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# Availability of surgical services in rural British Columbia

Family physicians with enhanced surgical skills/obstetrical surgical skills are integral to the well-being of rural patients and the health care systems they access.

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*This article has been peer reviewed.*

## ABSTRACT

**Background:** Family physicians with enhanced surgical skills/obstetric surgical skills contribute significantly to surgical care delivery in rural British Columbia. This environmental scan documents their practice locations and procedural scope.

**Methods:** Practice locations of enhanced surgical skills physicians/obstetric surgical skills physicians were identified using public data and professional networks. These data were collected between January 2022 and April 2023. Numbers of surgical procedures performed were determined using MSP billing data for fiscal year 2021–2022.

**Results:** Overall, 11 enhanced surgical skills physicians and 21 obstetric surgical skills physicians were practising in 17 of the 45 rural communities. Five communities had enhanced surgical skills physicians/obstetric surgical skills physicians as the sole surgical providers. Common procedures billed by these physicians included colonoscopies ( $n = 559$ ), C-sections ( $n = 404$ ), and inguinal/femoral hernia repairs ( $n = 52$ ).

**Conclusions:** A number of family physicians provide core surgical services in rural BC, sometimes as the only surgical providers at their hospital. Despite the limitations of the data collected, due mostly to a high turnover of surgical providers in rural sites, our study

shows that enhanced surgical skills physicians and obstetric surgical skills physicians are integral to the well-being of rural patients and the health care systems they access. Concerted efforts should be made to recruit and retain these key surgical providers in our province.

## Background

Providing quality surgical services, including emergency and obstetrical surgical care, is essential to a well-functioning health system. Over the past 2 decades, there has been significant attrition of surgeons and obstetricians/gynecologists in rural sites in Canada, notably in British Columbia.<sup>1</sup> Data from 2011 indicated that, in BC, women who resided more than 1 hour from a hospital that provided maternity services (including C-section) had poorer perinatal outcomes.<sup>2</sup> When accessing surgical care, rural and remote patients experience barriers related to transportation, finances, continuity of care, and psychosocial factors.<sup>3-5</sup>

Family physicians, including Canadian- and foreign-trained graduates, have a long history of providing surgical care in rural BC. In 2007, the enhanced surgical skills and obstetrical surgical skills training programs were created: 12-month and 6- to 12-month accredited training programs, respectively, for Canadian family physicians. The programs are recognized by the College of Family Physicians of Canada, and graduates receive a Certificate of

Added Competence in enhanced surgical skills/obstetrical surgical skills. Currently, there is only one enhanced surgical skills program in Canada (University of Saskatchewan, Prince Albert) and three obstetrical surgical skills programs (University of British Columbia, Surrey; University of Manitoba, Winnipeg; Northern Ontario School of Medicine, Thunder Bay). Another enhanced surgical skills program is being developed at the University of Alberta. According to the College of Family Physicians of Canada, there were 26 physicians with a Certificate of Added Competence in enhanced surgical skills and 55 physicians with a Certificate of Added Competence in obstetrical surgical skills in Canada as of July 2022, although this may underestimate the total family physician surgical workforce. While the Certificate of Added Competence can be obtained only after successful completion of an accredited enhanced surgical skills or obstetrical surgical skills training program, in practice, the certificate is not a requirement for hospital privileging in surgery. Hence, a few South Africa-trained physicians and Canadian physicians trained in the era of rotating internships continue to practise surgical skills in their community.<sup>6</sup>

Recognizing that lack of access to rural surgical care results in disproportionate adverse outcomes, a consortium of the Canadian Association of General Surgeons, Society of Obstetricians and Gynaecologists of Canada, College of Family Physicians of Canada, and Society of Rural Physicians of Canada published the *Joint Position Paper on Rural Surgery and Operative Delivery* in 2015. The authors concluded that enhanced surgical skills/obstetrical surgical skills are a key solution to ensuring patients receive surgical care close to home.<sup>7</sup>

While the importance of enhanced surgical skills physicians/obstetrical surgical skills physicians has been emphasized by patients, researchers, and professional bodies, little is known about the current volume and distribution of surgical care in rural BC.<sup>2-5,7</sup> To address this knowledge gap, we conducted an environmental scan

of surgical care in rural BC to identify the practice locations of enhanced surgical skills physicians/obstetrical surgical skills physicians, the procedures they perform, and available specialist support.

