

An Evaluation of Process and Protocols for Planned Home Birth Attended by Regulated Midwives in British Columbia

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Midwifery emerged as a self-regulated profession in British Columbia in the context of a 2-year demonstration project beginning in 1998. The project evaluated accountability among midwives, defined as the provision of safe and appropriate care and maintenance of standards of communication set by the College of Midwives of British Columbia. Adherence to protocols was measured by using documentation designed specifically for the Home Birth Demonstration Project. Hospital and transport records for selected clients were reviewed by an expert committee. Outcomes among Home Birth Demonstration Project clients were compared with outcomes among women eligible for home birth but planning to deliver in hospital. Adherence to clinical and communication protocols was 96% or higher. Planned home birth was not associated with an increase in risk but prevalence of adverse outcomes was too low to be studied with precision. Recommendations of an expert review committee have been implemented or are under review. Midwives have demonstrated a high degree of compliance with reporting requirements and protocols. Comparisons of birth outcomes of planned home versus hospital births, while supporting home birth as a choice for women, were limited in scope and require ongoing study. Integration of home birth has been a dynamic process with guidelines and policy continuing to evolve. *J Midwifery Womens Health* 2003;48:138–146 © 2003 by the American College of Nurse-Midwives.

keywords: midwifery, home childbirth, pregnancy, policy, outcomes assessment

INTRODUCTION

In contrast to the rest of the developed and developing world, midwifery has only recently emerged as a self-regulated profession in Canada. Planned home birth attended by registered midwives was first introduced in Canada in 1994 in the Province of Ontario, followed in 1998 by the Province of British Columbia. Although studies throughout the developed world have reported that planned home birth attended by appropriately qualified caregivers appears to be as safe as hospital birth,^{1–6} the northern climate and rugged terrain in Canada present unique challenges for communication and transportation.

LITERATURE REVIEW

Large population-based studies of planned home versus hospital births have reported similarly low rates of adverse maternal and neonatal outcomes.^{1–6} A 1994 British survey of 4,210 planned home versus 3,005 hospital births reported combined stillbirth/neonatal death rates of 0.6 per 1,000 among home births versus 2.1 per 1,000 among planned hospital births.¹ A prospective matched study of 489 planned home births and 385 hospital births in Switzerland, 1989 to 1992, reported perinatal death rates of 2.03 per 1,000 and 2.07 per 1,000, respectively.² A study from the Netherlands conducted between 1990 and 1993 reported perinatal death rates of 2.18 and 2.87 per 1,000 comparing

1,836 planned home versus 696 planned hospital births.³ An Australian study reported a mortality rate of 5.7 per 1,000 among babies weighing more than 2,500 g whose births were planned at home between 1985 and 1990 compared to the national Australian mortality rate for this birth weight group of 3.6 per 1,000.⁴ A study from Washington State in the United States reported neonatal death rates of 1.7 per 1,000 among 14,777 planned hospital births compared to 1.6 per 1,000 among 4,054 planned out-of-hospital births attended by certified nurse-midwives between 1981 and 1990.⁵ New Zealand reported a perinatal mortality rate of 2.97 per 1,000 among home births compared to the national New Zealand rate of 7.4 per 1,000 in 1973 to 1993.⁶ A metaanalysis of six observational studies in 1997 did not reveal differences favoring either home or hospital birth with respect to perinatal mortality.⁷

Rates of postpartum hemorrhage in the British study were 3.1% and 3.9% among home and hospital births respectively¹ and in the Dutch study, 0.7% among planned home births and 3.9% among planned hospital births.³ Although none of the studies cited used random allocation to place of birth, comparably low rates of adverse outcomes have reassured practitioners of the safety of planned home birth attended by trained and licensed midwives. Against the backdrop of this international experience, the Home Birth Demonstration Project, under the governance of the British Columbia Ministry of Health, was implemented to facilitate the introduction of home birth into the health care system in British Columbia and to undertake a comprehensive evaluation.

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THE HOME BIRTH DEMONSTRATION PROJECT

Purpose and Objectives

Midwifery was announced as a self-regulated profession in the Province of British Columbia under the Health Professions Act in 1995. The requirement of a Home Birth Demonstration Project was legislated in 1998 to evaluate the safety and feasibility of home birth during the first 2 years of implementation. The objectives of the project were as follows:

1. To measure accountability as defined by the provision of safe and appropriate care to Home Birth Demonstration Project clients and by the maintenance of standards of communication with associated health care providers established by the College of Midwives of British Columbia
2. To document the client experience with the Home Birth Demonstration Project.

