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Joint position paper on training for rural family practitioners in advanced maternity skills and cesarean section

Stuart Iglesias, MD; Peter Hutten-Czapski, MD

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All women in Canada deserve timely access to advanced maternity care. In urban Canada this is usually a given. For the approximately one third of Canadian women who spend their pregnancies in rural Canada, access can be a major challenge.

That which constitutes rural has been variously defined. In this paper we use the following definition:

> A practical definition in current Canadian application defines "rural remote" as communities ranging 80 to 400 km from a major regional hospital and "rural isolated" as communities more than 400 km away or about 4 hours transport time in good weather. In some of the agricultural zones of Canada, the population is widely dispersed and served by hospitals that are rural in nature but within 80 km of small urban centres. These small hospitals function relatively independently to provide

> safe and adequate maternity care. Facilities that meet these characteristics can be defined as "rural close."1

Rural Canada can be operationally defined as areas where general practitioners provide most or all medical services, including maternity care. As a direct result of a relative lack of specialists in these communities, rural family physicians have to provide a broader scope of practice than their urban counterparts. This paper describes training programs in advanced maternity care to provide delivery of these services in rural settings.

Most rural communities are too small and remote to sustain specialist obstetrical and anesthetic services for operative birth. There are only 38 obstetricians who practise in all of rural Canada.2 Most rural maternity care is done by the 1384 family physicians who provide intrapartum services.2 In rural hospitals, advanced maternity skills, including forceps, manual removal of the placenta, repair of lower genital tract lacerations and cesarean sections, may have to be performed by family practitioners. Their commitment and tenacity have sustained maternity programs in rural Canada. These family physicians have obtained varied training from several sources. Many are international medical graduates, some with foreign specialty training. Many rural hospitals have depended on these doctors, but it is increasingly difficult to find replacements as they age, and immigration patterns have reduced their entry into Canada. Others are Canadian-trained physicians who acquired their skills through a variety of training programs -- some formally, as in the third year of a family practice residency; some informally, through special arrangements between a supportive physician, a teaching program and a community with specific needs. Individual training has been arranged in recent years at the universities of Ottawa, Toronto, Manitoba, Saskatchewan, Alberta, Calgary and British Columbia.

In 1991, there were 576 hospitals that provided maternity care in Canada. The number is smaller now. When 40% of the 576 hospitals perform fewer than 20 cesarean sections each year,3 it is unrealistic to expect these services to be provided by specialist obstetricians. Physicians without specialty certification perform about 7% of all cesarean sections. Cesarean section in the hands of appropriately trained family practitioners has allowed rural Canada to continue to provide maternity care services -- there is no practical alternative.

Canada has one of the best regionalized health systems in the world that transports those who are sickest to centres that have the resources to manage their illness. This is reflected in maternal mortality (6/100 000) and perinatal mortality (6-8/1000) -- figures that are among the best in the world.4 Any changes to such a system must, therefore, be carefully planned and monitored.

There is a need to sustain and restore availability of advanced maternity care in rural Canada. Rourke5 has found that in rural Ontario there is considerable attrition in the availability of rural maternity units, family physicians attending births and cesarean sections. Canadians need to know that without well-trained practitioners these skills will not be available to women who need them. For this to happen, there needs to be an integrated response to sustain the rural medical, nursing,

administrative and physical environments where women give birth. Support of the rural health infrastructure is a complex undertaking. It involves such issues as maintaining a complement of trained nurses, adequate equipment, emergency transport, anesthetic support, funding and organization -- none of which is addressed here.

It must be emphasized that the capability to provide operative birth locally does not imply that all patients requiring operative birth can or should give birth locally. The relevant model is the larger perinatal system where a proportion of the pregnant population is identified as high risk and transferred for birth to the closest centre competent in the level of care required. The same principles of risk management and regionalization apply to patient selection for local operative birth as apply to the perinatal system as a whole.