## Methods

Rural BC communities with functioning hospitals and populations ranging from 1000 to 25 000 (2021 census) were included in this scan.<sup>8</sup> Health centres and clinics were excluded. Local surgical providers were

### **Enhanced surgical skills/ obstetrical surgical skills are a key solution to ensuring patients receive surgical care close to home.**

defined as specialist surgeons (OB/GYNs or general surgeons) and family physicians with surgical skills. Anesthesia providers were defined as anesthesiologists and family physician anesthesiologists. Nonphysician personnel were excluded from the scan.

Data on the practice locations of enhanced surgical skills physicians, obstetrical surgical skills physicians, and family physician anesthesiologists were initially collected from the literature on rural hospitals with functioning operating rooms.<sup>9</sup> Those data were verified and expanded by using health authority websites,<sup>10</sup> by making direct inquiries to hospital administration, via Rural Coordination Centre of BC staff, and by contacting our professional networks. Data on the practice locations of anesthesiologists, OB/GYNs, and general and subspecialty surgeons were obtained from the College of Physicians and Surgeons of BC's registrant directory. Data collection was conducted between 1 January 2022 and 30 April 2023.

MSP billing data for the 2021–2022 fiscal year were obtained from Doctors of BC for all procedures billed by family physicians in rural BC communities. To receive a list of codes billed by family physicians

for procedures performed in the operating room, contact the corresponding author.

## Results

### Mapping of surgical sites and personnel

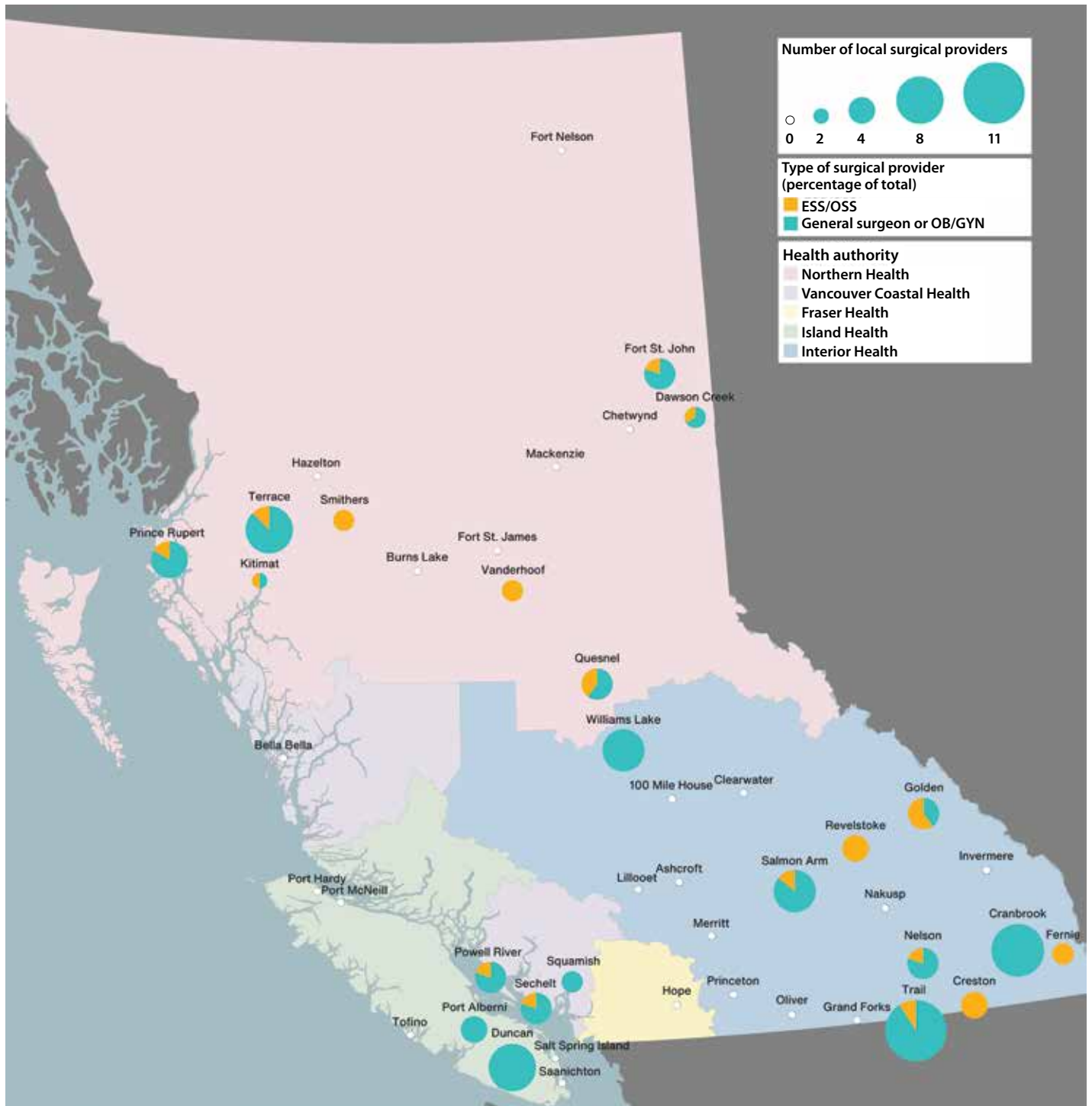
A total of 45 BC communities, spanning all regional health authorities, met the inclusion criteria (Interior Health:  $n = 19$ ; Northern Health:  $n = 14$ ; Island Health:  $n = 7$ ; Vancouver Coastal Health:  $n = 4$ ; Fraser Health:  $n = 1$ ). The **Figure** shows the availability of local surgical services in rural BC, defined as the presence of either a surgical specialist (general surgeon or OB/GYN) or an enhanced surgical skills physician/obstetrical surgical skills physician, as of 30 April 2023. Of the 45 communities included in this study, 17 (38%) had enhanced surgical skills physicians/obstetric surgical skills physicians, five (11%) had specialist surgeons only, and 23 (51%) had no local surgical provider. Six (13%) communities had anesthesiologists, and 24 (53%) had family physician anesthesiologists. Two sites, Fort Nelson and Hazelton, had one and two family physician anesthesiologists listed, respectively, but no permanent surgical provider. Contact with our family physician anesthesiologist network clarified that, in Hazelton, surgical care is provided by regular outreach general surgeons and obstetricians from Terrace. In Fort Nelson, the local family physician anesthesiologist currently works as a family practitioner and does not provide anesthesia care.

