionally help out in the OR program. The OR nursing rota can be characterized as needing to be flexible and adaptable. The OR cases are booked in response to what clinicians in the community identify as needed surgery.The patient care coordinator is Bev Grossler, and she works closely with Jennifer Thur, the administrative site director. Both are nurses.

There was an overall feeling of exhaustion from the medical staff. Ideally, the physician complement would include 6 doctors; however, having only 5 doctors coupled with increased call schedules and more emergency cases, the doctors are feeling overwhelmed. The prospect of expanding services without new recruitment is daunting.

The following table details the number of procedures performed in Lillooet in 2010 and 2011.

Procedure	2010	2011
Gastroscopy, Colonoscopy	65	54
Dental Restorations	15	9
C-section	2	-
Vasectomy	7	3
D&C	8	5
Hernia repair	4	6
IUD removal	1	1
Incision & drainage	1	2
Carpal tunnel release	3	3
Ganglionectomy	2	-
Cautery warts	1	2
Hysteroscopy	1	-
Bilateral Salpingectomy	1	-
post op wound exploration	-	1
excision of lesion	-	2
Total	111	88

4. History of surgical services

Twelve years ago, pre-regionalization, the OR was open 3-4 half days per week. It was supported by a fairly active outreach surgical program with 3-4 OR nurses in addition to the procedures provided by the local GPs with enhanced surgical skills in Lillooet. Dr. Sanden, a general surgeon, used to come from Kamloops to do complex hernias and other day care procedures. He worked closely with Nancy, and came 1 day every 3 months. There were also 2 OB/GYNs who came in turn every 3 months: Dr. Human and Dr. Treissman. They would do lap tubals, and diagnostic laps. Dr. Cleland, an ENT surgeon from Kamloops, came regularly as well. He would borrow equipment, including a microscope, from Kamloops. For the past 5 years, there has not been much outreach surgical activity. Key reasons include: difficult winter driving conditions, and increase in surgical cases in Kamloops.

There was a fairly significant shift around the time of regionalization with loss of most of the outreach surgical services that had been in place, and a gradual deterioration of collaborative relationships with the specialist surgeons in Kamloops. Surgical services also changed dramatically around 2002, when there was an accreditation process within the new regionalized model, and cuts were made to the program, in particular to surgical nursing funding.

5. Challenges and gaps in service

In order to perform an emergency C-section, which is the principle emergency operation done, there needs to be 3 nurses, 3 doctors, and a GPA in the operating room, which is the full local surgical team. Consequently, if any member of the team is away, the service is compromised.

The nurses go on call when someone is in labour or anticipated to be in labour in the near future. Because the OR team is so small, the whole team needs to stay in the community whenever a

woman is in labour. With the current leave schedule where each doctor is off one week every 5 weeks, there are only 4 doctors working at a given time in Lillooet. This means for 2 weeks out of every 5, either Dr Mascher, the GPA, or Dr Humber, the GP with enhanced surgical skills, are not working at the hospital, and the OR is closed.

Another challenge to the surgical program is its relationship with the physicians in referral hospitals, in particular Kamloops. Historically, the collegiality was built on an active outreach surgical program. The lack of interest in providing outreach surgical services, for various reasons, and reluctance to allow Lillooet residents to access outreach surgical services from elsewhere (stating that Kamloops refuse to take up any complications that occur) makes it difficult to maintain the surgical program in Lillooet.

Another issue is the refusal to provide surgical time to Dr. Humber to scrub in on cases in Kamloops with general surgeons or sub-specialist surgeons, to enhance or maintain her surgical competencies.

Another issue that was raised was the problem with recruitment of new physicians to the community. In particular, Dr. Mascher stated the difficulty in finding a physician who can follow his model of practice. Dr Mascher practices as a GPA on a part time basis with a majority of his service in family practice – a model that's gradually being found less attractive by aspiring GP Anesthetists.

There are some challenges in terms of nursing. One challenge is the low level of experience and de-skilling of nursing in terms of obstetrical care. This is compounded by the low volume of deliveries, which leads to less comfort with deliveries for the nursing staff. This leaves doctors also feeling less comfortable managing labour and delivery at the Lillooet hospital. The planned introduction of More^{OB} in IH may help to address this problem. The other issue is the very limited number of OR nursing staff, which includes only one regular part-time, one regular casual, and two on-call casual backups. Call schedules are difficult to schedule with the causal backup nurses, as they do not live in Lillooet. With the casual OR nurse planning to retire shortly, these nursing challenges threaten the surgical program's sustainability.

Lack of any backup surgical or anaesthetic providers creates a significant challenge to sustain the program. Recruitment of a second GPA and GP with enhanced surgical skills would not only fill the needed vacancy for another full-time physician, but also stabilize the surgical program.

Lack of a surgical outreach program, as has been historically the case, also undermines the overall integrity of the surgical service.

Appendix E - Fort Nelson

The visit to Fort Nelson took place on September 21st at 7:20am at the hospital. During the visit 8 people from the community were interviewed.

They included:

- 3 Nurses: Theresa Godber, Paviter Sidhu, and Leslie Bradiar
- 3 Physicans were Dr. Chris Fourie, Dr. Marius Mostert, and Dr. Lisa Nickson
- Chris Morey, Health Service Administrator
- Jaylene Arnold, the Economic Development Officer
- Dr. Becky Temple, the Northeast Health Medical Director with Northern Health

1. Geography and population characteristics

The catchment area for the Fort Nelson hospital is comprised of 6,500 residents, and up to 3,000 people who work in the oil patch. There are several First Nations communities that drain into the hospital; Fort Nelson First Nations, with nearly 500 people, Fort Liard (about 2.5 hours away in the NWT) with 600 people, and Prophet River with nearly 300 people. The community is about 2.5 hours away from Fort Liard in the Northwest Territories, 3.5 - 4 hours away from Fort St. John, 9 hours away from Whitehorse by road, and Yellowknife is about 11 hours away. Central Mountain Air runs scheduled flights every day of the week, twice a day in some instances. According to BC Statistics, the population is projected to grow slightly by 2020 to 6,525 from 6,257 in 2012.

The population of Fort Nelson is surrounded by several oil and gas exploration camps, some of which have up to 300 people living in the area. There is a level of support and fair degree of competency for patients arriving since they have telehealth backup running into the camp. The major economic activity in the oil patch is in the area of gas exploration, which takes a lot of manpower. Once the development has gone in and exploration has concluded, maintaining the extraction process is less manpower intensive.

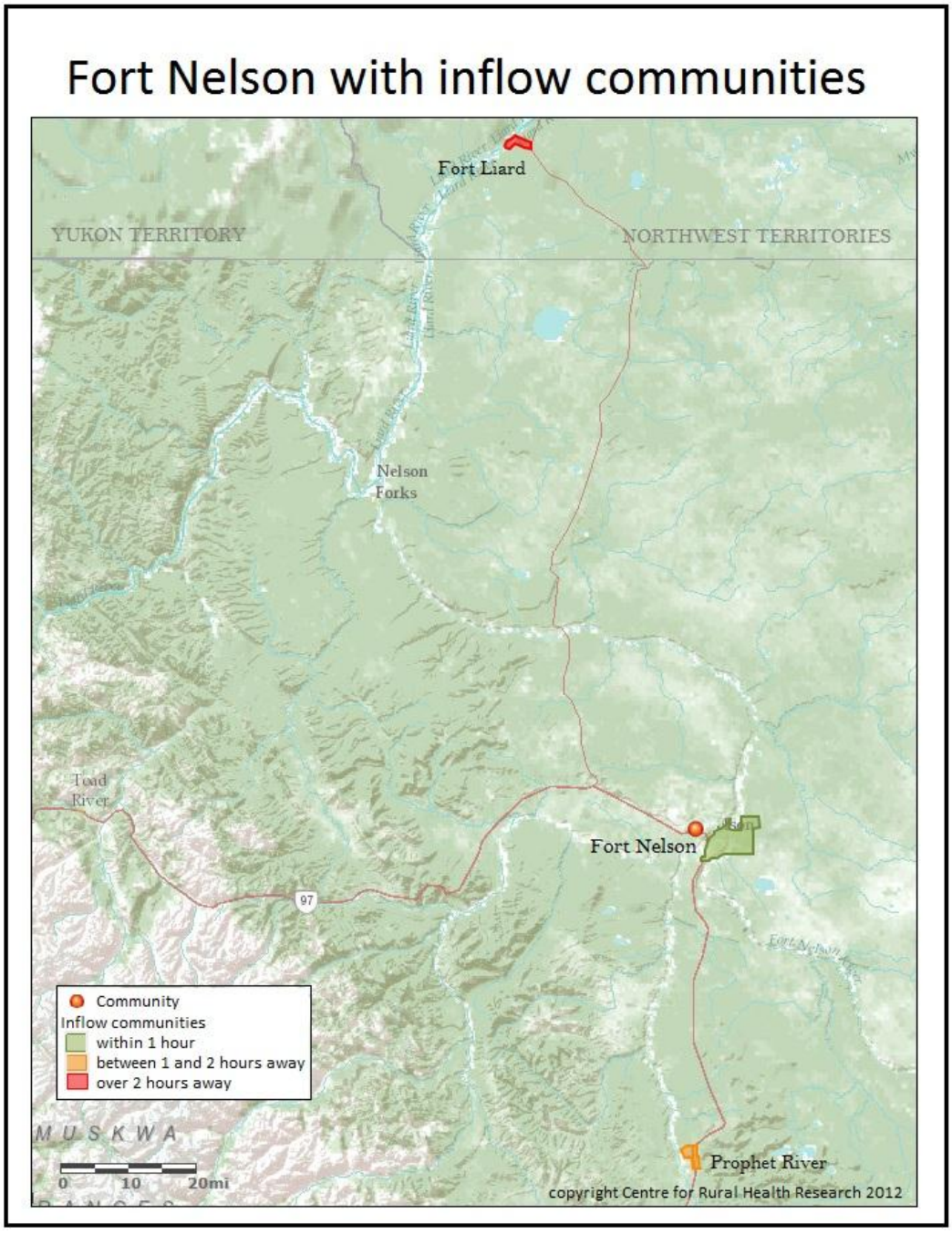
Fort Nelson is considered to be a “remote” posting for RCMP officers. There are currently 22 RCMP in the community. It is important that the spouses of RCMP officers are not infrequently nurses who can provide a significant contribution to the work force. The RCMP postings are generally for 3-4 years in length.

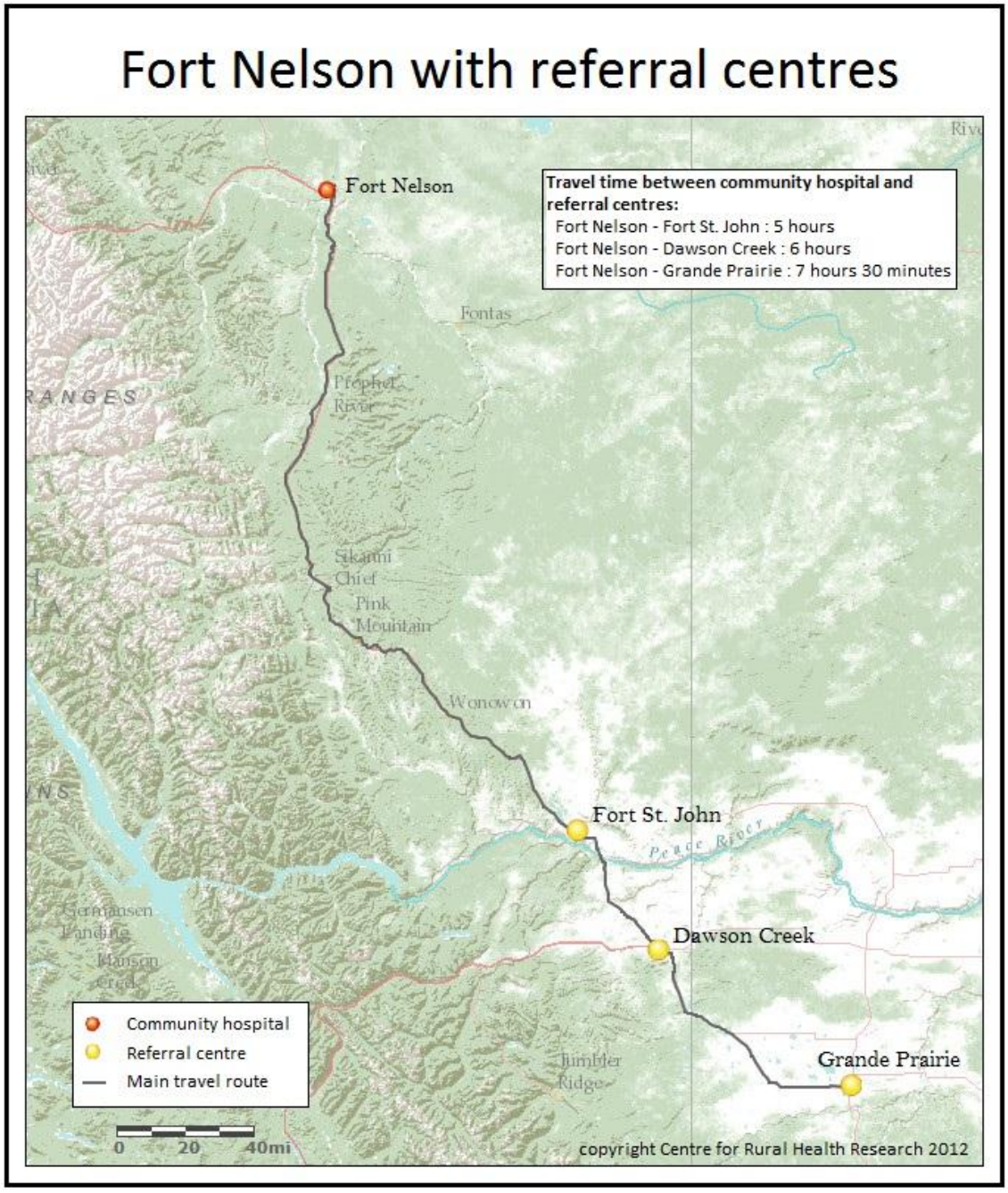
The demographic profile of the community is a young population with a high birth rate of 15.81 per 1,000 people. The population demographic is comprised of 20% First Nations. There are several reserves, including Fort Nelson First Nation located at Mile 295. There are not a large proportion of elderly people in the catchment, and as a consequence, services are not well oriented toward care for the elderly.