Not every community has the will, resources, and the anesthetic and nursing support required to sustain a local cesarean section option. Cesarean sections require a health care team approach with a high intensity of commitment and resources. Some rural communities will practise maternity care at a lower level of intensity and will transfer many women for birth elsewhere. It is clear that this can be done safely, provided the patient selection process is effective and backed up by an organized audit and feedback program.1

This paper is limited to a discussion of labour, operative delivery and other advanced maternity skills for rural physicians. Advanced maternity skills training could also include such areas as basic obstetrical ultrasound, obstetrical analgesia, as well as advanced neonatal assessment and stabilization. The program can also be integrated into a rural family practice surgery training curriculum. Companion training papers in family practice anesthesia and family practice surgery are being developed to complement and support this document.

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Review of the literature

Literature searches were performed on MEDLINE to 1987 on training general practitioners/family physicians for forceps, vacuum extractions and cesarean sections. Additional literature was gathered, as described earlier,1 on rural maternity care. Very few papers were found that listed rural operative birth outcome measures.6-9

The reviewed papers have a general problem of controlling for potential confounders in comparing population outcomes. Nevertheless, these papers are encouraging in their reports of acceptable perinatal and maternal outcomes of populations served by appropriately trained non-specialist physicians.

The study by Deutchman and associates6 documented outcomes over 10 to 15 years by family

practitioners in two 35-bed rural hospitals (631 cesarean sections). The cesarean section rate was 16%. Outcomes were compared with standards found in the medical literature for maternal mortality, Apgar scores, maternal transfusion, urinary tract infection, endometritis, peritonitis, wound infection, reoperation, and injuries to bladder, urethra or bowel.10 In this limited sample, "By national standards, family physicians performed cesarean sections that produced infant and maternal outcomes of high quality...."6

Kriebel and Pitts documented low levels of intervention, complications, infant mortality and good Apgar scores from 8 years of data (1026 births) at a 3-doctor, 25-bed hospital in Forks, Wash.7 All doctors had been trained in cesarean-section birth. Intrapartum transfers were 3% and infant transfers were 0.8%. The cesarean-section rate was 8.9%. Forceps rate was 1.8% and vacuum extraction, 3.1%.

Cameron recently documented outcomes from the hospital in Atherton, Queensland, from 1981 to 1990.8 Atherton lacked specialist obstetricians, but 5 physicians had advanced training in operative births and held diplomas in obstetrics. The patient population is mostly public with 10% aboriginal births. From 2883 births attended by 17 non-specialist physicians over 9 years, the section rate was 13% (Queensland average 18.4%). The success rate of vaginal birth after cesarean (VBAC) section trials was 58%. Gross perinatal mortality was 5.2/1000. When outcomes of antenatal referrals (1.6%) and intrapartum and postpartum transfers (3.8%) were factored in, the perinatal mortality (9.6/1000) compared favourably with the rates for the state of Queensland as a whole (13.5/1000).

In northern Ontario, Black and Fyfe9 carried out a population-based study of 24 524 births. They found that women from the 11 communities with only non-specialist cesarean section availability had acceptable rates of perinatal mortality. Instrumental vaginal birth rate was 7.7%. The cesarean section rate was 14.2%.

It can be anticipated that the collaborative process among the Society of Rural Physicians of Canada (SRPC), the Society of Obstetricians and Gynaecologists of Canada (SOGC) and the College of Family Physicians of Canada (CFPC) will encourage the establishment of perinatal population-based databases, which are needed to audit and conduct research into rural maternity care. The Canadian Perinatal Surveillance System (CPSS) is also beginning to address similar issues.

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Potential benefits to rural women and their infants

As maternity services or rural hospitals close, women are being denied the choice of giving birth in their home community hospitals. In the "Joint position paper on rural maternity care,"1 we

reviewed and confirmed the evidence that women in rural communities achieve better outcomes when supported by local intrapartum care programs, regardless of whether there is on-site access to operative birth.9,11-13 Clearly, a limited rural maternity care program is superior to none. Are there additional benefits for women in rural maternity care settings, which enjoy local access to advanced maternity care?