Overall, we identified 83 surgical specialists (48 general surgeons; 35 OB/GYNs), 32 family physicians with surgical skills (11 enhanced surgical skills; 21 obstetrical surgical skills), and 103 anesthesia personnel (27 anesthesiologists; 76 family physician anesthesiologists) working in the communities included in this study (to receive additional information, contact the corresponding author). Family physicians with enhanced surgical skills/obstetrical surgical skills practised alongside general surgeons and OB/GYNs in 11 communities (Dawson Creek, Fort St. John, Golden, Nelson, Powell River, Prince Rupert, Quesnel, Salmon Arm, Sechelt, Terrace,

and Trail), and alongside a single general surgeon in Kitimat. There were five communities in which family physicians with enhanced surgical skills/obstetrical surgical skills were the sole providers of surgical care, including Creston, Fernie, Revelstoke,

Smithers, and Vanderhoof. These communities were catchment areas for more than 30 smaller, predominantly Indigenous, surrounding communities. Referral centres for these five hospitals offered the following surgical services: general surgery, OB/GYN,

orthopaedics, ophthalmology, and urology (Cranbrook, Vernon, Terrace, Prince George); plastics (Prince George, Terrace); and otorhinolaryngology (Prince George, Vernon, Cranbrook). These five hospitals also benefited from outreach services from



**FIGURE.** Availability of local surgical providers in rural BC as of 30 April 2023.

ESS = enhanced surgical skills; OSS = obstetrical surgical skills; OB/GYN = obstetrician/gynecologist.

visiting general surgeons, OB/GYNs, orthopaedics, urology, plastics, and otorhinolaryngology, funded in part by the Northern and Isolation Travel Assistance Outreach Program.<sup>11</sup>

### Procedures performed by enhanced surgical skills physicians/obstetrical surgical skills physicians

All 45 communities provided MSP billing data for family physicians in 2021–2022. Across the 17 communities that had enhanced surgical skills physicians/obstetrical surgical skills physicians, the most commonly billed surgical procedures were colonoscopies, followed by C-sections, vasectomies, and dilation and curettage for spontaneous and therapeutic abortions [Table].