2. Nearest referral centre(s) and its characteristics

The nearest referral communities are Fort St. John, which is located 380 km (about 4.5 hours’ drive) to the south, and then Dawson Creek which is located 73 km (1 hour) further south from

Fort St. John, and through to Grande Prairie in Alberta, which is 131 km (about 1.5 hours) southeast of Dawson Creek. To the north, Whitehorse is 9 hours away along the Alaska Highway, and Yellowknife is over 11 hours away in the NWT.





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The complement of specialists in Fort St. John, in the nearest referral community , includes an internal medicine specialist, 2 general surgeons, a radiologist, a pathologist, a psychiatrist, and an

OB/GYN. Apparently, the surgeons in Fort St. John do not have enough OR time. The potential to attract outreach surgery to Fort Nelson from Fort St. John does exist. The backlog of WCB cases in the North could potentially be relieved in a timelier manner at the Fort Nelson hospital. Both of these enhanced surgical activities will depend upon the training of more OR nurses.

As far as transfers, most of the referrals will go to Fort St. John. Acute coronary care will go to Grande Prairie, which is 6 hours away. In general, the location uses Edmonton, rather than Vancouver, for more significant tertiary problems.

There are currently some visits from outreach surgeons, but this involves mainly consults in the community and very few procedures.

3. Analysis of current services

The planned action for the community of Fort Nelson and catchment calls for 5 FTE doctors and there are currently 3 in the community. Over the past few months, this has varied between 2 and 3.5, depending on who's in the community (Dr. Kassa works 0.5 time providing ambulatory care in the community). Wait times at the clinic can be lengthy, and consequently a lot of patients are diverting to the hospital, presenting with triage-level 4 or 5 problems at the emergency room.

There are 3 physicians in the community:

- Dr. Marius Mostert , a GP anesthetist, trained in South Africa, has been in the community since 1995 for 17 years.
- Dr. Kassa, GP with enhanced surgical skills, who retired from hospital practice in April 2012. Dr. Kassa and Dr. Mostert work closely together and co-own the clinic in town.
- Dr. Lisa Nickson, main GP in town who does surgical assists in the surgical program, performs normal deliveries and has been in the community for 4 years.

Currently there is a locum from South Africa, Dr. Chris Fourie, a GP with enhanced surgical skills and a GPA., has been in the community for 3 months. Dr. Fourie has been to Fort Nelson 6 times since 1999. He also works in Fort St. John. He is registered in Canada with his LMCC, but does not have permanent registration. As a consequence, each time he applies, he must go through a fairly extensive process to get a work visa and a work permit. The major stumbling blocks are the embassy in South Africa, the college of physicians and surgeons of British Columbia and then Northern Health. Generally, both the embassy and the college can be quite difficult in delaying the process substantially. There are a number of challenges to permanent registration for someone living in South Africa.

There are currently 4 OR nurses, 2 scrub nurses and 2 circulating nurses, a fairly stable contingent of nurses for the past 10 years. The number of nursing lines is currently 12.5. These lines are stable, there is 1 currently filled by a casual.

There are 15 acute care beds at the hospital and 7 long-term care beds. During the day shift, there are 2 RNs with 1 LPN, and during the night shift there are 2 RNs overnight. In the evening after 4:00 pm, the nursing staff must maintain and clean up, as there are no other staffs to support them. Many of the nurses trained many years ago; 2 have restricted their activities to circulating nurses while the other 2 are the scrub nurses. The OR nurses also serve as the critical care

response team alongside Dr. Mostert. The small pool of nurses are on call frequently, having been paid $3.75 per hour for the first 72 hours, and $4.25 per hour afterwards. As far as training more OR nurses, the potential exists as there is an apparent degree of interest amongst the nurses.

Currently there are no dedicated operating room days, and the only surgical procedures that are done are emergency Caesarian sections and the occasional other procedure. Recently the OR has been, for all intents and purposes, closed. The surgical service can only function in the presence of a GP with enhanced surgical skills, a GP anesthetist, and the OR nurses are available. This has not been the case for the past couple of months since Dr. Kassa retired from hospital practice in April. The surgical service has essentially been non-functioning. As a result, the birthing program has also been shut down. A form titled "permanent discontinuation of maternity service in Fort Nelson," has been created asking the OB clients to acknowledge that the maternity program has closed. Consequently, women have been advised that they should plan to leave the community at 36-38 weeks gestation to an alternative place for delivery, and that they should not wait to go into labour because medevac-ing is unreliable. They have the patient and all 3 doctors sign the form.

The 2009-present data shows 39 total surgeries in 2009/10, 33 in 2010/11, and only 19 in 2011/12, with only 4 in this current fiscal year. A little less than half are Caesarian sections, and the rest are minor procedures, mostly done by the ENT through the visiting clinics. The only procedures done this year have been ENT procedures. It was reported that the last birth at the hospital was in February.

As far as equipment, the OR, the PAR, and the equipment cleaning units are all in relatively good shape. The anaesthetic machine was replaced 3 years ago. As far as diagnostic services, X-ray and lab services are generally available in Fort Nelson. The nearest CT scanner is in Fort St. John. Ultrasound is also available in Fort Nelson, but is subject to the availability of a technician to provide the ultrasound. Generally, there are some challenges in coverage of services.

The budget for the hospital is $3.7 - 3.9 million for the operating cost with the vast majority of the budget, $1.6-1.7 million, going towards nursing lines.

With respect to the overall environment, there is a current primary care study being commissioned by Northern Health. This is due to present in the near future with the preliminary recommendations from the report supporting enhanced primary care services in the community. This may easily fit into a larger planning projection to include enhanced surgical skills. Because of the lack of medical personnel, it is difficult to gain appointments, and most of the primary care is being run through the ER. There are a lot of triage-level 4 and 5 emergency visits taking place.

An interview was conducted with the economic development officer, Jaylene Arnold, who has been in the community since 1994. She is strongly motivated to improve health services, and the municipality sees surgical care as an important component of that care. There's a fair degree of interest from the municipality with a strong concern to ensure that the existing health services are adequate to attract new residents. Birthing services are particularly important for new arrivals, particularly young families. The surgical services are a key component of ensuring that maternity services are stable. Since 2009, the municipality has been actively involved with recruitment, and prior to that in 2006, they were peripherally involved. Currently there are 3 physicians being

actively recruited, 2 of whom have potential enhanced surgical skills to contribute to the surgical workforce. The municipality has also supported the travel expenses associated with getting the locum over from South Africa.

Attempts to recruit potential surgeons over the past few years have not been successful. There have been credentialing challenges and issues related to surgical competency that have led to failures of individuals to stick in the North. It has been some years since the catchment had a full complement of family physicians (which is 5 FT equivalents); it has been running with 2-4 most of the time over the past few years. This places a strain on the entire system in the community.

4. History of surgical services

There has been a long history of surgical services in Fort Nelson. In the 1960s, Dr. Kenyon, a general surgeon was recruited from the UK, where his scope of practice included cholecystectomies, hernias, appendectomies, orthopedic procedures, k-wires and plating fractures, carpal tunnels, occasional bowel resections in an emergent basis, and some plastic surgical procedures. Dr. Kenyon performs 2 OR days per week (Tuesday/Thursdays, and Wednesdays were called cast days) but he does lumps and bumps, and scopes.

Historically, there was an active surgical program that included a comparable scope, including dental surgery, which continued up until 15 years ago. There used to be 3 GPAs in the community, but with the decline in the surgical program, the numbers have been gradually decreasing. Since Dr. Kenyon retirement in 2005, the surgical program has been sustained by Dr. Mostert and Dr. Kassa, doing GP surgery, primarily C-sections, and a small number of outreach surgeons. Over time, there has been a history of outreach surgery, which has included gynecology, general surgery, and orthopedic surgical involvement. There's also an ENT surgeon who visits typically twice per year, once in the spring and once in the fall. Based on the needs of the community, he may or may not perform surgeries during his visit. The outreach ENT surgeon has visited the community of Fort Nelson for at least 30 years. A pediatrician frequently visits, generally 4 times per year, at the same time as the ENT. Dr. Keith Riding, the outreach ENT surgeon who has retired, managed to find a replacement for himself upon retirement, as did Dr. Roy Saunders, the previous outreach pediatrician. An ophthalmologist, who came for 16 years, retired 2 years ago and has not yet been replaced. He focused primarily on children, but also saw occasional adult patient. The current ENT and pediatrician have been coming for several years; prior to that, the previous ENT and pediatricians were also long-standing in the community.

In terms of the delivery volume at the hospital, there has been a steady decline. In the 1990s, the volume was estimated to be over 100 (between 100-125), and since 2000 it's run between 70-100, until the last 5 years (since Dr. Kenyon retired) where it's run below 55. There were 34 deliveries in 2011/12, and almost none in 2012 and the surgical program was put on hold. Since Dr. Kassa stepped back from the surgical program, he still does some family practice clinic work.

Chris Morey is the health services administrator for the Fort Nelson hospital. She is the site leader for acute and residential care, and home and community care. She has a strong history with the community since 1986, and has gradually taking over more of the administrative role in the community. She also has served on council for 3 terms, two of those terms as the mayor of Fort Nelson. She is both a nurse and OR nurse by training.

Fort Nelson was an active part of the family medicine residency training program, when Dr. Kenyon was actively practicing. The concern was that the residents who came to participate in the program would not want to return and practice in the community. Consequently, questions of whether this was a worthwhile activity or not was in mind.

A total of 3 nurses were interviewed: Theresa Godber, Paviter Sidhu, and Leslie Bradiar. Leslie Bradiar has been in the community since 1979 working as a nurse. She is in charge of discharge planning, an OR nurse on call for critical care. Theresa Godber has been a nurse for 20 years in the community, and Paviter Sidhu has been a nurse in Fort Nelson for 21 years. Both of them are circulating nurses in the OR. The level of commitment of the nursing staff is very high.

5. Challenges and gaps in service

The limited number of providers resident in the community is a shared challenge by many small surgical services. Currently there are 4 OR nurses, 1 GP with enhanced surgical skills (locum) and 1 GP anesthetist as part of the semi-permanent staff. Because the personnel are relatively thin on the ground, it only takes 1 person being away to bring the OR down, and as of late Dr. Mostert has been away quite a bit, averaging 4 months per year. Consequently the activities of the OR have been minimal.

Concerns were raised around the sustainability of OR skills, as the small number of procedures done to cover emergencies may not be enough to maintain competency. There needs to be some larger solution identified, with potentially the re-introduction of regular OR days and potentially enhancement of the outreach surgery program.

Part of the problem with coverage for the past few years has been the absence of Dr. Mostert for as long as 4 months per year. His wife and son live in Edmonton, so he's not present with that much continuity anymore, though he still plans to live in the community.

One of the challenges that the nurses identified is that if there's an emergency transfer to Fort St. John. For example, 2 of the more experienced nurses will generally need to transfer, particularly if it's a maternity transfer pre-delivery. The transfer is sometimes complicated by the fact that if the woman is not at 3 cm yet, the referring community is reluctant to take them, and if the woman is over 3 cm, the ambulance is reluctant to take them in case they deliver en route. At one time the road ambulance used to switch half way between Fort Nelson and Fort St. John, when it would meet the ambulance from Fort St. John, but this is no longer encouraged because it takes an ambulance out of the community for too long. It would take as long as 4 hours on the road from the Fort Nelson and Fort St. John end as well. The air ambulance presents another constraint. The medevacs used to originate in Fort Nelson, which provided the nurses travel home again. Now the planes originate in Fort St. John, and consequently the nurses have to wait for the next scheduled flight. The scheduled flights occur only once per day, and consequently, the nurses frequently end up stuck overnight in Fort St. John during these transfers.

Another apparent gap is the relationship with referral communities, with respect to outreach services, has decayed to the point where it's almost non-existent, and revitalizing those services would be part of a comprehensive approach to strengthening the surgical program.

Appendix F - Hazelton

The visit to Hazelton took place August 13th and 14th. We interviewed fourteen providers and administrators, including.

- Dr. Peter Newbery, who is the Medical Director of the Hazelton Site for the United Church Health Services
- Dr. Prakash Shrestha, Dr. Sherry Shrestha, Dr. James Wiens, and Dr. Jenny Lee, GPs at the hospital
- Dr. Marlowe Haskins and Dr. Nancy Kim, GPs with enhanced surgical skills
- Dr. Charley Eckfeldt, GP anaesthetist
- Deb Lowe, a nurse practitioner providing prenatal care
- Jean West (RN), the Clinical Care Coordinator
- Wanda Mason, RN who runs the prenatal clinic and provides obstetrical support
- Elena Rakoff and Lynn Viennu, two recently trained OR nurses

Dr. Jim Dunfield, general surgeon from Terrace who provides outreach surgical services and Dr. Alf Laskowski, a GPA who lives in Telkwa, were unavailable during the visit to Hazelton, and were later interviewed by telephone.

