College of Family Physicians of Canada, Society of Rural Physicians of Canada, Society of Obstetricians and Gynaecologists of Canada

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 serious challenge.

The term rural has been variously defined. In this paper we use the following definitions.

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 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 or family physicians (FPs) provide most or all medical services, including maternity care. As a direct result of a relative lack of specialists in these communities, rural FPs have to provide a broader scope of practice than their urban counterparts. This paper describes training programs in advanced maternity care for delivery of these services in rural settings.

Most rural communities are too small and remote to sustain specialist obstetric and anesthetic services for operative birth. Only 38 obstetricians practise in all of rural Canada.2 Nearly all rural maternity care is offered by the 1384 FPs 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, might have to be performed by FPs. Their commitment and tenacity have sustained maternity programs in rural Canada.

These FPs have obtained varied training from several sources. Many are international medical graduates, some with foreign speciality 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 foreign physicians’ 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, 576 hospitals 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 speciality certification perform about 7% of all
cesarean sections. Cesarean section in the hands of appropriately trained FPs 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. The system transports those who are sickest to centres that have the resources to manage their illness. This is reflected in maternal mortality (6/100000) and perinatal mortality (6 to 8/1000) figures that are among the best in the world. Any changes to such a system must, therefore, be carefully planned and monitored.

There is a need to sustain and restore the availability of advanced maternity care in rural Canada. Rourke has found that in rural Ontario there is considerable attrition in rural maternity units, FPs 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 these services to be available, there needs to be an integrated response to sustain the rural medical, nursing, administrative, and physical environments where women give birth. Supporting 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 these issues is addressed in this paper.

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 pregnant women identified as high risk are 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 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 practise maternity care at a lower level of intensity and 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.

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 areas such as basic obstetric ultrasound, obstetric analgesia, and 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.
Review of the Literature

Literature searches were performed on MEDLINE back to 1987 on training GPs and FP for forceps, vacuum extractions, and cesarean sections. Additional literature was gathered, as described earlier, on rural maternity care. Very few papers were found that listed rural operative birth outcome measures.

The papers reviewed 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 for populations served by appropriately trained non-specialist physicians.

A study by Deutchman et al documented outcomes over 10 to 15 years of FP in two 35-bed rural hospitals (631 cesarean deliveries). 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. In this limited sample, "By national standards, family physicians performed Caesarean sections that produced infant and maternal outcomes of high quality...."6

Kriebel and Pitts documented low levels of intervention, complications, and infant mortality, and good Apgar scores from 8 years of data (1026 births) at a three-doctor, 25-bed hospital in Forks, Wash. 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%. The forceps rate was 1.8%; vacuum extraction, 3.1%.

Cameron recently documented outcomes from an Australian hospital in Atherton, Queensland, from 1981 to 1990. Atherton lacked specialist obstetricians, but five physicians had advanced training in operative births and held diplomas in obstetrics. The patient population was mostly public patients, 10% of them aborigines. 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 section (VBAC) 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 Fyfe 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 rates were 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 establishment of perinatal population-based databases that are needed to audit and conduct research into rural maternity care. The Canadian Perinatal Surveillance System (CPSS) is also beginning to address similar issues.
Potential benefits for rural women and their infants

As maternity services or rural hospitals close, women are being denied the choice of giving birth in their home communities. In the "Joint position paper on rural maternity care,"1 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, was reviewed and confirmed.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 that 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 antepartum 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 hospitals. Because of unexpected intrapartum events and emergency transfers, the proportion who actually give birth in these hospitals falls to 60%.9 With local access to operative delivery, more than 90% of maternity patients could give birth in their communities.7-9

Some women cannot be transferred because complications of childbirth are often unpredictable. Natural disasters (eg, abruptio placentae, cord prolapse, fetal hypoxemia) 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 et al12 found that communities that could and did handle most of their maternity care had little attrition of physicians attending births(<3% a year). The most vulnerable communities were those where less than a third of births occurred locally. These communities had lost the doctors who attended births at a rate of 27% a year.

