The Department of Health and Social Services (Department) is pleased to share the final *Midwifery Options Report* of the NWT Midwifery Review and Expansion Analysis conducted by DPRA Consultants.

We wish to thank the many women from Fort Smith and Yellowknife who provided input and shared their experiences with the Midwifery programs, as well as all those who contributed to the completion of this independent Report. The Report confirms that midwifery care and community birthing are both safe and appropriate for some Northwest Territories (NWT) communities. The Report also provides options for three models of Midwifery programming (community-based, regional and territorial).

The Department will consider the findings and recommendations contained in the Report as part of the work to update the Integrated Service Delivery Model, which also includes midwifery services in the NWT.

The vision for the NWT Health and Social Services system is “Healthy people, healthy families, healthy communities”. Though we acknowledge that our system is faced with significant fiscal challenges, we believe that access to quality maternity services, including midwifery care, is a key feature to this vision and as a result we look forward to further engagement both from the public and our community partners on the future of midwifery in the NWT.

Department of Health and Social Services
Government of the Northwest Territories
5022 49th Street
6th Floor, Centre Square Office Tower
Yellowknife, NT X1A 2L9

MIDWIFERY PROGRAM REVIEW AND EXPANSION ANALYSIS

Midwifery Options Report

March 2012

SUBMITTED BY:

5020 47TH STREET
P.O. BOX 2335
YELLOWKNIFE, NT X1A 2P7
E-MAIL: TRACY.FARMER@DPRA.COM

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **V**
ACRONYMS ..... **X**
1. INTRODUCTION **1**
1.1 Project Purpose *1*
1.2 Structure of the Report *1*
2. METHODOLOGY **2**
2.1 NWT Document and Data Review *2*
2.2 Cross-Jurisdictional / International Literature Review *2*
2.3 Key Stakeholder Interviews *2*
2.4 Focus Group Sessions *3*
2.5 Financial Data Review *4*
2.6 Hay River Chart Review *4*
2.7 Midwife Guidance *5*
2.8 Project Limitations *5*
3. CONTEXT FOR THE PRESENTED MODELS **6**
3.1 Society of Obstetricians and Gynaecologists of Canada *6*
3.2 Canadian Association of Midwives *8*
3.3 Caucus of the 17th Legislative Assembly Priorities *10*
3.4 2011-2016 NWT Health and Social Services Strategic Plan *10*
3.5 NWT Integrated Service Delivery Model *11*
3.6 NWT Midwifery Legislation *12*
3.6.1 Goal of Midwifery 12
3.6.2 Definition of Midwifery 12
3.6.3 Scope of Practice 13
3.6.4 Standards of Practice 14
3.6.5 Code of Conduct 14
3.6.6 Continuing Competency 14
3.6.7 Guiding Principles 15
3.6.8 Midwifery Program Objectives 15
4. CURRENT PERINTATAL SITUATION IN THE NWT **16**
4.1 NWT Birthing Statistics *16*
4.2 Community Travel Information and Birthing Service Availability *20*
4.3 Northern Women's Health Program *21*
4.4 Maternity Care Committee *23*
4.5 Midwifery in the NWT *23*
4.5.1 Fort Smith Health and Social Service Authority (HSSA) Midwifery Program 24
4.5.2 Yellowknife Health and Social Service Authority (HSSA) Midwifery Program 29
5. CRITERIA FOR ASSESSMENT OF MIDWIFERY MODELS **32**
5.1 Cost Effectiveness *32*

5.1.1 Cochrane Review Findings 33
5.1.2 Other Study Findings 34
5.2 Health Outcomes 35
5.2.1 Cochrane Review Findings 35
5.2.2 Other Study Findings 41
5.2.3 Risk 43
5.3 Hay River and Fort Smith Comparison 44
5.4 Average Estimated Cost of Perinatal Care by Community 49
6. KEY ISSUES 51
6.1 Key Considerations 51
6.2 General Assumptions 53
7. MIDWIFERY MODELS FOR CONSIDERATION 54
7.1 Community Midwifery Model 54
7.1.1 Model Description 54
7.1.2 Communities for Consideration 55
7.1.3 Staffing Requirements 56
7.1.4 Midwifery Client Load 56
7.1.5 Calculation of Annual Midwifery Coverage 59
7.1.6 Estimated Workload and Activities 59
7.1.7 Midwifery Practice 59
7.1.8 Other Associated Roles and Responsibilities 60
7.1.9 Program Space 60
7.1.10 Implementation Timeline 61
7.1.11 Model Pros and Cons 62
7.1.12 Model Costing Data 63
7.2 Regional Midwifery Option 66
7.2.1 Model Description 66
7.2.2 Regions for Consideration 66
7.2.3 Staffing Requirements 68
7.2.4 Midwifery Client Load 68
7.2.5 Calculation of Annual Midwifery Coverage 68
7.2.6 Estimated Workload and Activities 68
7.2.7 Midwifery Practice 69
7.2.8 Other Associated Roles and Responsibilities 69
7.2.9 Program Space 70
7.2.10 Implementation Timeline 71
7.2.11 Model Pros and Cons 71
7.2.12 Model Costing Data 73
7.3 Territorial Midwifery Option 74
7.3.1 Model Description 74
7.3.2 Communities for Consideration 75
7.3.3 Staffing Requirements 75
7.3.4 Estimated Workload and Activities 75
7.3.5 Midwifery Practice 77
7.3.6 Other Associated Roles and Responsibilities 77
7.3.7 Program Space 78
7.3.8 Implementation Timeline 79
7.3.9 Model Pros and Cons 80