The Home Birth Demonstration Project is the first systematic examination of the integration of planned home births in a regulated setting in Canada. In this article we report on the first objective of the project.

Policies and Protocols

A major component of the Home Birth Demonstration Project was the development of a set of policies and protocols to guide preparation for and management of planned home birth. The College of Midwives, which is the regulatory body for midwifery in British Columbia, established several policies,⁸ including:

- Indications for planned place of birth
- Policy on informed choice
- Indications for discussion, consultation, and transfer of care (to physicians)
- Policy for second birth attendant

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Table 1. Home Birth Demonstration Project Indications for Planned Home Birth

1. Client has chosen home birth on the basis of an informed decision
2. Singleton fetus
3. Cephalic presentation
4. Gestation between ≥ 37 completed weeks and < 42 completed weeks
5. Absence of preexisting serious medical conditions (e.g., cardiac or renal disease, insulin-dependent diabetes)
6. Absence of proteinuric preeclampsia or eclampsia
7. Absence of symptomatic placental abruption
8. Absence of placenta previa at the onset of labor
9. Absence of thick meconium
10. Absence of active genital herpes
11. Absence of any other conditions arising during labor that meet requirements for transfer of care to a physician

- Required equipment and supplies for home birth

An Advisory Committee, convened to design and oversee the Home Birth Demonstration Project, endorsed these policies and developed additional protocols to address communications with clients, hospitals, and the ambulance system.⁸ These included:

- The requirement for informed, written consent by which clients were required to indicate their agreement to participate in the project and to permit access their relevant health records
- Identification of clinical conditions precluding home birth or requiring transport to hospital
- Required hospital arrangements for planned home birth
- Protocols for transport to hospital

The Advisory Committee was composed of clinical experts and major stakeholders in the integration process, including representatives of the College of Midwives of British Columbia, the B.C. Ministry of Health including the B.C. Ambulance Service, family physicians, a perinatologist, a hospital administrator, midwives, and a consumer.

In 1998 and 1999, during the Home Birth Demonstration Project, enrollment in the project was a statutory requirement for midwives and their clients planning home birth. Women planning birth at home were registered with the Home Birth Demonstration Project at 36 weeks by their midwife. Births of all women in British Columbia who met eligibility requirements for home birth at 36 weeks' gestation and who had given written informed consent to participate in the project were included in the evaluation (Table 1). A total of 864 women fulfilled these requirements. Women not meeting these requirements were prohibited from having a home birth with a regulated midwife in British Columbia.

Documentation

Information on the course of each client's care was submitted to the Ministry of Health on forms developed for the

project (Home Birth Demonstration Project forms). In addition, midwives completed standard forms developed by the British Columbia Reproductive Care Program and currently used by hospitals throughout the province. Midwives were required to send completed British Columbia Reproductive Care Program forms and Home Birth Demonstration Project forms to the Home Birth Demonstration Project Coordinator within 8 weeks of each client's delivery. The forms were checked against lists of clients registered at 36 weeks' gestation at the Home Birth Demonstration Project to assess comprehensiveness of reporting on all clients. British Columbia Reproductive Care Program forms were received from midwives for more than 99% of clients. No records were received for two clients, and it was ascertained from colleagues of their midwife that these women had uneventful deliveries and healthy newborns. After removal of identifiers, analysis of data from both sources was undertaken at the British Columbia Research Institute for Children's and Women's Health. A Certificate of Ethical Approval was obtained from the University of British Columbia Clinical Research Ethics Board prior to commencing the evaluation.

Outcomes of Care

Outcomes of all women remaining eligible for home birth at the onset of labor ($n = 864$) were compared with those among women meeting eligibility requirements for home birth but planning instead to deliver in hospital with either a midwife or physician in attendance. All births of hospital-intended, midwife-attended births in the province during the study period were included ($n = 571$). Clients in the physician comparison group were matched on age, parity, lone parent status, and hospital where the midwife had privileges ($n = 743$). There were fewer subjects in the physician comparison group than in the Home Birth Demonstration Project because of our inability to find matches on all four parameters for all of the Home Birth Demonstration Project clients. Outcome data were obtained from the British Columbia Reproductive Care Registry. Intended place of birth was obtained from the Home Birth Demonstration Project Documentation forms.

