Outcomes of Maternity Care Services in Alberta, 1999 and 2000: A Population-Based Analysis

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Abstract

Objective: To evaluate the maternal and perinatal outcomes of Alberta's regionalized system of care. In particular, to compare the outcomes of communities with limited or no local intrapartum care with those of regional and tertiary care centres.

Methods: We conducted a population-based retrospective study of all Alberta deliveries in 1999 and 2000. Maternal outcome measures were rates of patient outflow, induction of labour, Caesarean section (CS), and participation in vaginal birth after Caesarean section (VBAC). The perinatal outcome measure was the perinatal loss rate (mortality rate plus stillbirth rate). Rural maternity care programs were categorized as follows: no elective local maternity care (level 0), local maternity care without local CS capabilities (level IA), and local maternity care with local CS capabilities (level IC).

Results: Communities offering intrapartum care without local CS capability delivered 22.1% of their maternity population. This proportion increased to 70.1% if the communities had local CS capabilities. Although patient outflow was associated with parity, risk, local services, and distance to an urban centre, there was a large unexplained outflow difference between communities with similar service levels. More limited local maternity care services and higher outflow rates were associated with higher rates of induction of labour. Rates for CS, participation in VBAC, and perinatal loss were not significantly different for different types of maternity care programs other than a lower CS rate for residents in type IA communities compared with other communities (18% vs. 20%).

Conclusion: The principal consequences of a limited scope of local maternity care services for rural women is an increased rate of induction of labour and, if they live in a community that delivers babies without local CS capability (IA), a lower CS rate. These category IA communities, with patient outflows of 78%, are largely unsuccessful in having women deliver locally, but women from these communities have a lower rate of CS wherever they deliver. The 18 rural Alberta maternity care programs where patient outflow is over 67% may not be sustainable.

Key Words: Maternity, perinatal, rural, induction, Caesarean section

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Résume

Objectif : Évaluer les issues maternelles et périnatales du système de soins régionalisé de l'Alberta. En particulier, comparer les issues que connaissent les communautés disposant de soins intra-partum locaux limités ou inexistants à celles que connaissent les centres de soins régionaux et tertiaires.

Méthodes : Nous avons mené une étude rétrospective en population générale qui portait sur tous les accouchements ayant eu lieu en Alberta en 1999 et en 2000. Les critères d'évaluation maternels étaient les suivants : taux de patientes n'accouchant pas localement, déclenchement du travail, césarienne et participation à l'accouchement vaginal à la suite d'une césarienne (AVAC). Le critère d'évaluation périnatal était le taux de perte périnatal (taux de mortalité plus taux de mortinaissance). Les programmes ruraux de soins de maternité ont été classés comme suit : aucun soin de maternité facultatif local (niveau 0), soins de maternité locaux sans capacités locales d'effectuer une césarienne (niveau IA) et soins de maternité locaux avec capacités locales d'effectuer une césarienne (niveau IC).

Résultats : Les communautés offrant des soins intra-partum sans capacités locales d'effectuer une césarienne ont accouché 22,1 % de leur population de femmes enceintes. Cette proportion passait à 70,1 % pour les communautés disposant de capacités locales d'effectuer une césarienne. Bien que le taux de patientes n'accouchant pas localement ait été associé à la parité, au risque, aux services locaux et à la distance à parcourir pour atteindre un centre urbain, une importante différence inexpliquée a été constatée, en ce qui concerne ce taux, entre des communautés disposant de niveaux de service semblables. Des services de soins de maternité locaux davantage limités et des taux de patientes n'accouchant pas localement accrus ont été associés à des taux accrus de déclenchement du travail. Le taux de césarienne, le taux de participation à l'AVAC et le taux de perte périnatal n'ont pas présenté de différences notables d'un type de programme de soins de maternité à l'autre, exception faite de la constatation d'un taux de césarienne moindre chez les citoyennes des communauté de niveau IA, par comparaison avec les autres communautés (18 % par comparaison avec 20 %).