A central component to rural living is the sense of belonging to a community. While rural women can usually travel out of the community to give birth, many will not want this. It is clear that the simple presence of such local operative birth options as forceps deliveries, vacuum extractions and cesarean sections will reduce markedly the need for ante- and intrapartum transfers. Without access to local operative birth and with careful risk management, approximately 80% of rural maternity patients can anticipate a birth in their community hospital. Because of emergent intrapartum risk and transfer, the proportion who give birth in these hospitals falls to 60%.9 With local access to operative delivery, more than 90% of maternity patients can give birth in their community.7-9

Some women cannot be transferred because complications of childbirth are often unpredictable. Natural disasters (e.g., abruptio placentae, cord prolapse, fetal hypoxemia) will occur in rural maternity practice. Local access to operative birth will equip these rural programs to deal with these rare but inevitable problems.

Independent of outcomes and standards, inaccessibility to advanced maternity care puts in question the survival of rural maternity programs. While many (125) rural communities continue to provide intrapartum care without cesarean section capability, they do so under considerable stress. In a study of outcomes of rural units in Washington state, Nesbitt and colleagues12 found that communities that could and did handle most of their maternity care had little attrition of physicians attending births (less than 3%/yr). The most vulnerable communities were those where less than a third of births were occurring locally. These communities had lost those doctors attending births at a rate of 27% per year.

Canadian data from Rourke5 and Hutten-Czapski14 show a rapid decline in availability of rural maternity services. Without the special anesthetic and surgical skills to intervene, health care professionals struggle with a crisis of confidence in their ability to manage the broad range of maternity complications they might encounter. Regardless of good outcomes, rural Canada faces continuation of the erosion of choice for women, as these programs close for reasons of occupational stress, crisis of confidence, perceived medicolegal risk, retirement of senior staff with advanced skills, and even hospital budgetary considerations.

Training for advanced skills will not solve occupational stress, medicolegal risk or budgetary considerations but it will improve confidence in rural maternity care providers so that they can continue to offer these services without local obstetrical specialist availability. It will also improve the ability of the community to attract a solo obstetrician by lessening the burden of on-

call coverage.

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Scope of practice

Concern has been expressed about providing short training programs in surgical and technical skills, with the assumption that these procedures can only be performed safely by those with the broader base of training achieved in an extended residency program (i.e., the specialty program is indivisible).15 The evolution of the delivery of medical care in rural settings would refute this concern. Appropriately trained rural doctors give anesthetics,16 manage trauma,17,18 give thrombolytics for myocardial infarction,19,20 treat pneumonia21 and perform cesarean sections.6,9,10 It is recognized that, in those clinical situations requiring technical/surgical skills in the rural setting, many cases are transferred out for specialist consultation or management, but many are handled locally. Available data are limited but show that these cases can be handled well in rural settings.6,9,10,16-21

Many rural family physicians are well trained in the knowledge base of maternity and neonatal care and the indications for operative birth. What is required for some is training in the specific procedures of operative vaginal birth and cesarean section, which can be performed with good outcomes by well-trained nonspecialist family physicians. This can only be achieved through properly designed and accredited training programs made available to those family physicians who wish to practise in a rural setting and provide these services. The knowledge taught in any such program should be of the same quality as currently exists within training programs in family medicine and obstetrics and gynecology. Family physicians trained through these accredited programs should be granted privileges to practise their expanded roles. This position is supported by the American Academy of Family Physicians (AAFP) and the American College of Obstetricians and Gynecologists (ACOG) who have stated: "Privileges should be granted on the basis of education, experience, and documented competence, not solely on the basis of board certification, fellowship in ACOG, membership in other organizations, or the physician's rank or tenure."22

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Training

There is little information that describes the training of a rural generalist to acquire advanced maternity skills. Clearly, these graduates need to meet high training standards that ensure outcomes comparable to the results from the same procedures in the same low-risk population receiving specialist care in urban Canada. In addition, these training programs should meet

national standards, ensuring the portability of these skills throughout rural Canada. This will require rigorous in-training evaluation and exit examinations of the graduates. Successful accreditation of the programs will require documentation that certification of Advanced Maternity Skills has been verified appropriately.