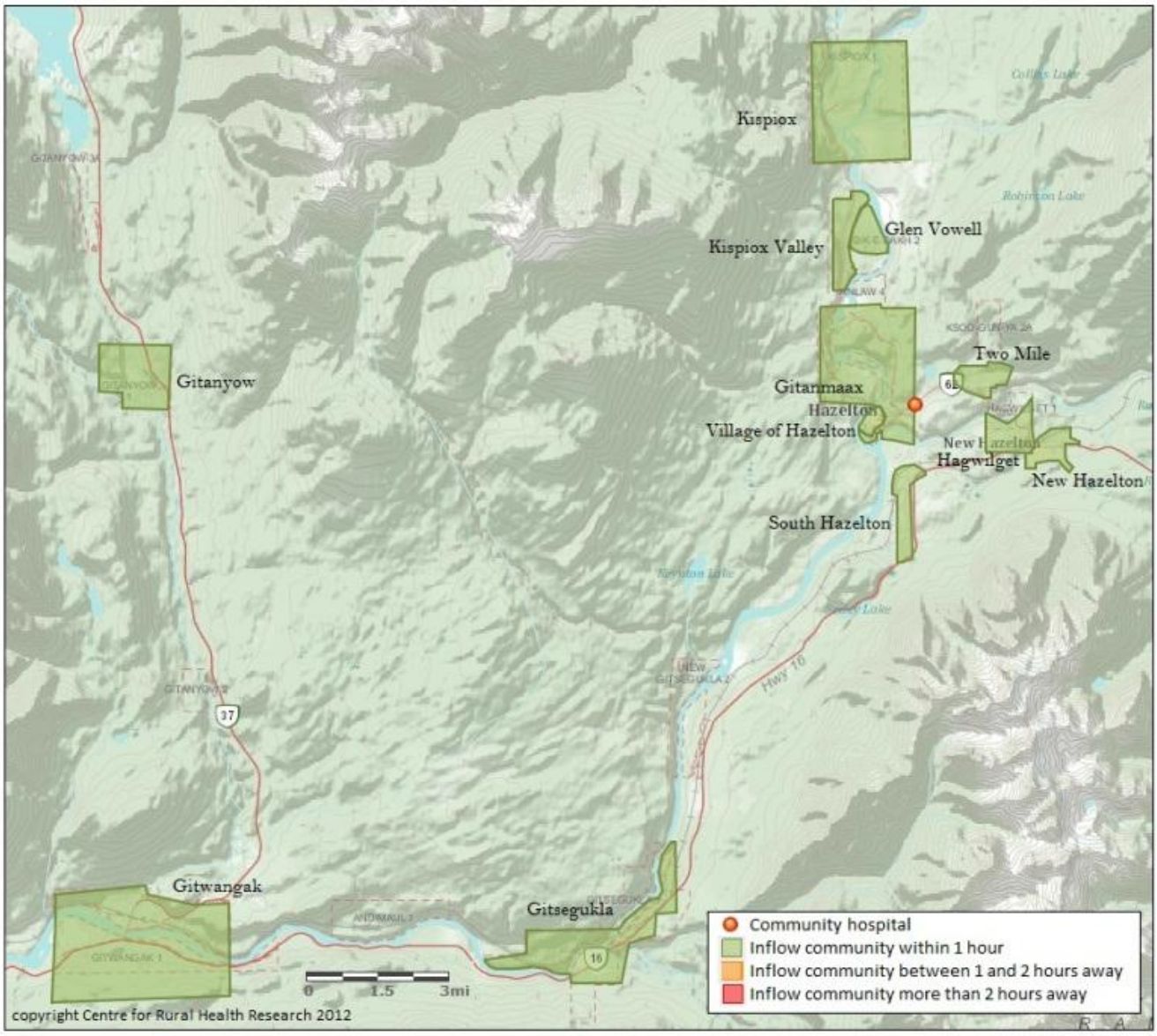
1. Geography and population characteristics

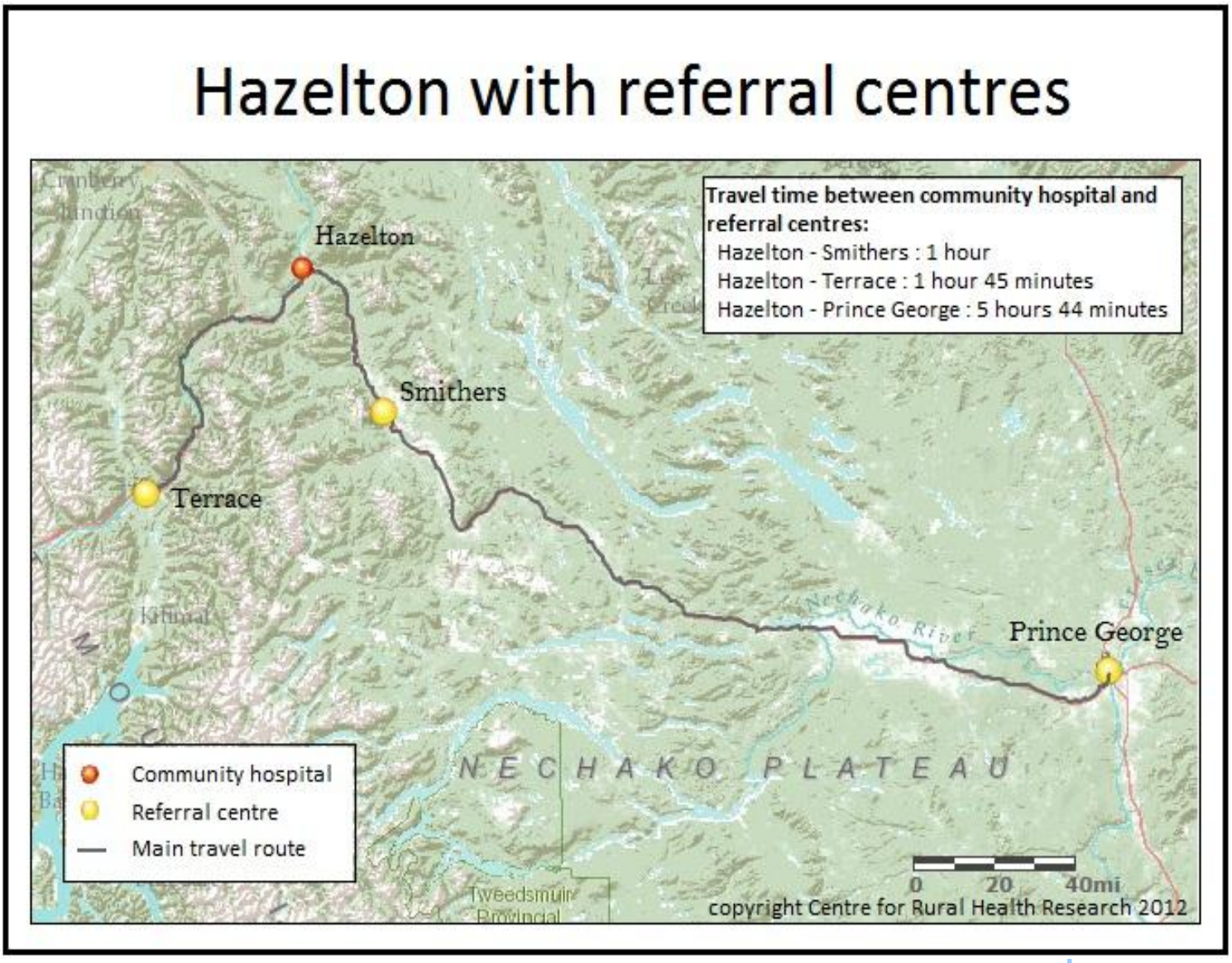
There are approximately 5,700 people in the 1-hour catchment of Hazelton. The unemployment rate is high and according to BC statistics, Hazelton has one of the most vulnerable populations in British Columbia, with a vulnerability score of 0.99, where 1 is the highest measure of vulnerability. The population of LHA #53, which overlaps about 90% with the 1-hour catchment, is expected to grow by approximately 300 people by 2020.

Hazelton is located on Highway 16, between Prince George and Prince Rupert. The average daily volume of traffic, as reported by the Ministry of Transportation, is estimated to be 2,400 vehicles averaged over the whole year, which peaks during the summer months at 3,400 vehicles .

The ethnic composition of the community is 60-65% First Nations. There are a number of First Nations communities that drain directly into Hazelton from within an hour, and some that have to travel more than 1 hour to access services in Hazelton, their nearest hospital. The population of the 1-2 hour catchment is an additional 542 people.

Hazelton with inflow communities





2. Nearest referral centre(s) and its characteristics

The nearest referral centres are Terrace, which is 1.5 hours by road to the west, and Smithers, which is 1 hour to the east. There is bus transportation supported by Northern Health to Smithers 3 days per week.

The outreach surgeons who serve the population of Hazelton include Dr. Jim Dunfield, from Terrace, who has been coming to Hazelton biweekly since 1989. He does scopes and minor procedures (e.g., lumps & bumps, plastics procedures) in the community. Some of the operative procedures are done under general anaesthetic. His scope of practice is mirrored by Dr. Marlowe Haskins, a GP with enhanced surgical skills, who comes from Smithers, on the alternate weeks. Dr. Moray, an ENT surgeon from Vancouver, Dr. van Rensburg, a gynecologist from Terrace, and Dr. Osei-Tutu, a urologist from Terrance, all come to Hazelton monthly and provide some procedural care.

The relationship with Smithers, which is more of a sister community than a referral community, is important. Smithers is 1 hour to the east, and has a 1-hour catchment population of 16,000. In Smithers, there are 4 GPs with enhanced surgical skills, 3 of whom are South African, as well as access to a general surgeon, Dr. Evans, who provides regular outreach surgical care. Dr. Haskins and Dr. Laskowski have both relocated closer to the Smithers hospital from Hazelton (Dr. Haskins in 2003, and Dr. Laskowski in 2011), and work in Smithers on a regular basis. Both continue to provide backup for the perinatal surgical program at the Wrinch Memorial hospital.

3. Analysis of current services

The complement of physicians is currently 5 full-time equivalents (FTE), paid in an alternative funding model, though the target is 7-8 physicians. There are 9 FTE nurses who work in 12 hour shifts, and LPNs to support the nurses. There has been a new nurse practitioner position since May, who provides prenatal care, and a second nurse practitioner is planned. The 2 lines for OR nursing are 0.5 and 0.4.

The physician workforce at the hospital has been fairly stable and includes: Dr. Prakash and Dr. Sherry Shrestha (5 years), Dr. James Wiens (5 years), Dr. Jenny Lee (15 years), Dr. Nancy Kim (7 years), and Dr. Charles Eckfeldt (more than 15 years). The only doctors providing obstetrics are Dr. Nancy Kim, and Dr. Charles Eckfeldt, who covers for her. Dr. Kim was recruited as an international medical graduate with specialty training in obstetrics and gynecology from Korea 6-7 years ago and is now the principle resource for the maternity program at Hazelton. Dr. Eckfeldt is a GP anaesthetist with a long standing history in Hazelton, trained through the UBC enhanced skills program while on the Hazelton medical staff. He retired from active clinical practice in 2011, but does provide some anaesthetic support and maternity care coverage.

Dr. Marlowe Haskins, a GP with enhanced surgical skills in Smithers, has been providing services in Hazelton since 1992. He acquired his surgical skillset through the UBC enhanced skills program, training in 1992 at Burnaby General, under Dr. Ewart Woolley (an obstetrician in Burnaby who provided surgical training for 4 GPs working with United Church Health Services across various sites). Dr. Alf Laskowski, a GPA, also trained through the UBC enhanced skills program while on Hazelton medical staff, and had been a physician in Hazelton for about 10 years. Before he relocated to Telkwa in 2011. He still provides anaesthetic coverage for the community. Anaesthesia on call coverage is around 60%, as currently Dr. Eckfeldt and Dr. Laskowski are covering the call part-time.

The physicians were consistent in their recognition that the OR underpins the maternity program, and sustaining the maternity program without it would be difficult. Local C-sections are performed by Dr. Kim and Dr. Haskins working together. Dr. Kim, although she has training as an obstetrician, feels more comfortable working with Dr. Haskins' support, and does not generally perform Caesarians alone. The last Caesarian section at the Wrinch Memorial hospital was done in 2011. Currently there are 2 nurses with maternity skills, and 3 other maternity nurses who are on call from a casual pool. Generally, casual nurses are called in to cover maternity cases when needed. Wanda Mason, an RN who has been a delivery nurse since 1973, works primarily in pregnancy outreach, and does some of the maternity clinic work at the Wrinch Memorial Hospital; most of the pregnant women in the catchment population pass through this maternity clinic. The

'More^{OB}' program has helped maintain the standard of care and enthusiasm for the maternity program in Hazelton.

Jean West, the clinical care coordinator, has been at the Wrinch Memorial hospital since 1982. She is the nursing program supervisor and organizes the nursing shifts. Sue Livingston has been the director of care for about a year, and has experienced significant challenges in keeping acute care services operational. Last spring, a number of nurses left Hazelton, leaving the hospital running on locum nurses. Furthermore, there has not been an OR charge nurse for the past year.

There was successful recruitment of five new nursing grads this past summer, four from Terrace and one from Prince George, which includes two new OR nurses: Elena Rakoff and Lynn Viennu. These newly trained OR nurses have been on staff at the Wrinch Memorial for some time, and took much of their training locally by distance ed. The training has been fairly straightforward, and requires 310 hours of practicum in general surgery, gynecology, paediatrics, and orthopaedics. Elena Rakoff undertook the OR training program as a commitment to the community to sustain the Hazelton OR program. While she lives in Smithers, she is willing to commute to Hazelton to provide this service.