A detailed description of perinatal outcomes in the Home Birth Demonstration Project births compared to those of women eligible for home birth but planning hospital birth are available elsewhere.⁹ In summary, women choosing home birth were comparable to those choosing hospital birth in terms of age, marital status, household income, height, prepregnancy weight, and use of substances. Women choosing home birth were less often nulliparous (46.6% versus 58.1%, $P < .001$) than the midwife-attended hospital group. Fewer women choosing home birth had had a previous cesarean birth than those in the planned hospital physician or hospital midwife comparison groups (2.7% versus 9.6% and 6.1%). Women planning birth at home had more antenatal visits (11.2 ± 3.2 compared to 9.7 ± 3.0 in

the hospital physician group and 10.5 ± 3.5 in the hospital midwife group, $P < .001$).

Women planning birth at home had significantly fewer interventions than women attended in hospital by either midwives or physicians, including use of epidural and narcotic analgesia, induction or augmentation of labor, episiotomy, assisted vaginal birth or cesarean birth (Table 2). The cesarean birth rate for Home Birth Demonstration Project clients was 11.2% among nulliparous women and 2.2% among multiparous women, 6.4% overall. Deliveries were conducted by physicians in 12.7% of Home Birth Demonstration Project cases and in 28.4% of births planned to be attended by midwives in hospital. There were significantly fewer infections (defined as maternal pyrexia greater than 38°C on at least two occasions 6 hours apart; urinary tract infection, major puerperal infection, or wound infection) in the Home Birth Demonstration Project group (0.7%) compared to the physician group (3.0%) and the midwife-attended hospital group (3.5%). Comparisons of adverse neonatal outcomes, including perinatal death, Apgar score less than 7 at 5 minutes, transfer to another hospital for tertiary-level care, or use of oxygen more than 24 hours, did not yield any significant differences among the comparison groups. Among three perinatal deaths in the home birth group, the first was a stillbirth, and fetal demise appeared to have occurred before labor. There was no obvious explanation for the death and an autopsy was refused. The second stillbirth occurred after cessation of fetal heart tones during early labor. An emergency transport to hospital was initiated. The infant was born entangled in the umbilical cord, and resuscitative efforts were unsuccessful. The third death occurred at 2 days of age. Autopsy revealed extensive hypoxic injury to all major organs, indicative of a prelabor insult.

It is noteworthy that all of the five babies requiring assisted ventilation for more than 24 hours were in the Home Birth Demonstration Project group. One of these newborns died in the neonatal period from causes determined at a coroner's inquest to have preceded labor. The second was a baby whose discharge diagnosis was hypoxic-ischemic encephalopathy, stage II. Thick meconium was noted in the amniotic fluid 8 minutes before delivery. The baby was unresponsive at birth. The third baby was diagnosed with severe meconium aspiration syndrome. Thick meconium had been noted in the amniotic fluid 13 minutes before delivery. The fourth had hyaline membrane disease and was thought to have aspirated clear amniotic fluid. The fifth baby developed respiratory distress at 2 hours of age. This baby was diagnosed with severe meconium aspiration syndrome although there was no meconium seen in the liquor during labor. Among babies exposed to thick meconium, tracheal suction was performed on 34.6% (18 of 52) of Home Birth Demonstration Project babies, 59.5% (25 of 42) of babies in the physician comparison group, and 58.7% (27 of 46) of the midwife comparison group. Intubation and suction of vigorous infants, even in

Table 2. Adjusted Odds Ratios for Selected Interventions and Outcomes by Intended Place of Birth*

Intervention or Outcome	Home Births vs. Physician-Attended Hospital Births			Home Births vs. Midwife-Attended Hospital Births	
	Home Birth n (%)	Physician-Attended Hospital Birth n (%)	Adjusted Odds Ratio (95% CI)	Midwife-Attended Hospital Birth n (%)	Adjusted Odds Ratio (95% CI)
Maternal					
Epidural analgesia	66 (7.7)	205 (27.6)	0.20 (0.14–0.27)	150 (26.3)	0.25 (0.17–0.35)
Induction of labor [†]	37 (4.3)	166 (22.3)	0.16 (0.11–0.24)	80 (14.0)	0.30 (0.20–0.46)
Augmentation of labor [†]	55 (6.4)	125 (16.8)	0.33 (0.23–0.47)	109 (19.1)	0.34 (0.24–0.51)
Episiotomy	33 (3.8)	114 (15.3)	0.22 (0.13–0.33)	62 (10.9)	0.43 (0.27–0.69)
Cesarean birth	55 (6.4)	135 (18.2)	0.30 (0.22–0.43)	68 (11.9)	0.66 (0.44–0.99)
3rd or 4th degree tear	19 (2.2)	19 (2.6)	0.85 (0.43–1.66)	26 (4.6)	0.53 (0.28–1.00)
Postpartum hemorrhage	38 (4.4)	36 (4.8)	0.90 (0.58–1.45)	30 (5.3)	0.83 (0.50–1.38)
Infection	6 (0.7)	22 (3.0)	0.24 (0.10–0.59)	20 (3.5)	0.26 (0.10–0.68)
Neonatal					
Apgar score < 7 at 5 minutes	89 (10.4)	106 (14.5)	0.84 (0.32–2.19)	69 (12.3)	2.28 (0.58–8.80)
Transfer to another hospital	6 (0.7)	4 (0.5)	1.40 (0.39–5.04)	6 (1.1)	1.00 (0.30–3.40)
Use of oxygen >24 hours	14 (1.6)	22 (3.0)	0.54 (0.27–1.07)	15 (2.7)	0.65 (0.30–1.41)
Perinatal death	3 (0.3)	1 (0.1)	2.50 (0.27–24.5)	0	