The continuation of high-quality rural medical care depends on our ability to design workable training programs for general practitioners who will then be able to function in emergency departments and medical wards, as well as in the maternity unit and surgical suite. Some of these skills are complementary. Unfortunately, there is no evidence-based information detailing the length of time that it takes for a general practitioner to acquire these skills, either individually or in various combinations. We believe that, in the absence of good evidence, the bar in each of the training programs not be set so high that the goals of the rural practitioner become unattainable.

With this background, guidelines for the length of training are presented as ranges. The final amount of training will vary with the pre-existing capabilities of trainees, their capacity to learn, the intensity of the training experience, the complementary skills to be acquired, and the anticipated role these physicians will serve in their communities. Any training program must be sufficiently flexible in duration and curriculum to accommodate the breadth of ability of the trainees and needs of rural Canada, as well as being sufficiently rigorous to ensure safe and competent graduates.

We believe that most trainees will achieve competence in the following periods of time.

1. Newly graduated family medicine resident: 6 to 12 months in a third year of training.
2. Re-entry family physicians: 6 to 12 months.
3. Re-entry family physicians who wish to refresh or consolidate existing advanced skills: 1 to 3 months.
4. International medical graduates with 1 or more years of training in obstetrics and gynecology: 1 to 3 months. (This initial 1 to 3-month appraisal may lead to a recommendation for further training.)

The volume of procedures required to achieve competence is poorly understood. For advanced maternity skills, one example comes from the Saskatchewan program, which "suggests" 20 cesarean sections performed by the family practitioner with involvement in another 30.23 This figure was derived from review of the literature and evaluations of first-year obstetrics and gynecology residents. The American ACOG-AAFP Core Curriculum specifies 10 or more cesarean sections in a 3-month train-
ing block.22 The Royal Australian College of Obstetricians and Gynaecologists (RACOG)-Rural Doctors Association of Australia (RDAA)-Royal Australian College of General Practitioners (RACGP) curriculum suggests 6 months of training and a minimum of 23 cesarean sections as primary surgeon.24 An American study noted that the training volumes for family doctors who currently perform cesarean sections ranged from 25 to 100, with the average of 46 completed in

training.6

Physicians wishing to undergo training should realize that there is no set number but that acquiring advanced maternity skills requires considerable commitment. Competence can only be based on measured proficiency in the procedure and not numbers of procedures or months of training. For a few physicians, mastery will come relatively quickly but others might not be ready for independent practice, even after the suggested number.

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Maintenance of competence

There is little in the literature about the necessary volume of advanced maternity procedures. Ontario general practitioner/family physicians who perform cesarean sections do an average of 15 annually.25 Research evidence shows that family practitioners who have acquired competence in cesarean section can maintain their skills with relatively few (5 to 22) cases.6 This fits with research that suggests that it is the quality of the training and not the numbers performed annually that preserves the skill base:

There is little to suggest that the psychomotor skills that are important in the practice of procedural medicine will be lost if they are not practised regularly. The extent to which the skill was practised during the initial learning phase is likely to be of greater importance. The more thorough the initial learning and the more overlearning (repetition past the point of having learned the skill) that occurs, the more resistant to forgetting the skill appears to be.26

The SOGC guideline for general competence in low-risk maternity care does not specify an absolute number of births to maintain competence. Rather, it encourages a lifetime commitment to audit, review and continuing professional development. Advanced maternity skills will require a greater commitment and broader training.