The outreach surgery program has been fairly stable, until recently. Dr. Dunfield has been coming to Hazelton for a long time. He comes because he is able to access a little more OR time, he sees a lot of patients in the clinic, and he feels that his services meet the needs of the local population. He envisions continuing to serve Hazelton until his retirement.

The Hazelton OR has been closed for renovations since the spring of 2012, but was scheduled to re-open in September. The process of renovation has been quite slow, and the only procedures that have been taking place during the process are scopes, which are generally provided 1-2 days per month. The OR is normally open for elective procedures 2 days per week, averaging 8 procedures daily. The scope of surgical practice in Hazelton has included carpal tunnel release, other minor plastics procedures, tubal ligations, vasectomies, sigmoidoscopies, gastroscopies, colonoscopies, biopsies, and lumps and bumps. There is a resident dentist in Hazelton, who provides services in the OR approximately one day per month.
The Wrinch Memorial hospital is a 20 bed hospital, of which 10 beds are designated for complex care and the remaining 10 are acute care beds. The PAR has capacity for 4 patients at one time, and there are 2 designated maternity beds. Currently, a small number of acute care beds are occupied by complex care patients.

4. History of surgical services

Ten years ago there was a consultation to evaluate the sustainability of the Wrinch Memorial hospital, which resulted in a recommendation that it should close and be converted into a Diagnostic and Treatment centre, with emergencies being transferred to Smithers. At that time, Smithers had no full-time full service family physicians in practice, as all had given up full service practice and were covering the ER and/or working part-time. This recommendation was roundly rejected by the community and was reversed. The presence of a surgical service to back up the maternity program was a crucial component in the hospital's need to stay open.

From the mid-1970s, up until about 1995, there was a strong cadre of outreach surgical specialists providing services in the community. Dr. Don Strangway, a general surgeon from Terrace, Dr. Thomas Nagy, an ophthalmologist originally residing in Hazelton and later moving to Terrace, and Dr. David Kuntz, an orthopaedic surgeon based in Kitimat, would all operate on a weekly basis and provide regular consultative support to the Hazelton population. Dr. Strangway provided a broad scope of surgical practice, which included some orthopaedics (particularly of an emergency nature), hernia repair, hysterectomies, C-sections, and abdominal surgery, and Dr. Kuntz provided a range of orthopedic surgeries. Dr. Hugh Rose, a resident ophthalmologist, established an ophthalmology service in Hazelton that attracted a number of ophthalmological surgeons to work in the community, commuting from Vancouver once or twice per year. Dr. Gordon Boyd, an obstetrician, visited Hazelton approximately every second month, to perform gynecological surgery, hysterectomies and C-sections. Dr. Francis Osei-Tutu provided urological service on a monthly basis.

Although the permanent complement of family physicians in Hazelton has changed in terms of numbers, there has always been a commitment to provide anesthetic and surgical services to the community. For instance, from 1978 through until the mid-1990s, of the five physicians working in Hazelton, four provided anesthetic services (Dr. Phil Muir, Dr. Paul Chabun, Dr. Duncan Etches, and Dr. Peter Newbery), and two were capable of providing some surgical services, including C-sections and appendectomies (Dr. Duncan Etches, Dr. Peter Newbery). One physician, Dr. Millie Cumming, had a special interest in obstetrics, and established an obstetrical service particularly sensitive to the needs of First Nations women. This resulted in Hazelton providing maternity care for a number of women from the Iskut and Dease Lake, and Telegraph Creek regions who preferred to come to Hazelton rather than Terrace.

Historically, the operating room ran 2 to 3 days per week. During this time, Hazelton was able to maintain an operating room staff of nurses fully capable of managing the OR. Additionally, the staff were prepared to respond to any emergency, and so over that 20 years, unless the surgical procedure was outside the scope of our physicians and nurses to handle, it was always handled in the community.

5. Challenges and gaps in service

The biggest problem facing the sustainability of the OR is staffing, with both nursing and GPA coverage being problematic. The OR nursing lines are both part-time positions: the first is a 0.5 position, which is the OR manager nurse, and the other position is a 0.4, which equates to two days per week. There were initially no applicants for the OR lines, as it is difficult to hire for part-time positions. The two dedicated nurses who stepped forward were sponsored for perioperative training, which was based out of Grand Prairie, Alberta. The training included 8 weeks of theory training online, and a period of training in an operating room. The cost of training was around $30,000, which was funded through the goodwill of the community. Two physicians put in $5,000 each (both the GPA and GP with enhanced surgical skills), and Northern Health, the local credit union, BCNU, and the Grace Dempster fund all contributed to the cost of training. This fund raising effort by the community is noteworthy in that it relates to training of practitioners rather than an equipment purchase which is the more common goal.

Adequate on-call funding for nurses is also a challenge. The BCNU rates are relatively minimal, with nurses being compensated $3.75 per hour for the first 72 hours, and then $4.25 per hour for each after afterwards. There needs to be an OR nurse and backup on-call at all times to cover the call schedule and the perinatal surgical program.

Anaesthesia coverage is a significant challenge, and another GP anaesthetist needs to be recruited to cover the OR call schedule. Ensuring that this position is attractive will depend on an adequate volume of elective surgery being performed at the site.

The physicians expressed concerns that the level of obstetrical competency amongst the nursing staff was not adequate for them to be comfortable providing maternity services. The gradual loss of senior nurses with broad maternity skills, some of whom had been trained as midwives, has been significant for the nursing service.

Concerns were also raised about access to nursing practicum training. One of the nurses felt that at times that she was not being welcomed at the institutions where she was undertaking her practicum. This problem parallels the problems faced by new GPs with enhanced surgical skills, who only recently have been able to undertake recognized and dedicated programs to enable them to maintain their skills when they work in low volume settings.

There are challenges in recruiting physicians to Hazelton under the current alternative payment plan. Physicians may find that the fee for service system generates more income, which has had a negative impact on recruitment to an alternative payment plan community. The challenges in payment have been further exacerbated by the fee for service supplements for clinical practice, which include fees for chronic care, and other incentives. The recent funding put in place for the support of rural emergency rooms has provided a disincentive for emergency coverage in Hazelton, since rural emergency rooms with physicians working on alternative payment arrangements were deemed ineligible to receive this funding. Recent experiences have indicated that, for instance, physicians from Smithers are not prepared to come and work in Hazelton to provide emergency coverage because Hazelton cannot provide the level of remuneration provided in emergency rooms staffed by physicians on a fee-for-service payment scheme.

There have been challenges in the provision of maternity services, as Dr. Kim is currently the only physician out of five providing maternity care. There has been some trouble with maintaining continuous maternity services, and since maternity diversion has become more commonplace as the hospital has been closed for deliveries, women have been going to the emergency department in advanced labour, using what is called the ‘10 cm strategy’ to ensure that they get delivered locally.

One of the participants raised a concern about the outdating of supplies in the low volume surgical sites. There is need for a better system to ensure that the quantities of supplies issued to the small hospitals correspond appropriately to the level of care and number of services being provided to avoid wastage

Appendix G - 100 Mile House

The visit to 100 Mile House took place on September 28th, from 8:00 to late-afternoon. During the visit, 7 individuals were interviewed. They are:

- Patti Boyd, the acute care coordinator, was there and did most of the organizing for the day.
- Dr. Joanne Lapin, GP Anaesthetist
- Dr. Bruce Nicolson, GP with enhanced surgical skills
- Dr. Rod Dickey, Chief of Staff for 100 Mile House & Cariboo Regional Chief of Staff
- Dr. Derek Wilden, Dental Staff who provides dental surgeries in the community
- Anne Marie Hamel and Carol Little, OR Nurses

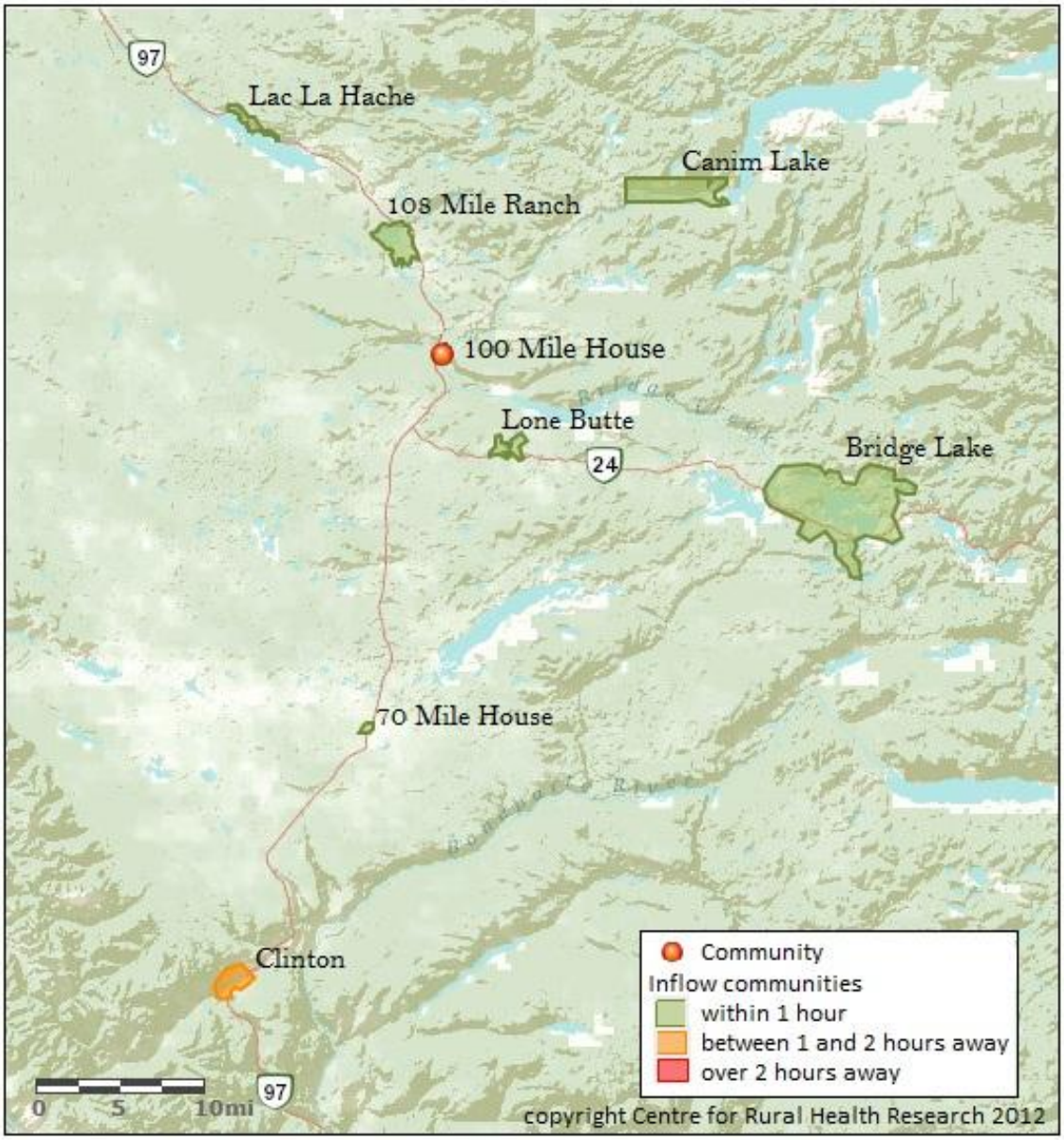
The visit was organized by Deb Runge, the Health Services Administrator for Caribou-Chilcotin, who was away at a meeting of senior administrators in Kamloops, and was followed-up with via telephone interview which also included Peter DuToit, the Area Director for the Thomson Caribou Shuswap Region.