* Adjusted for maternal age, lone parent status, income quintile, use of any vs. no substances and parity.

[†] Using oxytocin or prostaglandins.

the presence of thick or particulate meconium, has not been associated with a decrease in meconium aspiration syndrome or other respiratory disorders.¹⁰ Among babies exposed to thick meconium and whose Apgar score at 1 minute was less than 7, 45% of the Home Birth Demonstration Project group received tracheal suction compared to 75% in each comparison group.

PROCESS OF MIDWIFERY CARE

Administrative and Reporting Protocols

Midwives were mandated to fulfill a number of administrative and reporting requirements. The requirement to preregister with the hospital prior to 36 weeks was met in 831 or 96.2% of cases (Table 3). The requirement to forward a copy of the prenatal form to the hospital was fulfilled in 834 (96.5%) cases; 3 others were sent in after a later decision to undertake home birth, and 27 forms (3.1%) were not forwarded. Among 797 births attended at home, hospital notification of the onset of labor occurred as required in 728 births (91.3%). Among the 69 cases where the hospital was not notified, the most common reason was precipitous delivery (n = 28, 3.5%) or unattended birth (n = 6, 0.8%). One midwife indicated that no one answered the phone at the hospital and another was at a home without a phone. No reason was given among the remaining births for lack of hospital notification at onset of labor. Among 652 births completed at home, 619 (94.9%) were reported to the hospital as being complete. A second midwife or approved second attendant was present in 589 of home births (90.3%). Second attendants are professional associates certified in adult and neonatal resuscitation and who

are competent to assist with childbirth.¹¹ They are approved by the College and are usually registered nurses. The most common reason given for not having a second attendant was precipitate delivery (n = 43, 6.6%). Among the remaining 20, in 5 cases the midwife was not called in time to arrive at the birth, in 6 cases the birth was unattended, in 4 cases the midwife had not arranged for a second attendant, and in 1 case the designated second attendant was at another birth.

Place of Birth

Among women who registered for the Home Birth Demonstration Project, 649 births took place at home (75.1%),

Table 3. Adherence to Administrative and Clinical Protocols

Protocol	n (%)
Eligible for home birth at 36 weeks according to CMBC policy	863 (99.9)
Client preregistered at the hospital prior to 36 weeks	831 (96.2)
Copy of prenatal form forwarded to the hospital	834 (96.5)
Hospital notified when labor established	728 (91.3)*
Hospital notified when labor complete	619 (94.9) [†]
Second midwife or second qualified attendant at birth	589 (90.3) [†]
Among transports (n = 172), hospital notified prior to arrival	169 (98.2)

CMBC = College of Midwives of British Columbia.

* Denominator for this proportion is the 797 births that at the onset of labor were still intended to be at home.

[†] Denominator for this proportion is the 652 births that were completed at home.

211 (24.4%) in hospital, and 4 (0.5%) in other settings. (See Figure 1 for a schematic diagram of disposition of clients in the Project.) In the “other” category, three deliveries took place in a hotel or motel and one in a friend’s home to satisfy the client’s desire to be closer to a hospital than her own home would have allowed. The median estimated traveling time from home to hospital was 15 minutes. Nine clients lived more than 60 minutes from hospital; all of these 9 births were uncomplicated.