The largest number of C-sections were performed in Dawson Creek ( $n = 67$ ), followed by Smithers ( $n = 66$ ) and Vanderhoof ( $n = 41$ ). Although our scan did not identify the presence of permanent enhanced surgical skills physicians/obstetrical surgical skills physicians in Squamish, C-sections ( $n = 29$ ) were billed by family physicians in this location; the Rural Coordination Centre of BC indicated that the procedures were performed by obstetrical surgical skills locums. Across the 17 communities, other billed OB/GYN procedures, in order of prevalence, included oophorectomy/salpingectomy, curettage for postpartum hemorrhage, management of Bartholin abscess, and hysterectomy.

A variety of general surgical procedures were performed by family physicians with enhanced surgical skills/obstetrical surgical skills, including inguinal/femoral hernia repairs ( $n = 52$ ) and appendectomies ( $n = 13$ ). Appendectomies were billed in two locations: Vanderhoof (open:  $n = 7$ ) and Revelstoke (laparoscopic:  $n = 5$ ; open:  $n = 1$ ). Across the 17 communities, enhanced surgical skills physicians also billed a small number of other procedures, including management of perianal disease ( $n = 132$ ), management of venous insufficiency ( $n = 22$ ), tonsillectomy ( $n = 64$ ), palmar/plantar fasciectomy ( $n = 13$ ), and skin graft and flap

( $n = 13$ ). Notably, Lillooet, which does not have enhanced surgical skills physicians/obstetrical surgical skills physicians, had billings for 33 colonoscopies, five surgical abortions, and one umbilical hernia repair; presumably, these procedures were performed by locums.

### Discussion

Timely access to quality surgical care is critical. However, in a vast, 944 700 km<sup>2</sup> province that has difficult terrain and extreme winter weather, it is a challenge to provide this lifesaving care close to home for much

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of BC's population. Our study highlights a persistent gap in the surgical workforce in rural BC. Of the 20 small-volume surgical programs that were operating in the province in 1995, 11 have closed, three in the past 10 years.<sup>12,13</sup> As a result, more than half the rural population we studied cannot obtain a C-section or an appendectomy in their local hospital. And since most of the Indigenous population in Canada lives in remote areas,<sup>14</sup> Indigenous peoples are disproportionately affected by this inequitable access. Addressing this issue must be prioritized in the effort to decolonize health care in BC.

Fortunately, there are physicians who are passionate about providing essential surgical services in our province's most remote environments.<sup>15</sup> We identified 32 family physicians with enhanced surgical skills/obstetrical surgical skills who were working in BC, which represents one-third of this workforce in Canada. These physicians practised in 17 rural communities and were the sole providers of surgical care in five of them. In some places, such as Kitimat,

these physicians offered the only access to C-section in the region. If these physicians were not working there, more than 30 Indigenous communities would not have access to surgery. In addition, patients living in Creston, Fernie, Revelstoke, Smithers, and Vanderhoof would have to travel, sometimes up to 200 km, to access basic surgical care, often under adverse road and weather conditions.

While data from our environmental scan suggest that individual enhanced surgical skills physicians in rural BC performed fewer procedures in 2021–2022 compared with self-reported national averages in 2018,<sup>16</sup> they offered a wide scope of interventions ranging from colonoscopy to curettage for postpartum hemorrhage and skin flaps. This diversity of practice is characteristic of surgical providers who work in rural sites, as has been shown by the breadth of practice of Australia's rural surgeons.<sup>17</sup> These procedures are essential and time-sensitive for patients: they either alleviate morbidity (e.g., screening colonoscopy for early detection of colon cancer), improve function (e.g., curettage and skin flaps for nonhealing wounds), or prevent mortality (e.g., treatment of postpartum hemorrhage).