If one is to succeed with formal programs to train maternity care providers with advanced skills, one must anticipate and provide for the continuing education, organizational needs and professional support of the graduates. Each of these programs has a large potential contribution to make in the continuing support and development of rural family physicians with advanced maternity skills:

- University and hospital departments of obstetrics and gynecology might, on an informal or formal basis, open their clinical practices to rural family practitioners who want a brief opportunity to refresh their advanced skills.
- The curriculum (see Appendix) proposes that graduates continue to record their clinical experience in a log book and that this be reviewed every 3 to 5 years. This review should

be educational and helpful. Departments that have trained these physicians would, thus, continue to play a role in meeting ongoing educational requirements.

Individual training programs should be encouraged to select that which seems most appropriate to local geographic needs. However, we recommend that the accreditation of these programs should require some formal maintenance of competence and be subject to periodic evaluation.

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Summary

- Advanced maternity skills, including operative birth, can be incorporated into the scope of family practice.
- Well-trained family practitioners who perform cesarean sections can produce satisfactory outcomes.
- Communities with local access to advanced maternity skills can sustain local maternity services.
- The disciplines of family medicine and obstetrics and gynecology need to design and deliver formal, accessible training programs for advanced maternity skills. This will involve the cooperation and coordination of academic departments to organize the programs, the CFPC to accredit them, and the provincial licensing authorities and health ministries to provide funding.
- The training and privileges for these advanced maternity skills are advocated for rural physicians, hospitals and communities only and should not be considered transferable to settings where there is an adequate number of specialist obstetricians.

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Recommendations

1. Existing hospitals with cesarean section capability should work to sustain this service.
2. Where adequate human and physical resources are present, every woman who can anticipate a safe birth in a rural community should be supported by physicians with local access to advanced maternity skills, including cesarean section.
3. The principles of risk management, regionalization, disclosure, informed consent and patient choice in the "Joint position paper on rural maternity care"1 apply without qualification to rural maternity care providers who successfully acquire advanced maternity skills.
4. Advanced maternity skills, including those in operative birth, are included in the scope of appropriately trained rural family physicians.

5. Training in advanced maternity skills is the joint responsibility of the university departments of family medicine and obstetrics and gynecology.
6. Departments of family medicine need to play the lead role in negotiating these training programs with their obstetrical colleagues, universities, provincial licensing authorities and funding authorities.
7. These training programs should be accredited by the CFPC.
8. Family physicians who obtain advanced training in maternity care should have a long-term commitment to audit, review and continuing professional development.
9. Accreditation of training programs should require that support and continuing professional development of the graduates be in place and evaluated on a regular basis.
10. Training should be accessible to third-year family medicine residents and to re-entry physicians. In principle, subject to availability of mentors and teaching opportunities, these skills could be acquired in a teaching centre, regional hospital, rural hospital or a combination of sites.
11. Training programs in advanced maternity skills for rural family physicians should have a formal realistic mechanism for their evaluation and certification that includes the observation of inhospital work of physicians who received their training outside Canada.
12. Applicants for training should be evaluated for previous learning, existing skills and their access to community resources and support. The proposed duration and scope of training should be sufficiently flexible to meet the needs of individual trainees and communities.
13. Certification or membership in the CFPC should not be a factor in the selection process.
14. All efforts should be made to train an adequate number of Canadian physicians in advanced maternity skills and in making working conditions sustainable for them. If a suitably trained Canadian is not available, care should be taken not to exclude the entry of international medical graduates with advanced training.
15. Physicians who successfully acquire certification in advanced maternity skills require assurance that these will be recognized by provincial licensing bodies and rural hospital boards.
16. Funding authorities need to provide an appropriate level of financial support to the applicants, the preceptors, and the departments of family medicine and obstetrics and gynecology.
17. A continuous audit and quality improvement program is a necessary adjunct to training in advanced maternity skills.
18. The Curriculum for Advanced Skills in Maternity Care for Family Physicians (Appendix) is recommended as one example of an appropriate, generic and inclusive training program.