Unattended Births

Six births were unattended. In three cases, the client did not call the midwife until she was pushing. In one case, the midwife arrived within a half hour of being called but the baby had already delivered. In one case, the couple did not call the midwife. One family requested a birth at home, the circumstances of which fell outside of College of Midwives of British Columbia standards and care was terminated prior to labor.

Consultation

Overall, physicians were consulted for 281 (32.6%) births. Following an initial history and physical examination at first presentation for prenatal care, 15 consults (1.7%) took place, the most common indication being preexisting medical conditions. Another 100 (11.6%) took place during the antepartum period, most commonly for postterm pregnancy (n = 26) or pregnancy-induced hypertension (n = 14). During the intrapartum period, 188 (21.7%) of clients had a consultation, the most common reasons being for prolonged active phase of labor (n = 46), prolonged rupture of membranes (n = 39), and prolonged second stage (n = 15). Postpartum maternal consultation (n = 45, 5.2%) were precipitated largely by evidence of infection (n = 19). Consultations were obtained for 104 newborns (12%) for a variety of reasons, including suspected infection (n = 6), abnormal findings on physical examination (n = 5), pathological jaundice after 24 hours (n = 6), and persistent abnormal respiratory rate (n = 7).

Transfer of Care to a Physician

Consultation is distinct from transfer of care in the Home Birth Demonstration Project; it simply means that the client’s management was discussed with a physician. The outcome of a consultation may include transfer of care to a physician with the midwife continuing in a supportive role. Transfer of care to a physician took place in 152 births (17.7%). These were distributed as follows: initial history and physical examination 1 (0.1%), antepartum 13 (1.5%), intrapartum 112 (13%), postpartum 13 (1.5%), and newborn 48 (5.6%). Slow or arrested progress (n = 53) was the most common indication for transfer of care in the intrapartum period, and respiratory distress (n = 9) was the most common indication among newborn transfers. (See

Table 4 for conditions requiring transfer of care to a physician.⁸)

Admissions to Hospital

During the time span of the Home Birth Demonstration Project, most midwives obtained hospital privileges at the hospitals within their practice area and could admit and care for women in hospital without consultation or referral to physicians. In all, 187 (21.7%) admissions to hospital took place; 23.3% among those births were attempted at home (Table 5). Among 172 admissions for which documentation forms were completed by midwives, transfer of care to a physician occurred in 93 (54.1%). In the remaining cases, midwives retained primary responsibility for the client. Among cases that were transferred to a physician, primary responsibility for postpartum maternal care was usually transferred back to the midwife, with 31 (33.3%) remaining under the care of an obstetrician and 4 (4.3%) remaining in the care of a family practice physician. Among newborns, a family practice physician retained care in 6 (6.4%) cases and a pediatrician in 28 (30.1%) cases.

Thirty-one emergency admissions to hospital took place. Cases that were considered an emergency are indicated with an “*” in Table 5. Median time intervals for transportation were as follows: from call for ambulance to arrival of ambulance: 10 minutes; from arrival of ambulance to departure for hospital: 10 minutes; from ambulance departure to hospital arrival: 13 minutes. The median time between arrival at hospital and assessment by a physician was 5 minutes.

Requests Outside of the Scope of Midwifery Care

Seven client requests outside of College of Midwives of British Columbia standards of practice occurred. Four of these occurred as a result of clients wanting to deliver at home after 42 weeks’ gestation. Two occurred as a result of clients refusing to go to hospital after prolonged rupture of membranes and one when the client refused to go to hospital with particulate meconium in the amniotic fluid. In all cases, consultations were undertaken according to College of Midwives of British Columbia protocol, and documentation met standards for the project.

RECOMMENDATIONS OF THE PROTOCOL REVIEW COMMITTEE

An expert committee was convened to review selected cases in detail. The Protocol Review Committee reviewed all cases in which there was an unattended birth, emergency admission to hospital, adverse outcome, or communication problem relating to the integration of midwifery. The Review Committee consisted of two midwives, a perinatologist, a family physician, a pediatrician, and an obstetric nurse. Committee members were charged with determining if Home Birth Demonstration Project protocols were followed, if the protocols were adequate, and if there were any other factors that contributed to the adverse outcome. Documentation from midwives,