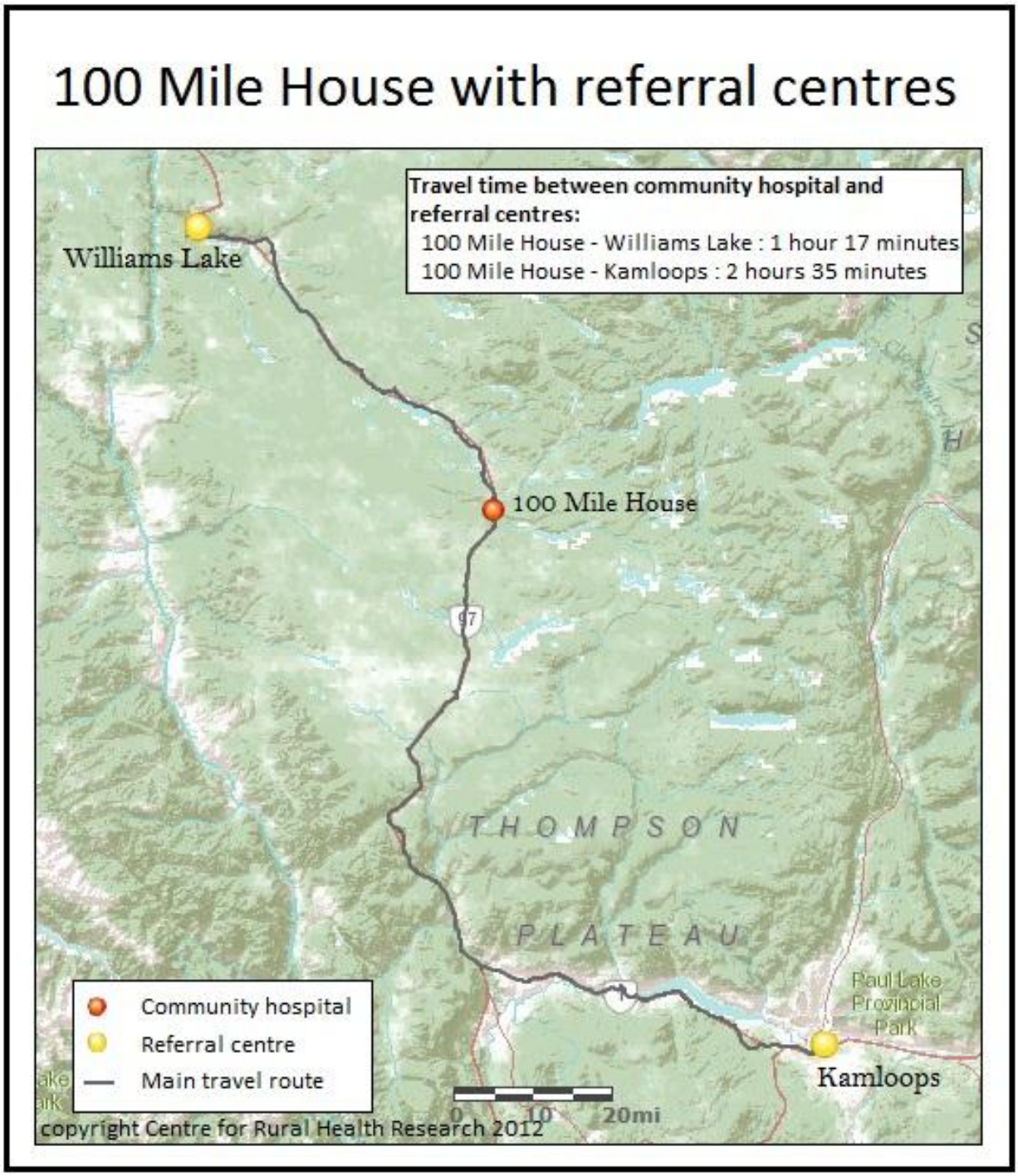
1. Geography and population characteristics

The 1-hour catchment population of 100 Mile House is approximately 14,000, and BC statistics estimates that the population will not change significantly in the next few years, diminishing slightly from 14,112 to 14,099 in 2020. The proportion First Nations is 9.4%.There are a number of communities that drain into 100 Mile House, including Lac La Hache, which is about 30 minutes north, Clinton to the south, and the interlakes area to the west. There is a significant transient population, including travelers on the Highway 97, the main highway to Northern British Columbia. The Ministry of Transportation estimates the road volume on Highway 97 as an average of 8,900 vehicles daily, which is higher in the summer when the average is 12,200 vehicles daily.

The number of deliveries in the catchment is around 100-110 annually.

100 Mile House with inflow communities





2. Nearest referral centre(s) and its characteristics

100 Mile House is located on Highway 97, 1 hour and 10 minutes south of its referral centre Williams Lake. Kamloops, the other referral centre for 100 Mile House is 2.5 hours away to the south. General surgical or obstetrical consultations are referred to Williams Lake; orthopaedic, ENT, and other internal medicine cases are transferred to Kamloops.

Currently, there is no outreach surgery provided on a regular basis at the hospital. Relationships with surgeons in Williams Lake have led to some interest in supporting care in 100 Mile House, but no formal visits have occurred. This is distinctly different from the service patterns pre-regionalization, which included regular visits and outreach surgery.

3. Analysis of current services

Currently, as far as human resources, there are 12 FTE doctors: 10 of the 12 do ER work, while 4 provide obstetrical care. There are 3 GPs with enhanced surgical skills: 2 are from South Africa, and Dr. Bruce Nicolson, who has been in the community for 34 years, trained 1 year as a general surgeon in Australia with 1 year of anesthesia training. Dr Nicolson's general pattern of practice is a half-day per week of surgery increasing to 1.5 days if the case load is high. His scope of practice includes minor surgery: hernias, some plastics such as carpal tunnels, dilation and curettage. Dr Nicolson no longer participates in the surgical call schedule, which is covered by the other 2 surgeons; this means he does not do C-sections anymore, though he did for many years.

The 2 other GPs with enhanced surgical skills cover the call schedule, including backup for the trauma call. Their current schedule is 1 week on, 1 week off, which works well for them and the community. There are also 2-3 slates per month of dental surgery, and these are shared between the two dentists resident in the community. These dental surgeries are an important service for the population, and also provide the GPA an opportunity to do more significant anaesthetic procedures involving intubation to keep skills up. Most of the surgical cases otherwise involve regional blocks or spinals. There is no current outreach surgical program.

Historically, it was an expectation that all of the nurses covered the obstetrical area. In more recent years, nurses with obstetrical skills have gone to a call schedule, and currently there are only 3 nurses who provide obstetrical coverage. They are on call whenever there is a patient due or in labour.

In terms of OR nursing, there are currently 2 experienced OR nurses actively supporting the program. The scrub nurse and circulating nurse also do tasks that the nurses perform and provide sterile reprocessing of instruments. A third nurse has just newly qualified and will begin working shortly. The lines for OR nurses are funded as 0.42 lines, and currently 1 is casual and 1 is part-time. That means that the OR is open at most 2 days per week, and does not always run to this capacity. There is potential to add on a fourth nurse to help in the OR. She is FT in the ER so she can only act as backup for the other OR nurses. To increase efficiency and meet the staffing standards for PAR at 2 nurses, the hospital has moved the PAR adjacent to the nursing station, allowing the nurse assigned to PAR to be supplemented by ward nurses. This allows for 3 beds in the PAR.

The number of deliveries in the catchment is around 100-110 annually. The number of deliveries that occur in the hospital on an annual basis was around 100 before 2007, but has shrunk appreciably in recent years: 2008/09 was 47, 2009/10 was 26, and then 39 and 38 in the last 2 years. Caesarian section capability is maintained most of the time, but was shut down for 2.5 months this summer when the only GPA, Dr. Joanne Lapin, was away.

According to the documentation provided by the community, in 2011/12 there were 23 inpatient surgical cases (nearly half were C-sections), and 428 surgical day care procedures (most commonly endoscopies) performed locally. Many deliveries are diverted from the hospital; in 2010, 39 deliveries occurred locally, and 49 deliveries from 100 Mile House patients occurred in other facilities. In 2011, there were 11 C-sections performed at the hospital, and between January and March 2012, there were only 7 C-sections performed at the 100 Mile House Hospital.

4. History of surgical services

The core surgical providers Dr. Bruce Nicolson, GP with enhanced surgical skills, and Dr. Joanne Lapin, GPA, have a long history in the community. Dr. Nicolson has noted a dramatic change in the recent years that he has provided surgical care in 100 Mile House. In his first years, Dr. Nicolson felt well supported by the health governance structure and his specialist colleagues in the nearest regional centres. This is no longer the case in the past 10 years where he has felt actively undermined by the Williams Lake specialists, including one particular case in which there were complications associated with a C-section. Dr. Joanne Lapin has been providing anesthetic care to the community for close to 30 years, and she has also experienced significant ebbs and flows of support for the program. In the past 11 years, she has been the only GPA for the majority of the time.

Historically, endoscopies were performed at the 100 Mile House Hospital. The hospital has an endoscopy room with scopes in good condition; this infrastructure is ready for service if resumed. This service stopped as the GP who provided emergency care and endoscopy chose to no longer provide this service. Pre-regionalization, the surgical team consisted of 2 or 3 GPs with enhanced surgical skills and 2 GP Anaesthetists present, as well as a number of outreach surgeons. The scope of practice included cholecystectomies and appendectomies, though this was pre-laparoscopy. At this time, the OR slate was 1 day per week, ranging from a half to full day depending on the case load. In the past, there were regular outreach visits from general surgeons until 2008, OB/GYNs from Williams Lake in 1994, a urologist from Quesnel in 1993, and an orthopaedic surgeon from Abbotsford in 1995.

5. Challenges and gaps in service

One of the biggest current challenges to the surgical program is the fact that there is only one GP anesthetist. This can be resolved if the other physician who has extensive anesthesia experience from another jurisdiction, South Africa, is allowed to practice without completing a 1-year Canadian program.

Another challenge is the reluctance of both nurses and physicians to provide obstetrical care. The current education of nurses is they become more specialized in training; so unless they have the certificate, nurses do not feel comfortable providing maternity care. Most of the young nurses also do not have that skill set. Similarly, locum physicians recruited to the community to cover holidays often do not provide obstetrical care; the physicians could only recall 1 locum in the past 6 years who has been able to provide obstetrical coverage. There are also increasing guidelines to determine and mandate what providers can and cannot do in the hospital, and what certifications they need to provide various elements of care. This can make it more difficult for junior nurses and physicians to take up particular elements of practice.

There is also a lack of obstetrical on-call nurses. There was a change in funding 2 years ago to support obstetrical nursing that established an OB nurse on call for the service 24/7. This nurse receives BCNU on-call rates, and the call coverage has been continuous. This nursing line no long is available as the nursing staff at that time ended up calling in the on-call nurse for anything related to an obstetrical patient, rather than trying to manage and practice their obstetrical skills. It is hoped that the introduction of More^{OB} in 2013 will support a stronger maternity care team.

In spite of the well-resourced endoscopy room, there is little endoscopy activity on site. It is certainly an area that could rapidly be expanded either by outreach surgeons, or by training one of the local GPs. There are a substantial number of endoscopies, estimated to be over 200 per year performed, on patients living in the 100 Mile House catchment. In past years, when the scoping service was running, the number of scopes performed in 1 day has been 7-8, and this degree of efficiency should attract outreach surgery.

Appendix H - Creston

The visit to Creston took place on Tuesday, August 28th, from 8:00-4:00. During the visit, a broad range of individuals from Creston were interviewed. They are:

- Shirley Mercier, Administrative Lead for Creston site
- Dr. Andrew Weaver, GP who provides maternity care
- Dr. Karen Persad, GP who provides maternity care
- Dr. Kriegler Le Roux, GP with enhanced skills (anaesthesia and surgical skills)
- Dr. Erin Ewing, GP who formerly provided obstetric services
- Dr. Randy Grahn, Chief of Staff
- Dr. Raphael Elemuo, a Nigerian international medical graduate in the community
- Leah Barlow, Midwife and Nurse
- Susan Brooks (LPN), Medical Device Reprocessing unit (MDR) Aide
- Carolyn Hawton, Acute Patient Care Coordinator
- Karen Evans (OR patient care coordinator), LeAnn Nawalkowski, Lorraine Ward, and Dawn Terrill , OR Nurses
- Chris Ondrik, current Interim Site Manager, formerly Nurse Manager and Quality and Risk Management Lead in Cranbrook

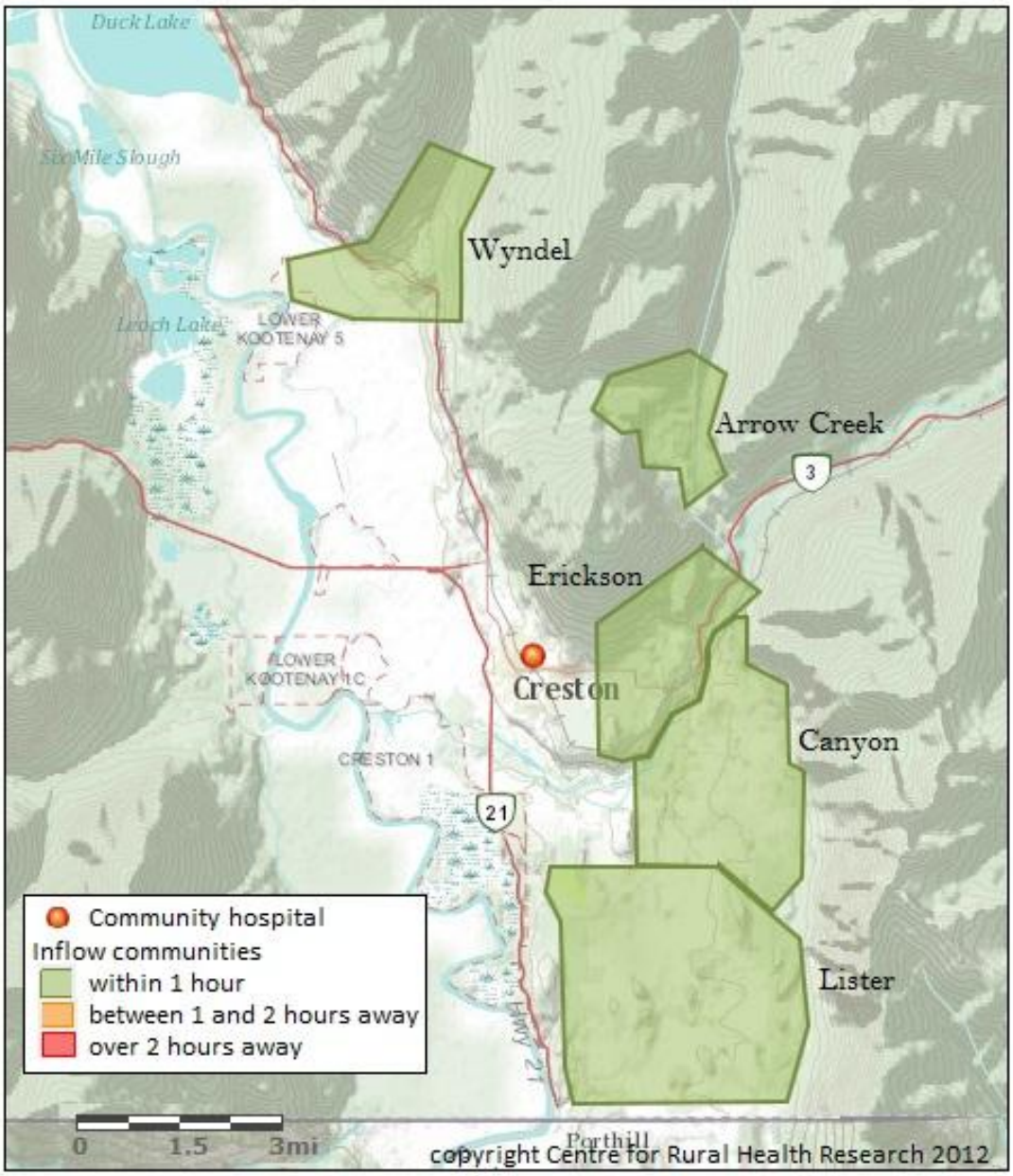
1. Geography and population characteristics