Family physicians with enhanced surgical skills/obstetrical surgical skills do not work in isolation. Our scan confirmed that they worked in teams, either with other enhanced surgical skills physicians/obstetrical surgical skills physicians or with surgical specialists. We feel this is crucial to prevent professional isolation, defined as geographic separation between different professionals leading to reduced coordination and collaboration.<sup>18</sup> Whether working alongside other nonsurgeon physicians or with specialists, these surgical teams help create a critical mass of surgical providers who can share the burden of surgical emergencies and support each other, which reduces the risk of burnout. In communities that have a single general surgeon, such as Kitimat, obstetrical surgical skills support can protect against the attrition of an entire local surgical program. Professional isolation can also

**TABLE.** MSP billing data for major procedures performed by family physicians with enhanced surgical skills/obstetric surgical skills in 17 British Columbia communities (2021–2022).\*

Domain	Procedure	Total number billed	Number of communities
<b>General surgery</b>			
	Colonoscopy	559	6
	Gastric polypectomy	8	3
	Inguinal/femoral hernia repair	52	3
	Incisional hernia repair	4	1
	Umbilical hernia repair	27	4
	Hernia repair, resection of bowel	1	1
	Appendectomy, open	8	2
	Appendectomy, laparoscopic	5	1
	Laparoscopy	8	1
	Laparotomy (post-op hemorrhage, intra-abdominal management)	1	1
	Chest tube insertion	35	10
	Abscess, incision, and drainage under general anesthetic	10	6
	Hematoma, incision, and drainage under general anesthetic	1	1
	Hemorrhoid, surgical management	57	13
	Pilonidal cyst, surgical management	8	6
	Perianal abscess/fistula, surgical management	49	13
	Sphincter repair	18	8
	Temporal artery biopsy	1	1
	Lymph gland biopsy	4	1
	Breast biopsy	1	1
<b>Obstetrics/gynecology</b>			
	C-section	404	16
	Surgical abortion	262	11
	Oophorectomy/salpingectomy	36	8
	Sterilizations, tubal and abdominal	27	8
	Bartholin cyst/abscess, surgical management	11	5
	Hysterectomy	2	1
	Endometriosis, cautery of, laparoscopic	1	1
	Curettage postpartum hemorrhage	19	7

Domain	Procedure	Total number billed	Number of communities
<b>Urology</b>			
	Vasectomy	272	9
	Circumcision	26	5
	Cystostomy	11	4
	Spermatocele/hydrocele excision	3	2
<b>Plastics</b>			
	Tendon repair	14	7
	Palmar/plantar fasciectomy	13	2
	Skin flap	8	2
	Skin graft	5	3
	Digit amputation	6	5
	Foreign body removal with general anesthetic	3	1
	Open reduction metacarpophalangeal or interphalangeal joint	2	2
<b>Ear, nose, and throat</b>			
	Tonsillectomy	64	4
	Adenoidectomy	31	4
	Peritonsillar abscess, surgical management	9	3
	Tongue, excision with general anesthetic	1	1
	Submandibular gland, excision	1	1
<b>Orthopaedics</b>			
	Prepatellar bursa, excision	3	1
	Osteomyelitis, surgical management	1	1
	Abscess, pelvis/hip/femur, incision and drainage with general anesthetic	1	1
	Toe amputation	1	1
	Synovectomy, hip	1	1
<b>Vascular</b>			
	Sclerotherapy	12	1
	Venous ligation	6	1
	Venous stripping	4	1

\* Creston, Dawson Creek, Fernie, Fort St. John, Golden, Kitimat, Nelson, Powell River, Prince Rupert, Quesnel, Revelstoke, Salmon Arm, Sechelt, Smithers, Terrace, Trail, Vanderhoof.

be prevented by accessing frequent outreach by specialists from referral centres. Professional relationships between specialist and enhanced surgical skills/obstetrical surgical skills teams are crucial for sustaining robust local surgical programs and should be a continued focus of rural development initiatives.