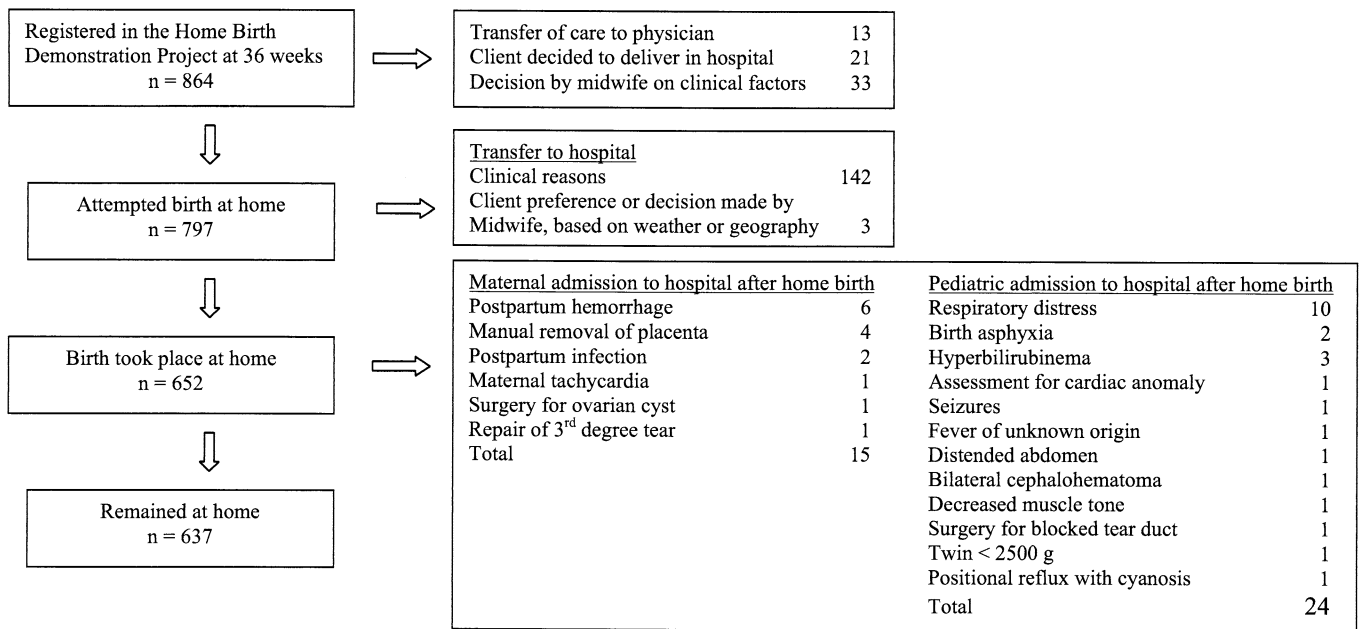


Figure 1. Outcomes of clients enrolled in the home birth demonstration project.

hospitals, and the British Columbia Ambulance Service were reviewed in detail for each case.

In all, 45 cases were reviewed: 6 unattended births, 16 cases in which an emergency transport took place, 21 cases in which an adverse outcome occurred (some of these also involved emergency admission), and 2 in which communications issues were identified. Adverse outcomes included the following: fetal distress in labor (2); low Apgars/birth asphyxia (5); stillbirth (2); neonatal death (1); low birth weight (1); undiagnosed twins born at home (2); birth trauma (1); shoulder dystocia (1); failure to thrive (1); and postpartum hemorrhage (5). In total, 42 recommendations were made in the following general areas:

1: Communication

The Review Committee recommended that policy be developed to specify who at receiving hospitals was to take and document telephone notification of incoming transport. The policy should state explicitly who would be responsible for notifying the physician on call. Contact information for the physician on call for obstetrics and pediatrics should be obtained by the midwife when she begins attending a woman in labor at home. If hospital admission is required, the midwife should speak directly to the physician whenever possible prior to or during transport so that she can confer with respect to care during transport and on arrival at hospital. This issue has been referred to the College of Midwives of British Columbia Quality Assurance Committee to determine if this is a reasonable provincial standard, given the wide variation in current hospital on-call arrangements.

2. Documentation and Record Keeping

Midwives are required to use the standard British Columbia Reproductive Care Program partogram or one generated by their local hospital for intrapartum documentation. The College of Midwives of British Columbia has developed a documentation workshop for orienting new registrants, which can also be adapted for continuing distance education.

3. Informed Consent

The Handbook for Midwifery Clients¹² has been revised by the College of Midwives of British Columbia in conjunction with the Ministry of Health to include evaluation findings on clinical outcomes, to emphasize that low-risk birth is not risk-free, and to strengthen requirements relating to discussion about local transport and hospital backup arrangements.

4. Definition of Roles

The Review Committee recommended that the most responsible caregiver during ambulance transport be identified. Midwives have been designated as “official escorts,” with primary responsibility for client care during transport.