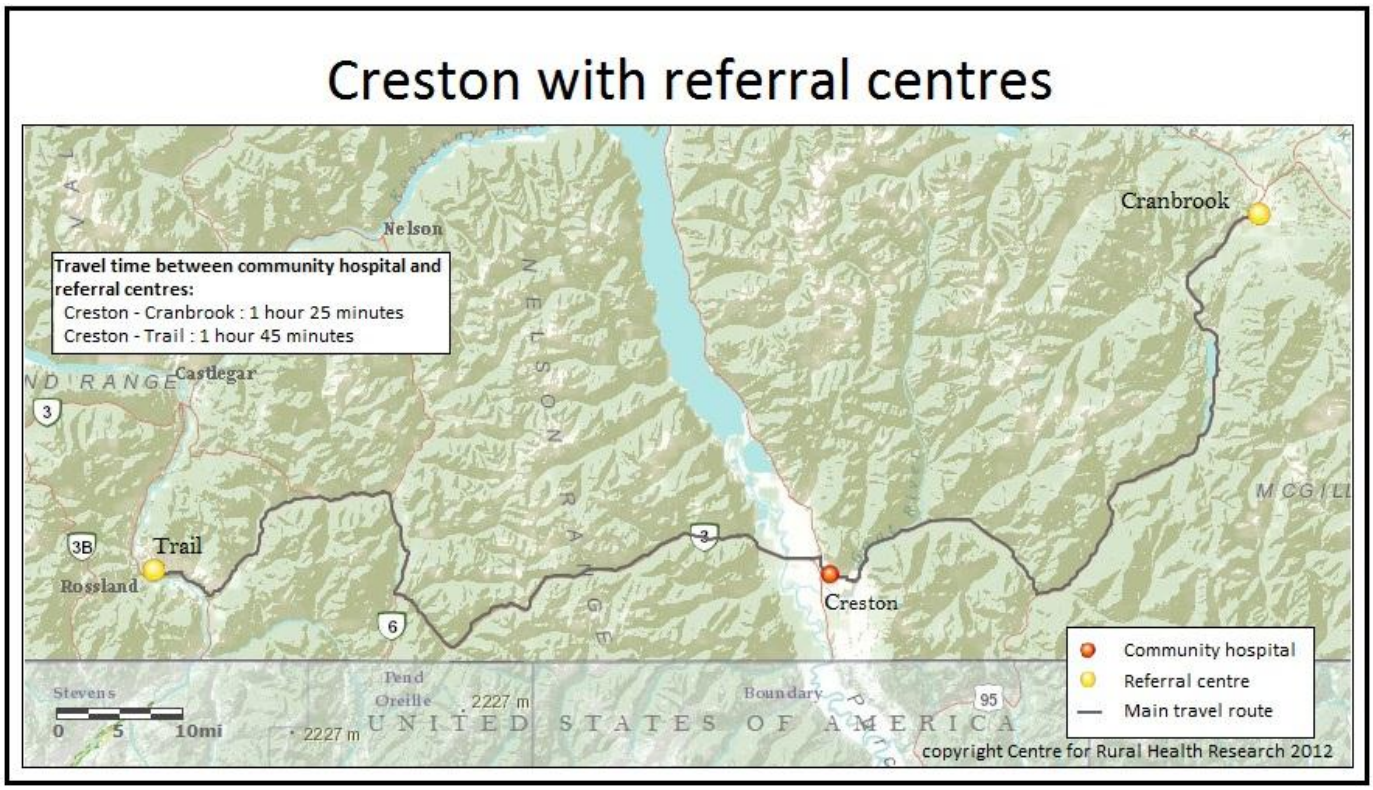
The 1 hour catchment population for Creston is approximately 14,822, and BC statistics project an increase in population by 2020. A significant proportion of the population is elderly, with 24.1% of the population over 65 (BC stats 2010). The community is a retirement destination for many residents. The LHA population for Creston is 3.4% First Nations.

There are an estimated 125 pregnancies per year in Creston's 1-hour catchment area. There is also natural catchment drainage of maternity care cases into Creston from a distance of 1 to 2 hours, which includes the communities of Boswell, Crawford Bay, Riondel, Erickson, Lister, Kitchener, Yahk, Wynndel, and Canyon. The Church of Latter Day Saints community, Bountiful, is located in the Creston valley, and contributes to the overall birthing population and need for surgical back-up. An important issue is the vulnerability of the birthing population; the mothers are often younger and poorer, and there is a fair amount of substance use in the population. The relatively small First Nations population is well represented in the birthing population, and it should be considered vulnerable.

There is a recently announced agricultural project (i.e., fresh water fish farming and year-round greenhouse production), as well as a growing number of agri-businesses (e.g., organic foods) in Creston. The town has experienced increased economic diversification in recent years. Population projections for Creston suggest that there will be a slow, steady increase in population over the next 10-20 years.

Creston with inflow communities





2. Nearest referral centre(s) and its characteristics

Creston is located 107 km (about 1 hour 25 minutes by road) southwest of Cranbrook, and is part of the East Kootenay Health Services management area. Cranbrook is the principal referral centre for Creston, and there is a long history of collaborative care between these 2 communities. Although most referrals go to Cranbrook, Nelson and Trail have specialists that attract some referrals. Trail is located 1 hour and 40 minutes to the west of Creston.

Relationships have varied with different specialty groups over time. There has been considerable support for Creston's obstetrical services from the obstetricians in Cranbrook, including surgical services, and less support from the general surgeons. This has manifested through minimal outreach surgical activity in spite of the relative close proximity of these 2 communities. Aside from the occasional lump and bump procedure, there is little other surgery performed in Creston by the general surgeons from Cranbrook.

Outreach specialists are covered under NITAOP, and include ENT, internal medicine, gastroenterology, nephrology, general surgery, neurology, OB/GYN, orthopaedics, paediatrics, psychiatry, radiology, and urology. Creston is considering additional outreach specialists who perform plastics, dermatology, and ophthalmology, depending on specialist availability. These specialists provide both consultative and clinical work, and generally come from Cranbrook, Fernie, and Trail.

3. Analysis of current services

Currently, there are 11.25 full-time equivalent doctors in the community, four of whom are very committed to providing obstetrical care. The local surgical team includes: Dr. Le Roux, a GP with enhanced surgical skills and anesthetic skills, Dr. Faye MacKay, a GP anesthetist, and 3 OR nurses. The family practitioners cover the Emergency Room. On-call shifts are half-day during the week, then fairly lengthy night shifts, and on the weekend they do night and day shifts. The OB call can be for a day at a time, or even the whole weekend. The physicians doing OB try to coordinate their ER call with their OB call. There will be one GP with enhanced surgical skills and one GP anaesthetist coming to work in Creston to support the OR and the anaesthesia call, beginning in January 2013.

The physicians in the community currently include:

- Dr. Karen Persad, who has been in the community for 8 years and is committed to obstetrical practiceDr. Andrew Weaver is a young family doctor who has been in the community for 4 years. He does obstetrics and is part of a group practice with Karen Persad. He had spent some time in Creston as a resident
- Dr. Kriegler Le Roux is a GP with enhanced surgical skills and GP anesthetist, and has been in the community since 2002.

The current nursing staff include:

- Karen Evans, the OR manager, who has been in the community since the 1980s
- LeAnn Nawalkowski, who has been in the community for 4 years
- Lorraine Ward, who has been in the community for 29 years
- Susan Brooks, who has been in Creston for 5 years
- Dawn Terrill, who has been in Creston her entire life. She recently completed a surgical update program and worked in Cranbrook for 3 months.

The nursing complement is well organized, and the nurses are highly competent and enthusiastic about the surgical services. They are one nurse short of a full complement, but there is sufficient staff to manage services. The services are currently structured to run 3 days per week. A significant amount of resources, both human and financial, have been expended into the perinatal training of nurses. Furthermore, education and recertification for NRP and FHS are ongoing. There is a midwife in the community, Leah Barlow, who has been providing midwifery services for many years. She has occasionally found herself pressured into home deliveries with uncertain surgical backup available at the local hospital.

The OR is currently funded to offer elective work 3 days per week. Most of this work is being provided by the local GP with enhanced surgical skills. During OR days, there are 3 nurses on, with 2 in the OR and 1 in the recovery room. A 4th nurse works 4 hours on scoping days and supports recovery.

In 2011/12, there were 791 surgical cases, the majority of which were endoscopies. Currently, the scope of practice includes carpal tunnels, vasectomies, circumcisions, lumps and bumps (surface cancers such as melanoma and squamous cell carcinoma, simple breast lumps that are circumscribed and likely benign), C-sections (elective and emergent) with possibility of open tubal ligation should the woman want the procedure at the same time, dilation & curettage, and

occasional placental removal of retained placenta. Dr. Le Roux covers a large proportion of these procedures. There are currently no hernia repairs done locally, but this could be undertaken with sufficient support. Dental procedures are often performed on patients who have difficulty traveling.

Obstetrics is currently limited by the lack of surgical backup. When the GPA is away from the community the service is limited with no epidurals, no augmentations, no vaginal birth after caesarian (VBAC), and consequently the number of deliveries has been severely reduced to an estimated 40 per year. The 4 doctors providing obstetrics have a 1 in 4 call schedule, which overlaps with their 1 in 10 emergency call schedule. They are often on-call for an entire weekend to cover obstetrics. This worked well when there was surgical backup available, as the volume of deliveries supported this schedule and made it worthwhile to be on call. About 18 months prior to this visit, Creston had about 100 deliveries per year. There were only 17 deliveries between March 1st and July 31st, of this year, which is equivalent to 25-30% of the potential deliveries. In the past 18 months, there has been a discontinuity of surgical services due to family problems for some members of the surgical team. The successful recruitment of 2 GPs (one of whom has anaesthetic certification, and both of whom have C-section capability) should stabilize the Creston OR program, providing backup of obstetrics as well as emergency services.

There are 20 acute care beds available at the hospital. There is good physical infrastructure for the OR, and it is well organized and has appropriate equipment. It will require very little expenditure on new equipment to provide basic services to the community. Available equipment includes several scopes for upper and lower GI scoping, equipment for laparoscopic cholecystectomies, and the anesthesia machine, which is in good condition as it was recently purchased. The OR has been renovated and conforms to current infection control standards. The physical plant appears to be completely appropriate to continue surgical services.

Ongoing education to support all rural site staff includes (but is not limited to): NRP, FHS, CPAM, Rural Prenatal Program through Professional Practice Office with programs through UNBC and BCIT, TNCC, ENCP, CTAS, Clinical Practice Guidelines, Clinical Competencies , Standards of Care, ongoing monthly connection to larger centers and Clinical Leaders in the OR, Surgical and Prenatal Services Departments. The Rural sites are additionally linking in with the regional center to send staff for additional training.

4. History of surgical services

Surgical services have been present in the community for the past 50 years. The services were generally provided by a series of general surgeons, as opposed to the past 10 years, in which the service is provided by GPs with enhanced surgical skills. Historically, there were 2 GP anesthetists supporting the surgeon, as well as outreach surgeons.

During the 1960s and 70s, Dr. Nunn, a general surgeon, worked in the community for approximately 10-15 years and performed extensive surgery: back, orthopaedics, total hips, hip pinning, urology, cystoscopy, and all other types of general surgery. Dr. Lomax, a general surgeon, worked from 1980-1986 and performed general surgery and orthopaedic procedures. During this time, the OR was running 5 days per week. In addition to the general surgeon, an OB/GYN surgeon operated 1 day per week, until 1990. OR days were reduced to 3 days per week in the mid-1980s. Dr. Dubienski, a general surgeon, worked in Creston from 1986-1992. From

then until 2001, it was difficult to retain general surgeons for more than a couple of years, the last of which being Dr. Lee, whose scope of practice included laparoscopic gallbladder removal and bowel surgery. This increase in the difficulty of retaining surgeons occurred in conjunction with the designation of Cranbrook as the Regional Center.

5. Challenges and gaps in service

There are some significant shortfalls and gaps in current human resources. Dr. Le Roux can provide GP surgical or GP anesthesia services, but not both in one case. Dr. Faye MacKay, the GPA backbone of the surgical service, has been away for a considerable amount of time in recent months for personal reasons, and this has compromised the integrity of the surgical service. However, she has confirmed that she will be continuing her work in Creston.

One challenge to staffing the OR that has been particularly frustrating for the community is that there is an individual in the community from Nigeria, Raphael Elemuo, whose practice is limited by constraints on certification. Although he has 10 years of experience providing anesthesia, his ability to provide anesthesia has not been supported, nor is there any shortcut for him to obtain certification. He would have to complete a 1 year training process to provide GP anesthesia, whereas in his prior practice he has provided anaesthesia for thousands of cases.