While family physicians with enhanced surgical skills/obstetrical surgical skills are a pillar of the surgical workforce in BC, they face several challenges. First, although there are local mixed surgical teams (specialists and nonspecialists) and specialist outreach activities, networks of care can be fragmented, and relationships with specialists can be difficult.<sup>16</sup> To circumvent this, the BC Rural Surgical and Obstetrical Networks piloted a coaching program in seven BC communities in 2017 to connect enhanced surgical skills physicians/obstetrical surgical skills physicians with specialist surgeons in their referral region, which was well received.<sup>19</sup> In addition, the UBC Reticulum platform recently integrated enhanced surgical skills physicians in their map to create a virtual connection between specialists and nonspecialists.<sup>20</sup> Further, the first Rural Surgery Symposium organized by the UBC Global Surgery Lab in April 2023 brought together stakeholders from all disciplines related to surgical care and sparked discussions about recruitment, retention, and sustainability.<sup>21</sup> While relationship building is ongoing, more formalized networks of care need to be created to ensure sustainability of rural surgical sites.<sup>22</sup>

Second, as identified by a recent scoping review, identifying training gaps for isolated surgical providers is crucial to supporting this critical workforce.<sup>23</sup> While family physicians with enhanced surgical skills/obstetrical surgical skills benefit from strong accredited training programs, continuing professional development activities are few and far between. Indeed, these physicians have identified continuing professional development as essential to their capacity to maintain procedural confidence and to the sustainability of their field; the College of Family Physicians of Canada will

soon make continuing professional development mandatory.<sup>6,16</sup> Presently, family physicians with enhanced surgical skills/obstetrical surgical skills rely on conferences, asynchronous learning media (e.g., podcasts), a virtual obstetrical surgical skills curriculum,<sup>24</sup> and focused skills workshops, as well as returning to their training site for a refresher and being deployed abroad to obtain more exposure. Funding to pursue additional training is available from

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the National Advanced Skills and Training Program for Rural Practice; it partially covers 30 days of expenses. Innovative and improved opportunities for continuing professional development are crucial to ensuring the continued viability and expansion of enhanced surgical skills/obstetrical surgical skills in rural BC communities. For example, the Virtual Educational Platform Working Group, a collaboration between enhanced surgical skills physicians and trainees, obstetrical surgical skills physicians and trainees, and the UBC Global Surgery Lab, which is funded by the Rural Coordination Centre of BC, will explore the continuing professional development needs of rural surgical providers in order to create educational resources that are tailored to their needs. Moving forward, we strongly advocate for longitudinal training of rural surgical providers in close collaboration with moderate- to high-volume referral centres to maintain existing skills and diversify the scope of practice to better serve the rural population.

### Study limitations

This study provides a snapshot of the state of surgical services in BC, as of 30 April 2023. Although we can confidently rely on MSP billing data for surgical procedures

billed during the fiscal year 2021–2022, the complete surgical mapping was complicated by the dynamic state of the workforce (e.g., frequent locuming, provider turnover, and out-of-date registrant directory information in rural communities). To overcome these challenges, our research team contacted Rural Coordination Centre of BC staff and enhanced surgical skills physicians/obstetrical surgical skills physicians and family physician anesthesiologists within our professional networks. Also, the publicly available fee-for-service billing data do not capture procedures conducted under alternative payment plans. Additionally, we could not capture data on procedures in which enhanced surgical skills physicians/obstetrical surgical skills physicians assisted specialist surgeons, which resulted in an underestimation of the actual number of procedures performed by family physicians who have surgical skills.

### Conclusions

Despite provincial and national urgency to improve access to and quality of surgical care in remote and rural communities, there is still a profound gap in surgical coverage. Family physicians with enhanced surgical skills/obstetrical surgical skills are invaluable stakeholders and providers who play a key role in resolving this inequity. These physicians require support in the form of robust networks of care, connections with specialists, and structured continuing professional development programs to maintain competencies and confidence. We hope this scan serves as a call to action for health policymakers, administrators, and clinicians in BC. ■

### Competing interests

None declared.

### References

1. 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;51:173–178.
2. Grzybowski S, Stoll K, Kornelsen J. Distance matters: A population based study examining access to maternity services for rural women. *BMC Health Serv Res* 2011;11:147.