Canadian data from Rourke5 and Hutten-Czapski14 show a rapid decline in the 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 range of maternity complications they might encounter. Regardless of good outcomes, rural Canada faces continued 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 obstetric specialist availability. It will also improve the ability of communities to attract solo obstetricians by lessening the burden of on-call coverage.
Scope of Practice

Concern has been expressed about providing short training programs in surgical and technical skills, with the assumption that these procedures can be performed safely only by those with the broader base of training achieved in an extended residency program (ie, the specialty program is indivisible). The evolution of 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 pneumonia,21 and perform cesarean sections.6,9,10 It is recognized that, in those clinical situations requiring technical or surgical skills in rural settings, 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 FPs 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 non-specialist FPs. This can be achieved only through properly designed and accredited training programs made available to those family physicians who wish to practise in rural settings 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

Training

There is little information on training a rural generalist to acquire advanced maternity skills. Clearly, these graduates need to meet high training standards that ensure outcomes comparable to 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 (ITE) and exit examinations of the graduates. Successful accreditation of the programs will require documentation that certification in 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 GPs who will then be able to function in emergency departments and medical wards, as well as in maternity units and surgical suites. Some of these skills are complementary. Unfortunately, no evidence-based information gives details on the length of time it takes for a GP or FP 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 should not be set so high that the goals of rural practitioners become unattainable.
Training for Rural Family Practitioners in Advanced Maternity Skills and Cesarean Section

May 1, 2003

With this background, guidelines for 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 play 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 be sufficiently rigorous to ensure safe and competent graduates.

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

1. Newly graduated family medicine residents: 6 to 12 months in a third year of training.
2. Reentry family physicians: 6 to 12 months.
3. Reentry family physicians who wish to refresh or consolidate existing advanced skills: 1 to 3 months.
4. International medical graduates with 1 or more years’ training in obstetrics and gynecology: 1 to 3 months. (This initial 1- to 3-month appraisal might 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 that "suggests" 20 cesarean sections be performed by an FP 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 training block.22 The Royal Australian College of Obstetrics 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 FPs who currently perform cesarean sections ranged from 25 to 100, with an 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.

Maintenance of competence

There is little in the literature about the necessary volume of advanced maternity procedures. Ontario GPs and FPs who perform cesarean sections do an average of 15 annually.25 Research shows that FPs who have acquired competence in cesarean sections can maintain their skills with relatively few (five 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 we are to succeed with formal programs to train maternity care providers with advanced skills, we 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 (Table 1) proposes that graduates continue to record their clinical experience in a logbook 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 what seems most appropriate for local needs. We recommend, however, that accreditation of these programs should require some formal maintenance of competence and be subject to periodic evaluation.

**Summary**

* Advanced maternity skills, including operative birth, can be incorporated into the scope of family practice.
* Well-trained FPs 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.
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" 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. The departments of family medicine need to lead in negotiating these training programs with their obstetrical colleagues, the 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 reentry 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 FPs should have a formal, realistic mechanism for their evaluation and certification that includes the observation of in-hospital 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 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 (Table 1) is recommended as one example of an appropriate, generic, and inclusive training program.
Table 1. 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 institutions and communities.
- 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 rural settings.

### Course

Teaching 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 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 extraction
- Complications of cesarean section
- Risk management
- Audit and quality assurance

Conditions that increase risks and operative complications that might warrant transfer for specialist opinion or management including:

### Core procedures

- Cesarean sections (assisted)
- Cesarean sections (completely done)
- Low (nonrotational) forceps
- Vacuum extraction
- Repair of 3rd- and 4th-degree tear
- Manual removal of retained placenta
- Manual rotation
- Repair of bladder
- Treatment of obstetric emergencies
- Treatment of neonatal emergencies

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

*Knowledge of principles and as much experience as possible.*

### Logbook

An integral part of ongoing and exit examinations 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 (eg, lower uterine segment cesarean section)
- Level of responsibility (eg, primary surgeon)
- Indication (eg, fetal distress)
- Complications (if any)
- Apgar scores, cord gas measurements, and fetal outcome
- preterm 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; or
- coagulopathy or thromboembolic disease.

**Evaluation**

All candidates will be evaluated by standardized criteria and will undergo continuous formative evaluation by their supervisors 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 three 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 obstetric 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.
References


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