Retention of the surgical team in Creston has been under some threat, which may have implications for the recruitment of new physicians to the community. However, a young couple with C-section and anaesthetic capability has recently been recruited to Creston. The OR nurses in Creston are well-trained and enthusiastic, and certainly capable of more than they are being asked to do. This is likely not sustainable if they are not given the opportunity to exercise their skills. There has, however, been stability in the medical staff over the past 5 years, and the presence of an active OR program would contribute substantially to the sustainability of the physician complement.

The medical staff believe that the OR is currently underutilized. The scope of practice is limited, and has been constrained by the wishes of the Cranbrook surgeons and regional governance. It is limited to scopes and a few minor procedures. There is not a strong outreach surgery program, nor are the GPs with enhanced surgical skills permitted to provide much surgical care locally. This does not effectively meet the needs of the community, nor the potential for local OR services.

The surgical services needed by this population are oriented toward elder care, and their needs are currently being met in large part by having to travel to access services in Cranbrook. The travel itself can be difficult for them, as is having to travel home post-operatively. Furthermore, they are then away from any potential subsequent post-surgical care should there be any complications from the surgery.

Appendix I - Fernie

The visit to Fernie took place on August 27th, from 8:00 to mid-afternoon. During the visit, 16 individuals were interviewed:

- Shirley Mercier, Administrative Lead for the Fernie site
- Jane Binter, Site Manager
- Dr. Colm Nally, General Surgeon
- Dr. Patricia Burnett, Gastroenterologist
- Dr. Ron Clark, Chief of Staff & GP Anaesthetist
- Dr. Paul Michal, GP Anaesthetist
- Dr. Lori Gadsden, GP who provides obstetrics services
- Dr. Shelley Forrest, GP who provides obstetrics services
- Dr. Alastair Nicoll, Dentist
- Dr. David McBeath, GP who provides emergency care
- Jo-ann Hnatiuk, Clinical Nurse Educator
- Karen Brown, Patient Care Coordinator
- Debbie DeLuca, Lisa Vincent, Leahh Potyok, and Brent Green, OR Nurses

We gained a broad range of perspectives on the services from both the administration and the providers.

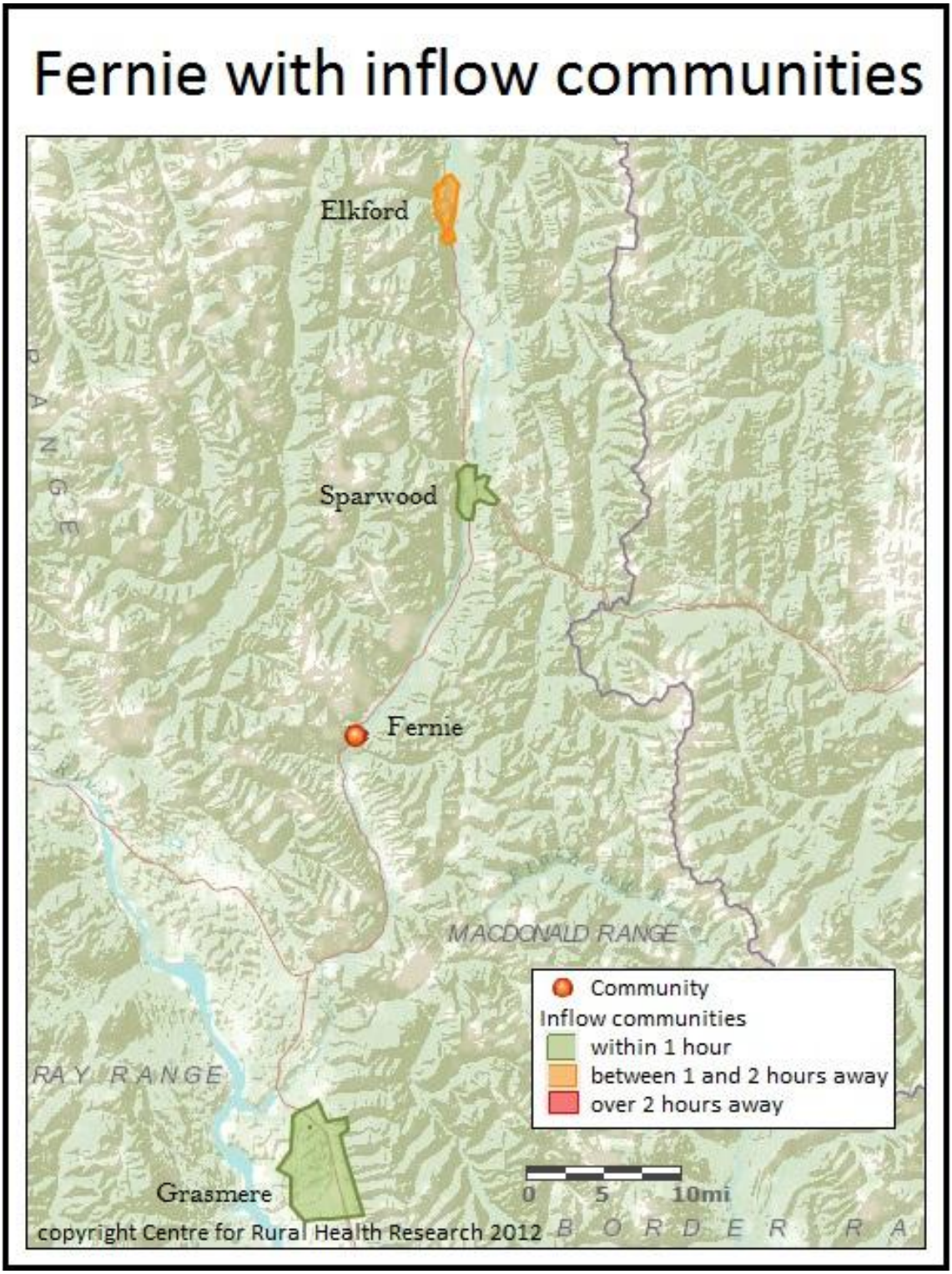
1. Geography and population characteristics

The 1-hour catchment population is approximately 15,000, and there is a good fit between the surface travel time catchment and the local health area. The LHA population for Fernie is 6% First Nations. On any given day, Fernie may have an additional 10,000 people due to the high transient and recreational population. The resident population has fluctuated very little in the past 30 years. The Elk Valley provides a significant portion of the world's coal, and has thriving tourism and forestry industries. The industries underpinning the population are quite strong and there's no decline in sight for the coal industry. Many of the residents in the Elk Valley are of child bearing age, and moved to the community for the attractive lifestyle and strong sense of community.

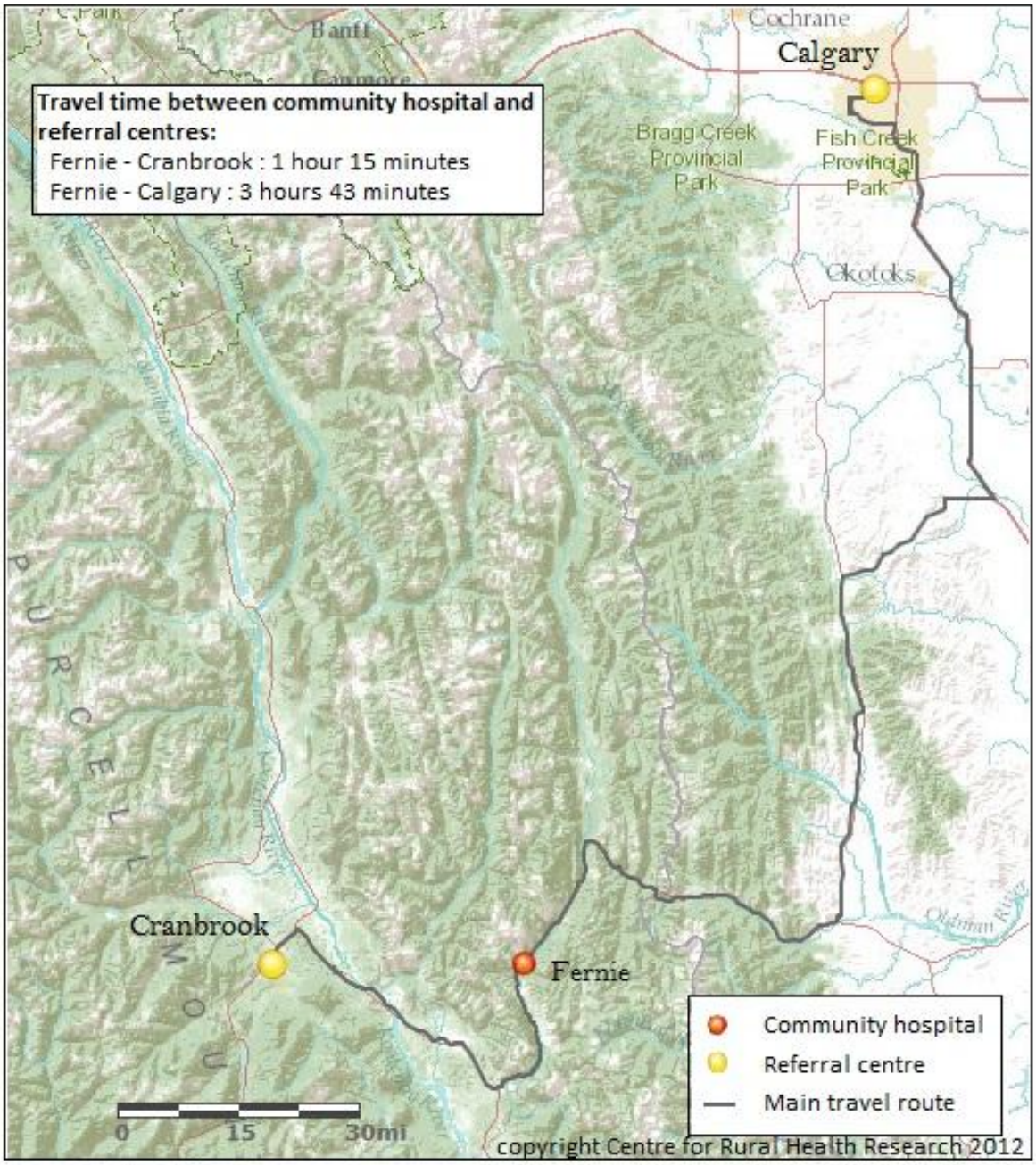
There are a lot of extreme sports practiced in the Valley, and consequently a lot of injuries that need competent and comprehensive emergency room management. There are also frequent MVAs coming off of Highway 3, which has been noted to be as busy as the TransCanada highway due to increased tourist volume. In 2009, the Ministry of Transportation estimated the daily average volume of traffic to be 8,000 vehicles, which rose to an average of approximately 11,000 vehicles in the summer months. Consequently, the ER needs to be prepared to manage critical injuries and trauma, which occur not infrequently.

The demographic characteristics of the Elk Valley catchment are influenced by its proximity to Alberta. The Crows Nest Pass, which includes the towns of Coleman, and Blairmore, is located 35 minutes southeast of Sparwood, which has an active acute care hospital. Other communities in the valley supported by Fernie include Sparwood, Elkford, Grasmere, Hosmer, Elko, and Jaffray. Sparwood, which had an active acute care hospital prior to regionalization, is now a Primary Health Care Centre with an emergency department and a complement of 3 FTE physicians. The Sparwood OR closed in 1991. Elkford, which also had an active acute care hospital, now offers

limited community programs and an emergency department with specific hours of operation and a complement of 2 FTE physicians. With the closure of the Sparwood and Elkford hospitals, the importance of having surgical services available in Fernie has been magnified.



Fernie with referral centres



2. Nearest referral centre(s) and its characteristics

Historically, the East Kootenays was home to several community hospitals, of which Cranbrook was the largest, and Fernie was the second largest in size. Regionalization identified advantages of centralizing some specialist services in Cranbrook. There have been general surgery and gastroenterology services in Fernie for over 20 years.
A proportion of referrals go to Cranbrook, which is 1 hour and 10 minutes away. Most emergency transfers by ambulance go to Cranbrook, which is the designated regional centre.

Currently, the interprofessional relationship with Cranbrook works well in the area of obstetrics, but there are some challenges in the area of general surgery, including administrative decisions to limit the scope and number of procedures being done in Fernie. There has been a perception amongst the surgical providers that the Cranbrook perspective is that the best situation would be if surgical services closed completely in communities like Fernie, and all the work went to Cranbrook. This is very much out of sync with the perceptions of the individuals at the Elk Valley hospital who provide the surgical programs, and also the residents of the Elk Valley.

The population of the Elk Valley is proximate to alternative referral sites in Alberta, including Calgary (which offers many tertiary care facilities for complex transfers) and Lethbridge. Some residents of Fernie have familial connections to Alberta, making it an economically beneficial and convenient option. Helicopter transport for critically ill patients can be coordinated through Alberta's STARS service. Alberta, however, has placed some restrictions on the types of patients they see from British Columbia, and so fewer patients are utilizing this transfer option.

3. Analysis of current services

There are currently 16 active primary care physicians providing services to the population. The surgical team is led by Dr. Colm Nally, a general surgeon, who has been in Fernie for 24 years. Dr. Nally is approaching retirement in the next 5 to 15 years, and is in the process of succession planning. Dr. Patricia Burnett, the gastroenterologist, has been present in the valley for over 20 years. She provides gastroenterological, hepatology, and internal medicine services to the Elk Valley, as well as Cranbrook, Sparwood, and Creston. She networks with gastroenterologists in Calgary, and is one of 6 gastroenterologists practicing in Interior Health. There are currently no GPs with enhanced surgical skills resident in the community. The Elk Valley hospital has confirmed the addition of 2 GPs with enhanced surgical skills (both with C-section capability, one of whom has anaesthetic certification) who will begin work in Fernie in January 2013.