This document has been prepared by the College of Family Physicians of Canada, the Society of Rural Physicians of Canada and the Society of Obstetricians and Gynaecologists of Canada.

This article has been peer reviewed.

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Appendix: proposed curriculum for advanced skills in maternity care for family physicians

The following is a suggested curriculum and evaluation outline to teach physicians advanced maternity care skills including those in operative birth.

Selection of candidates

- Rural generalists who require operative birth capabilities and who are supported by their institution/community.
- Existing rural doctors who wish for certification of their existing skills in operative birth.
- Family practice residents as an add-on to a 2-year basic family practice residency for physicians who intend to practise in a rural setting.

Course

The teaching of procedural medicine should take place within the larger cognitive context of the indications, options and complications of these procedures. In addition, successful completion of the curriculum will require the candidates to demonstrate their familiarity with the principles of

risk management, regionalization, the CFPC training standards for maternity care, and the relevant guidelines endorsed by the CFPC, SOGC and SRPC.

Knowledge Component
Induction of labour
Management of dystocia
Fetal assessment in labour
Indications for cesarean section
Alternatives to cesarean section, including forceps and vacuum
Complications of cesarean section
Risk management
Audit and quality assurance
Conditions that increase risks of operative complications that might warrant transfer for specialist opinion or management including:

- pre-term cesarean section
- grand multiparity
- placenta previa
- placenta accreta;
- repeat cesarean section with extensive adhesions
- extension of uterine incision into uterine arteries, cervix or vagina
- wound infection or hematoma
- morbidly obese patients
- fetal abnormalities
- maternal coagulopathy
- multiple gestation
- injury to bowel or bladder
- uterine atony
- uterine infection
- coagulopathy or thromboembolic disease.

Core procedures

Cesarean sections (assisted) 15
Cesarean sections (completely done) 25
Low (nonrotational) forceps 10
Vacuum extraction 10
Repair of third- and fourth-degree tear *
Manual removal of retained placenta *
Manual rotation *
Repair of bladder *
Treatment of obstetrical emergencies *

Treatment of neonatal emergencies *

Obstetrical emergencies covered include shoulder dystocia, unexpected breech or emergency twin birth, sepsis, hemorrhage, eclampsia, prolapsed cord, etc.
Neonatal emergencies include neonatal resuscitation, management of meconium, neonatal transfer, etc.

* Indicates knowledge of principles and as much experience as possible.

Logbook

An integral part of the ongoing and exit examination is based on logbooks of procedures. For operative birth, the following information will be kept as appropriate:

Case number (as on the hospital chart)
Procedure (e.g., lower uterine segment cesarean section)
Level of responsibility (e.g., primary surgeon)
Indication (e.g., fetal distress)
Complications (if any)
Apgar scores, cord gases and fetal outcome.

Evaluation

All candidates will be evaluated by standardized criteria and will undergo a continuous formative evaluation by their supervisor during training. When training is complete and the required volume and competence levels have been achieved, the supervisor will recommend the candidate for an exit evaluation. Each candidate will be tested for competence in operative birth by an examiner other than the supervisor. The exit evaluation is in 3 parts.

- Oral Examination: each candidate will submit a logbook. The examiner will pick a number of charts for the candidate to bring to the examination and review these charts as a basis for discussion.
- Written Examination: written questions will evaluate cesarean section skills and others for which the candidate is being tested.
- Practical Examination: the candidate will be observed performing operative birth.

Maintenance of competence

As an adjunct to a program to maintain their competence in advanced obstetrical skills, all trainees are required to continue to record their clinical experience in a logbook. A formal review of this experience should be conducted every 3 to 5 years by the departments that trained them or a recognized training program.

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