3. Jazdarehee A, Parajulee A, Kornelsen J. The experiences of rural British Columbians accessing surgical and obstetrical care. *Patient Exp J* 2021;8:126-134.
4. Humber N, Dickinson P. Rural patients' experiences accessing surgery in British Columbia. *Can J Surg* 2010;53:373-378.
5. Oelke N, Plamondon K, Kornelsen J. Rural stories of getting back home: An integrated knowledge translation study of people's experiences of navigating access to healthcare from rural and remote communities in British Columbia, Canada. *Int J Integr Care* 2021;20:106.
6. College of Family Physicians of Canada. Certificates of Added Competence in family medicine. Accessed 15 March 2023. [www.cfpc.ca/en/education-professional-development/examinations-and-certification/certificates-of-added-competence-in-family-medicine](http://www.cfpc.ca/en/education-professional-development/examinations-and-certification/certificates-of-added-competence-in-family-medicine).
7. Iglesias S, Kornelsen J, Woollard R, et al. Joint position paper on rural surgery and operative delivery. *Can J Rural Med* 2015;20:129-138.
8. Government of British Columbia. Hospital address list. Accessed 11 December 2022. [www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/health-care-partners/hospitallist.pdf](http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/health-care-partners/hospitallist.pdf).
9. Grzybowski S, Kornelsen J. The sustaining of small rural surgical services in British Columbia: A report commissioned by the Joint Standing Committee on Rural Issues. Centre for Rural Health Research, 2013. Accessed 11 December 2022. <https://srpc.ca/resources/ESS/Library/Small%20Volume%20Rural%20Surgery%20Programs/JSC-Report-Feb-1.pdf>.
10. Health Authorities. Accessed 11 December 2022. [www.fraserhealth.ca](http://www.fraserhealth.ca); [www.interiorhealth.ca](http://www.interiorhealth.ca); [www.northernhealth.ca](http://www.northernhealth.ca); [www.vch.ca](http://www.vch.ca); [www.islandhealth.ca](http://www.islandhealth.ca); [www.fnha.ca](http://www.fnha.ca).
11. Government of BC. Northern and Isolation Travel Assistance Outreach Program. Accessed 15 March 2023. [www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/physician-compensation/rural-practice-programs/northern-and-isolation-travel-assistance-outreach-program](http://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/physician-compensation/rural-practice-programs/northern-and-isolation-travel-assistance-outreach-program).
12. Iglesias S, Strachan J, Ko G, Jones LC. Advanced skills by Canada's rural physicians. *Can J Rural Med* 1999;4:227.
13. Iglesias S. GP surgery and anesthesia in BC. Keynote presentation at the Rural Coordination Centre of BC, 5 January 2012.
14. Statistics Canada. Census in brief: Population growth in Canada's rural areas, 2016 to 2021. Accessed 11 December 2022. [www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021002/98-200-x2021002-eng.cfm?wbdisable=true](http://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021002/98-200-x2021002-eng.cfm?wbdisable=true).
15. Humber N. Lillooet, 2 km: Reflections of a rural GP surgeon. *Can Fam Physician* 2008;54:1028-1029.
16. Kornelsen J, Geller B, Janke F, Iglesias S. Learners' experiences of an enhanced surgical skills training program for family physicians. *Can Med Educ J* 2018;9:e46-58.
17. Bappayya S, Chen F, Alderuccio M, Schwalb H. Caseload distribution of general surgeons in regional Australia: Is there a role for a rural surgery sub-specialization? *ANZ J Surg* 2019;89:672-676.
18. Orhan MA, Rijsman JB, Van Dijk GM. Invisible, therefore isolated: Comparative effects of team virtuality with task virtuality on workplace isolation and work outcomes. *J Work Organ Psychol* 2016;32:109-122.
19. Iglesias S, Kornelsen J. An evidence-based program for rural surgical and obstetrical networks. *Rural Remote Health* 2018;18:4921.
20. UBC Reticulum. Accessed 15 March 2023. [www.ubcreticulum.com](http://www.ubcreticulum.com).
21. Global Surgery Lab. Global surgery symposium April 28, 2023. Accessed 15 March 2023. <https://globalsurgery.med.ubc.ca/global-surgery-lab/save-the-date>.
22. Falk R, Topstad D, Lee L. Surgical task-sharing in the western Canadian Arctic: A networked model between family physicians with enhanced surgical skills and specialist surgeons. *World J Surg* 2022;46:1629-1636.
23. Nealeigh MD, Kucera WB, Artino AR Jr, et al. The isolated surgeon: A scoping review. *J Surg Res* 2021;264:562-571.
24. Obstetrical surgical skills: Online modules. Accessed 15 March 2023. <https://oss-online.ca>.

**Family physicians with enhanced surgical skills/obstetrical surgical skills have identified continuing professional development as essential to their capacity to maintain procedural confidence and to the sustainability of their field.**