Other physicians in the community include:

- Dr. Paul Michal (GPA)
- Dr. Ron Clark (GPA), who has been in the community since the 1970s, and trained to do anaesthesia in 1984. He is the most recent chief of staff
- Dr. Lori Gadsden and Dr. Shelley Forrest (GPs who provide obstetrical services); Dr. Gadsden has been in the community since 1999, and Dr. Forrest since 1989. Both have made significant contributions to the obstetrical program.
- Dr. Tessler and Dr. Robinson are also physicians providing obstetrical care at the Elk Valley hospital. Dr. Robinson travels to provide prenatal services in Sparwood and Elkford, and

preliminary data suggest that this has had an influence on mothers choosing to remain in the Elk Valley, rather than travelling to Alberta to deliver.

- Dr. David McBeath (GP who provides ER services)
- Dr. Alastair Nicoll (dentist), who has lived in Fernie for 20 years, and strongly believes having local dental care is important addition to the sustainability for the OR.

Currently the Fernie hospital has 20 beds, 15 full time nurses, and 15 part-time nurses. During the day, they have 3 RNs and 1 LPN, and during the night they have 3 RNs on duty. The OR is currently staffed by 5 permanent OR nurses (3 part time RNs, 2 part time LPNs) and 1 casual OR nurse. One of the OR nurses is a DC2 Patient Care Coordinator with supervisory responsibilities. Two of the RNs have been trained as midwives, but do not practice midwifery. Overall turnover of nurses has been low and the morale is high. Nursing educational leadership is provided by Jo-ann Hnatiuk, who has a background in emergency nursing and transport.

There are 1.75 days a week when elective surgical slates are done, and 2.25 days per week when scoping is provided. The only other surgeries performed outside of the regular OR days are emergency C-sections. The annual number of procedures that take place in the OR is estimated to be between 250 and 300. The Elk Valley Hospital utilizes the NITAOP program, which offers services delivered by specialists in ENT, Neurology, Orthopaedics, OBS/GYN, Psychiatry, Paediatrics and Radiology. The majority of physicians come from Cranbrook, and some from Lethbridge. The services provided by the specialists are a combination of consultation and clinical procedures.

The scope of practice is, for emergency procedures, appendectomies and C-sections done by Dr. Nally. As this is a very sports-oriented region with significant transient population, there are a number of industrial, motor vehicle, bike, and ski accidents for which the OR is occasionally called in to help. Other surgeries include: incarcerated hernias, dilation & curettage, trauma in the ER, laparoscopic cholecystectomy, and carpal tunnel surgery. The general practitioners who provide obstetrical services emphasized that without the surgical backup provided by the perinatal surgical program, they would not be able to continue to provide obstetrical care. The dental waiting list is reportedly 3 months long, with an ongoing need for emergency dental work related to acute infections.

Currently, nurses have been involved in maintaining their education through UNBC; every year they have a 1 month practicum for 1 or 2 nurses, which includes emergency and obstetric care. Mandatory education includes NRP, FHS, CPAM, TNCC, ENCP, CTAS, and Rural Perinatal Programs in conjunction with the Professional Practice Office through UNBC, BCIT, Clinical Practice Guidelines, Clinical Competencies, and Policy and Practice Standards. They also have regular luncheon sessions called “lunch and learn” that are attended by a majority of nurses. There is an active system of perinatal meetings every 2 months. The maternity skill set of the nurses and physicians is high, and the maternity program is working well.

Coverage for maternity care is available about 80% of the time. The service is closed for 5 weeks per year as per Interior Health protocol, as well as every 2nd weekend. Women who are in labour during times when the OR is unavailable are generally diverted to Cranbrook for delivery, though some choose to deliver in Alberta. Surgical backup will be bolstered with the recruitment of 2 new

GPs with enhanced surgical skills commencing January 2013. Of the average 150 pregnant patients in the catchment, about 100 deliver locally at the Elk Valley hospital.

The surgical equipment and facility are reasonably up to date. The anaesthetic machine was purchased in 2009 and is functioning well. The scopes are replaced regularly, and the laparoscopic cholecystectomy equipment is up to date. The OR and day care rooms currently meet infection control standards, with the exception of some minor renovations, which have been scheduled. There are 3 fully functional labour and delivery rooms, and funding has been secured to upgrade one of these rooms. There is no CT scanner available on site, and the nearest scanner is located in Cranbrook.

The emergency department has experienced a significant increase in volume. Ten years ago they had 500-600 visits per month, and now there are an estimated 1100-1200 visits monthly for a total of about 15,000 visits annually. This may reflect an increase in visitors to the Elk Valley to take advantage of the recreational activities.

4. History of surgical services

There has been a general surgeon present at the Elk Valley hospital for over 30 years. Dr. Nally has been in the community since 1988. Historically, there have been GPs with enhanced surgical skills supporting the general surgeon, as well as 3 GP anaesthetists (Dr. Clark, Dr. Reis, and Dr. Roswadowski).The OR was previously opened 5 days per week, but is now open 4 (1.75 days for elective procedures and 2.25 days for endoscopy).

There is a history of outreach surgery in the community. Dr. Post provided obstetrical services until 1993. Fernie had outreach orthopaedic surgery until 2006, and plastic surgery until 2000. Radiology was provided until 2000, and ultrasound was supported historically, but was removed with regionalization

5. Challenges and gaps in service

The Elk Valley hospital has had surgical services for more than 50 years, which were provided by a general surgeon supported by a GP with enhanced surgical skills. It is only in the past 10 years that there has been more constraint on the scope of practice of the general surgeon, Dr. Nally, and has led to significant unresolved tensions. The perinatal program has benefited from Dr. Nally's commitment for over 20 years, and will benefit from another provider to augment Dr. Nally's service and provide 24/7 coverage. The community has recently confirmed the recruitment of 2 GPs with enhanced skills to augment Dr. Nally's practice. Another challenge is the intermittent closure of the OR, which leads to diversion of surgical cases. Service coverage as well as maintenance of the surgical skill set would be strengthened by more consistent access to the OR.

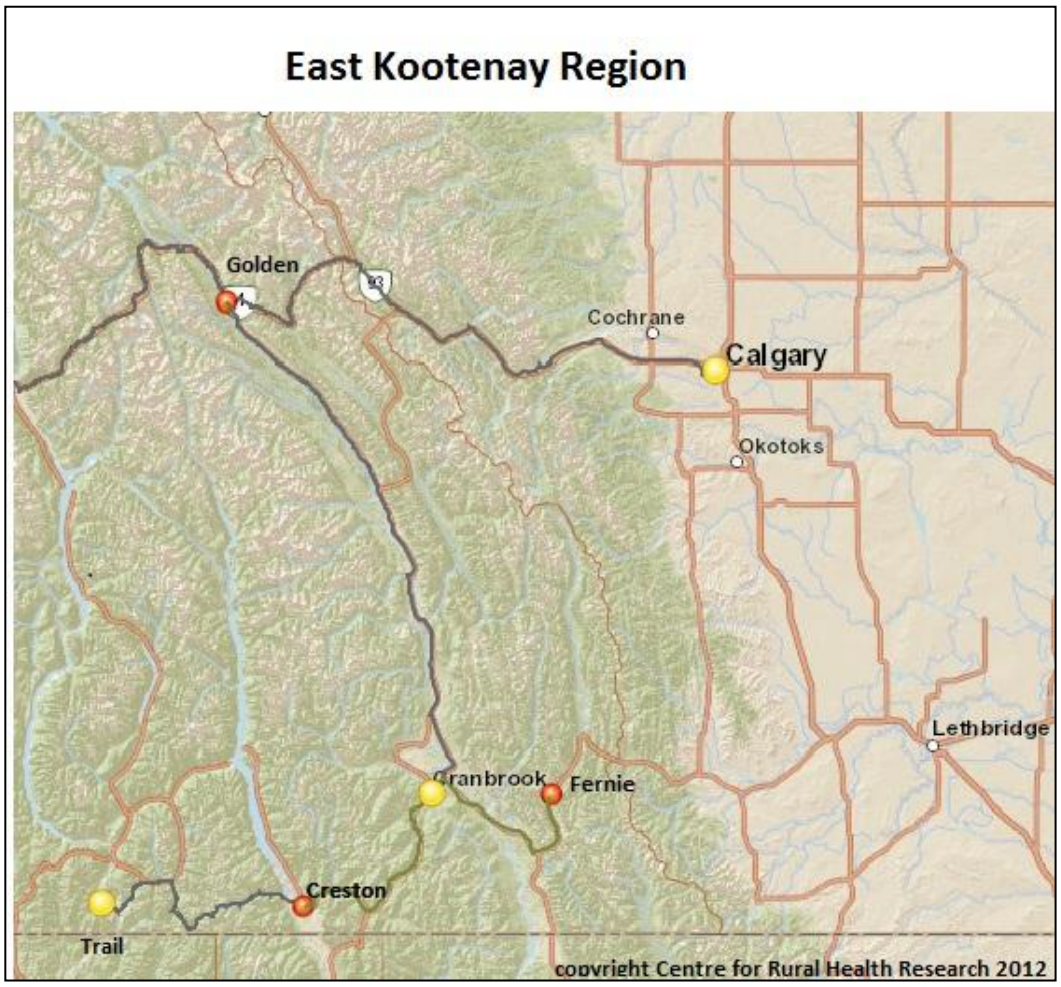
Appendix J - Cranbrook and the East Kootenay Region

The visit to Cranbrook took place November 1st, and meetings were held during the afternoon and into the evening. During the visit, the OR and surgical facilities were toured with Dr. Driedger. Several people were interviewed during the visit, including:

- Jason Giesbrecht, the acute area director for Interior Health
- Chris Ondrik, who was a nurse manager and quality and risk management lead at Cranbrook before taking on a role as interim site manager in Creston
- Dr. Lawrence Jewett, ENT surgeon and EK chief of staff,
- Dr. Bernie Driedger, orthopaedic surgeon and EK perioperative director,
- Dr. Daniel Hugo, head of obstetrics and gynecology
- Dr. Ryan Cain, an ENT surgeon and head of surgery as of October
- Dr. Peter Chong, general surgeon
- Dr. Abdul Aleem, general surgeon

1. Geography and population characteristics

While the East Kootenay region has a population of about 80,000 in total, the population is distributed over a number of communities: Cranbrook (approximately 25,000), Creston (14,000), Fernie (12,000), the Elk Valley (3,000), Golden (7,000), and Invermere (3,000). Cranbrook, the largest community in the area, has been designated as the referral site for the East Kootenay region. The challenge is that the population is quite dispersed across the region, and this is further complicated by problems related to emergency transport in the East Kootenays. The ambulance service is often delayed, generally due to poor weather conditions and competing priorities. Patients who travel to access services across the East Kootenay region face similar obstacles, as travel in inclement weather and mountainous terrain can be difficult. For descriptions of the demographics of the individual communities of the East Kootenay region, please refer to the other appendices in this report (Appendices C, H, and I).



2. Nearest referral centre(s) and its characteristics

Referral services for the East Kootenay region, beyond surgical conditions that can be managed in Cranbrook, include complex plastic surgery in Trail, and cardiac and spinal surgery that generally go to Calgary or Kelowna.

3. Analysis of current services

Strategic recruitment to the Cranbrook medical staff has progressively occurred since regionalization. The surgical staff currently includes: 4 general surgeons, 4 (3 full-time and 1 part-time) obstetricians, 5 (4 full-time and 1 part-time) orthopaedic surgeons, 2 ENT surgeons, 2 ophthalmologists, and 1 urologist. There are 5 full-time anaesthetists working at the hospital. The OR slate is run 5 days per week across 3 operating rooms.

Currently there is almost no procedural outreach occurring from Cranbrook, though a number of the surgeons provide consultative outreach through regular clinics in some of the smaller East Kootenay communities. Wait lists are generally short, though there is some variability amongst surgical providers. There are some challenges in filling all of the surgical slates. This creates pressure on the surgical programs to find enough patients to fill the slates, and keep all 5 anaesthetists full-time in the operating room.

The number of surgical services performed annually in Cranbrook is about 1,500, and in the surrounding 3 surgical sites in the East Kootenays, it is estimated that there might be another 100. A significant number of procedures are done on the East Kootenay population at surgical points in Alberta, but the exact number is uncertain. The East Kootenay population is generally well served by endoscopy services.

4. History of surgical services

Cranbrook has had a long-standing history as the referral centre for the surrounding communities in the East Kootenay region. It has always been in competition with the draw from Alberta, where much larger community services are available. General surgery has been provided in Fernie for a long time, which has meant that many general surgical problems were handled there. Prior to regionalization, the cadre of specialists in Cranbrook was smaller, and included 1 general surgeon, and 1 ENT surgeon.

5. Challenges and gaps in service

Major challenges for the overall East Kootenay region are lack of an integrated vision with respect to the utilization of the surgical facilities, and a sense of inequity between communities. There is general respect and acknowledgement that the enhanced services in Cranbrook provide a very valuable service to the East Kootenays. There is a relatively large roster of surgical providers located at the referral centre to meet the needs of the call schedule. This creates a situation where almost all the surgical procedures for the East Kootenays are centralized to the Cranbrook operating room program. There is no disagreement about centralizing the complex surgery and the complex patients with anaesthetic risk in Cranbrook. There is contention around whether day care surgery in low-risk patients resident in the satellite communities could not be more effectively done in the satellite communities.

Another issue identified is the long-standing diversion of surgical patients from British Columbia to Alberta, due to the proximity of surgical service points in Alberta (e.g., Calgary, Lethbridge, and Banff). This diversion, which is particularly significant from the Elk Valley and the Golden area, represents an outflow of money as well as an outflow of surgical opportunity for the East Kootenay's surgical program.