5. Clinical Management

In response to concerns raised about clinical management in selected review cases, the College of Midwives of British Columbia has developed and distributed guidelines for 1) fetal surveillance in labor;¹³ 2) management of home birth

Table 4. Home Birth Demonstration Project Indications for Transfer of Care to a Physician

Intrapartum		
Temp > 38.0°C on > 1 occasion	Proteinuric preeclampsia	Abnormal fetal heart rate patterns unresponsive to therapy
Active genital herpes at the time of labor	Prolapsed cord	Uterine rupture
Pre-term labor < 34 weeks' gestation	Placenta abruptio	Uterine inversion
Abnormal presentation	Placenta previa	Hemorrhage unresponsive to therapy
Multiple pregnancy	Severe hypertension	Obstetric shock
	Thick meconium	
Postpartum		
Hemorrhage unresponsive to therapy	Thrombophlebitis or thromboembolism	Postpartum eclampsia
Uterine prolapse		
Neonatal		
Apgar score < 7 at 10 minutes	Suspected seizure activity	Significant congenital anomaly requiring immediate medical intervention

after a previous cesarean section;¹⁴ and 3) management of the second stage of labor.¹⁵ Guidelines for fetal surveillance include protocols for intermittent auscultation, use of external electronic fetal monitoring, and internal monitoring as well as protocols for documentation. Guidelines for vaginal birth at home after a previous cesarean birth include specific contraindications, the need to consider distance from hospitals with cesarean birth capability, as well as road and weather conditions, in determining whether planned birth at home is appropriate. Guidelines regarding management of the second stage recommend admission to hospital when labor is prolonged, meconium is present in the amniotic fluid, or nonreassuring fetal heart rate patterns are auscultated.

The need to identify risk factors for postpartum hemorrhage and to use anticipatory planning with respect to active management of third stage and admission to hospital was identified. A reminder about the evidence for support of prophylactic use of oxytocin in the third stage of labor was sent to midwives in the College of Midwives newsletter. Midwives are required to update their emergency management skills every 3 years.

Because not all distressed babies exposed to thick meconium were suctioned by trachea, the Review Committee recommended the striking of a task force to examine the feasibility of requiring intubation skills as a competency and how such skills should be maintained. The College of Midwives of British Columbia is in the process of convening a provincial task group to examine this issue.

CONCLUSION

The Home Birth Demonstration Project, under the governance of the Ministry of Health, was designed to facilitate the integration of home birth into the health care system. This evaluation documented the experience of 58 practicing regulated midwives and the 864 families who registered with the project.

The Home Birth Demonstration Project has demon-

strated that midwifery care at home can be monitored closely and that midwives communicate and collaborate well with professional colleagues. Midwives have established professional relationships that have allowed them to obtain hospital privileges, to carry out consultations, and to transfer care to a physician when needed. There are no indications of increased risk associated with home birth at this time. These comparisons are based on small numbers and, therefore, warrant ongoing evaluation.

The evaluation has provided evidence to support the decision by the Ministry of Health to continue offering to women in British Columbia the choice of home birth attended by regulated midwives practicing within the guidelines established by the College of Midwives of British Columbia. Midwifery services are fully funded by the Ministry of Health at no cost to clients. At the conclusion of the demonstration project, midwives, through the College of Midwives of British Columbia and the Midwifery Association of British Columbia (the professional body that represents midwives), have chosen to continue to submit documentation of midwifery care and outcomes of home birth to the British Columbia Reproductive Care Program for inclusion in the Provincial Database. This database will provide the basis for ongoing monitoring trends and evaluation of birth outcomes. Midwives have also opted to continue the practice of obtaining written consent prior to conducting home birth. Consent forms provide a means of standardizing consenting procedures and have been updated to include some of the findings from the evaluation. The reports and recommendations of the expert review committee were perceived to be a valuable method of highlighting issues and learning needs for inclusion in continuing education activities. Analysis of selected cases has, therefore, been implemented within hospital-based departments of midwifery. Ongoing efforts to study midwifery practice in Canada should include a more detailed look at adverse outcomes using larger population-based databases compiled over time. In addition,

Table 5. Reasons for Hospital Admissions* Among Home Birth Demonstration Project Clients