Conclusion : Les principales conséquences de la limitation de la portée des services de soins de maternité locaux offerts aux femmes rurales sont un taux accru de déclenchement du travail et, dans le cas des femmes vivant au sein d'une communauté qui procède à des accouchements sans capacités locales d'effectuer une césarienne (IA), un taux de césarienne moindre. Ces communautés de niveau IA (qui présentent un taux de patientes n'accouchant pas localement de 78 %) ne parviennent largement

pas à faire accoucher leurs citoyennes localement; toutefois, les femmes de ces communautés présentent un taux de césarienne moindre, peu importe où elles accouchent. Il est possible que les 18 programmes ruraux de soins de maternité de l'Alberta qui présentent un taux de patientes n'accouchant pas localement supérieur à 67 % ne s'avèrent pas viables à long terme.

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INTRODUCTION

Maternity care services in Alberta, as in most of Canada, are regionalized. Although women perceived to be at high risk of complications must often go to larger centres to deliver, those at low risk can be cared for in smaller rural hospitals. Regionalization of services in Canada has thus preserved an important role for small local maternity care services. In Northern Ontario,[1] communities without capability to perform Caesarean section (CS) delivered between 57% and 80% of women in their catchment area. This rose to almost 100% if local operative delivery was available.

There is considerable variation in the level of maternity care services provided by rural hospitals. Some communities with local surgical programs are able to offer extensive services, including CS. Others are restricted to offering a limited local maternity care program without CS. Still others have chosen to offer no elective local intrapartum maternity care and require women to travel elsewhere for care. Within these programs, women themselves are free to choose whether to seek care locally or to travel. Equally, their caregivers choose whether to recommend women travel for maternity care, depending on risk as well as the skills and comfort level of the care providers.

There is consensus, but limited published evidence, that outcomes for this regionalized system are good.[2] We conducted a search of Medline from 1980 to 2003 using the key words "rural" and "obstetrics" and cross-searched with MeSH headings of "maternity," "perinatal," "asphyxia," and "Caesarean section." We found only a few studies that were relevant to the Canadian context. The study by Black and Fyfe[1] of deliveries in Northern Ontario between 1980 and 1982 stands alone in Canada as a population-based evaluation of the outcomes of a regionalized care system. This study found little difference in the rate of perinatal loss in populations served by different levels of maternity care services.[1]

International studies that have documented the safety of rural maternity care with and without local CS have been based on delivery site rather than the mother's residence.[3,4] A small study in Washington State[5] showed that pregnant women living in high outflow areas (i.e., less than one-third of women deliver locally) were more likely to have complicated labour and premature deliveries, and their infants were more likely to have longer and more expensive hospital stays.

The evaluation of both regionalized care and the outcomes of deliveries in small hospitals has been limited by the lack of appropriately organized databases. A proper evaluation requires that outcomes be attributed to the maternity service where the mother resides rather than where she ultimately delivers. The safety and performance of these small hospitals and the success of a risk identification, referral, and transportation system will be measured in the maternal and perinatal outcomes for all pregnant women who reside within a hospital's catchment area, regardless of where they deliver. Unfortunately, the administrative databases in Canada's perinatal programs and health records systems have generally been organized on the basis of where delivery occurs.

This study represents a collaborative effort by the principal stakeholders in Alberta's perinatal programs. We constructed a population-based database containing the maternal and perinatal outcomes of all deliveries in Alberta in 1999 and 2000. This allowed the following questions to be asked:

1. How do the perinatal outcomes for populations served by small community hospitals compare with those for regional and metropolitan centres?
2. How do the outcomes of maternity care services with no capacity for Caesarean section compare with programs that do have capacity? That is, does the availability of local Caesarean section services affect outcomes?
3. How do the outcomes of limited local maternity care programs compare with outcomes from communities without such programs (whose residents are obliged to travel for care)? That is, is it important to offer a limited local maternity care program?
4. Are outcomes different or comparable between high and low outflow communities?

METHODS

Data sources

Through voluntary membership, the northern and southern Alberta perinatal outreach programs represent all of Alberta's maternity care programs. Each program maintains databases containing information abstracted from the provincial labour and delivery record. These databases are rigorously validated manually with the individual hospital sites. The labour and delivery record includes a numeric risk scoring system identifying each delivery as low, medium, or high risk. This score is derived from information about maternal health, past obstetric history, and the current pregnancy. The protocol for transcribing issues of risk into numerical