Antepartum: 7		
Prolonged rupture of membranes (4)	Hypertension (1)	
Induction of labor (1)	Fever and abdominal pain (1)	
Intrapartum: 142 (16.4% of all clients and 17.8% of 797 births in which home was the intended place of birth at the onset of labor)		
Unengaged head in active labor (2)	Vaginal birth after cesarean (2)	Avoid unattended birth (2) [1]*
Postdates (1)	Patient preference (3)	
Prolonged rupture of membranes (12)	Meconium in liquor (16) [2]*	Prolonged labor (stage not specified) (9)
Prolonged rupture of membranes with fever (3)	Breech presentation (7) [2]*	
	Fever (3)	Hemorrhage (1)
Pain management (11)	Pregnancy-induced hypertension (2)	Augmentation of labor (1)
Fetal distress (13) [7]*	Antibiotics for GBS pos (1)	Supervisor unavailable (2) [1]*
Failure to progress (12)	Active herpes (3) [1]*	
Uterine inertia (1)	36 weeks' gestation (1)	Arrest of progress/obstructed labor (3) [1]*
Prolonged latent phase (1)	No reason given (2)	
Prolonged active phase (14)	Left flank pain (1)	Pediatrics consult: abnormal ultrasound (1)
Prolonged 1 st stage (5)		
Prolonged 2 nd stage (8)		
Postpartum (maternal): 10 (1.2% of all clients, 1.5% of births that took place at home)		
Retained placenta/membranes (3) [3]*	Tachycardia and elevated BP (1)	Postpartum hemorrhage (4) [3]*
	Repair episiotomy (1) [1]*	Fever (1)
Newborn: 13 (1.5% of all clients, 2.0% of all births that took place at home)		
Respiratory distress (7) [2]*	Distended abdomen (1) [1]*	Tachycardia with patent foramen ovale (1)
Birth asphyxia (2) [2]*	Hyperbilirubinemia (1)	
Birth weight < 2,500 g (1)		

* Cases that required emergency transport are indicated in brackets.

the Canadian single-payer system for all sources of midwifery and physician-provided obstetric care will lend itself in the future to economic studies of home birth attended by midwives.

This project was supported by a financial contribution from the Health Transition Fund, Health Canada. The views expressed herein do not necessarily represent the official policy of federal, territorial, or provincial governments.

REFERENCES

1. Chamberlain G, Wraight A, Crowley P. Birth at home: a report of the national survey of home births in the UK by the National Birthday Trust. *Pract Midwife* 1999;2:35–9.
2. Ackermann-Liebrich U, Voegeli T, Gunter-Witt K, Kunz I, Aullig M, Schinkler C, et al. Home vs. hospital deliveries: follow up study of matched pairs for procedures and outcome. *Br Med J* 1996;131:1313–8.
3. Wiegers T, Keirse M, van der Zee J, Berghs G. Outcomes of planned home and planned hospital births in low risk pregnancies: prospective study in midwifery practices in the Netherlands. *Br Med J* 1996;313:1309–13.
4. Bastian H, Keirse M, Lancaster P. Perinatal death associated with planned home birth in Australia. *Br Med J* 1998;317:384–8.
5. Janssen P, Holt V, Myers S. Licensed midwife-attended, out-of-hospital births in Washington State: are they safe? *Birth* 1994;21:141–8.
6. Gulbransen G, Hilton J, McKay L, Cox A. Home birth in New Zealand 1973–93: incidence and mortality. *NZ Med J* 1997;110:87–9.
7. Olsen O. Meta-analysis of the safety of home birth. *Birth* 1997;24:4–13.
8. Handbook for Midwives and Health Care Professionals. Victoria (BC): Ministry of Health and Ministry Responsible for Seniors, Home Birth Demonstration Project, 2000.
9. Janssen P, Shoo K, Ryan E, Etches D, Farquharson F, Peacock D, et al. Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia. *Can Med Assoc J* 2002;166:315–23.
10. Wiswell T, Gannon C, Jacob J, Goldsmith L, Szyld E, Wiess K, et al. Delivery room management of the apparently vigorous meconium-stained neonate: results of the multicenter international collaborative trial. *Pediatrics* 2000;1:1–7.
11. College of Midwives of British Columbia. Policy for second birth attendants. November 1998.
12. Handbook for Midwifery Clients. Victoria (BC): Ministry of Health and Ministry Responsible for Seniors, Home Birth Demonstration Project, 2000.
13. College of Midwives of British Columbia. Guideline for fetal surveillance in labour. April 2000.
14. College of Midwives of British Columbia. Guideline for managing second stage of labour. September 2001.
15. College of Midwives of British Columbia. Guideline for vaginal birth at home after one previous low segment cesarean section. June 2001.