7.3.10 Model Costing Data 81
8. RECOMMENDED MODEL.....81

APPENDICES

Appendix A: Bibliography
Appendix B: Standards of Practice for Registered Midwives in the NWT
Appendix C: Recommendations for Consideration Related to Perinatal Standards of Care
Appendix D: Fort Smith Health and Social Service Authority Midwifery Program Financials
Appendix E: Estimated Cost of Physician-provided Perinatal Care Services to Yellowknife Residents
Appendix F: Maternity Care Worker Certificate Program
Appendix G: NWT Midwifery Program Evaluation Framework

LIST OF TABLES

Table 1: NWT Births by Region and Mother's Community of Residence, 1995-2010 17
Table 2: NWT Births by Community of Occurrence, 2004-2010.....19
Table 3: Routine Prenatal Travel by Community 20
Table 4: Number of YHSSA Midwifery Program Clients, 2008 - 2011.....30
Table 5: Priority Population Criteria 31
Table 6: Outcomes Associated with Midwifery-led Models of Care versus Other Models of Care.....36
Table 7: Perinatal Comparison of Hay River and Fort Smith 45
Table 8: Average Cost of Perinatal Care by Community (with available scheduled flight information) in the NWT...50
Table 9: Formula for Calculating the Estimated Average Cost of Perinatal Care for Spontaneous Vaginal Delivery for Communities in the NWT.....50
Table 10: Client Care Workload 56
Table 11: Annual Midwifery Coverage Required 59
Table 12: Work Activities and Estimated Time Allocation (Weekly and Annually).....59
Table 13: Potential Model Pros and Cons.....62
Table 14: Maximum Midwifery Caseloads by Jurisdiction in Canadian Provinces/Territories where the Practice is Regulated 64
Table 15: Community Model Description of Costs by Item 64
Table 16: Average Number of Births for Communities under Consideration within the Community Model of Care.65
Table 17: Annual HR and Supplies Costs By Community for NWT Communities with births in excess of 25/year 65
Table 18: Work Activities and Estimated Time Allocation (weekly and annually).....68
Table 19: Potential Model Pros and Cons.....72
Table 20: Regional Model Description of Costs by Item.....73
Table 21: Average Number of Births by Region and Associated Midwifery Requirements 74
Table 22: Cost of Midwifery Care Services by Region, not Inclusive of Infrastructure.....74
Table 23: Work Activities and Estimated Time Allocation Administrative Component (Weekly and Annually) 76
Table 24: Work Activities and Estimated Time Allocation Client Care Component (Weekly and Annually) 76
Table 25: Potential Model Pros and Cons.....80
Table 26: Cost of Territorial Midwifery Care 81
Table 28: Cost Comparison of Births Hay River versus Fort Smith D-3
Table 29: Estimated Cost of Physician-provided Perinatal Care Services to Yellowknife Residents E-2

LIST OF FIGURES

Figure 1: Percentage of Birthing Women Served by the FSHSSA Midwifery Program, 2005/06 - 2010/11 27
Figure 2: Percentage of Women who Birthed in Fort Smith using the FSHSSA Midwifery Program, 2005/06 - 2010/2011.....27
Figure 3: Percentage of Clients Appropriate for Birth in Fort Smith, Intended to Birth in Fort Smith and Completed Birth in Fort Smith, 2005/06 - 2010/11.....28
Figure 4: Overall Satisfaction Level with the FSHSSA Midwifery Program, 2005/06 – 2010/11 29
Figure 5: YHSSA Midwifery Program Overall Satisfaction Level 32
Figure 6: Community Model Timeline 61
Figure 7: Regional Model Timeline 71
Figure 8: Territorial Model Timeline.....80

EXECUTIVE SUMMARY

INTRODUCTION:

The primary intent of this project is to provide recommendations to help enhance the quality of perinatal care available to NWT families by increasing access to midwifery services and further integrating midwifery into the existing NWT framework of perinatal care. The goal of this document is to present a range of evidence-based midwifery models of care that vary in their cost effectiveness, ability to impact health outcomes, sustainability, cultural appropriateness, accessibility, and ability to support integrated care.

METHODOLOGY:

The models presented in this report are based on the following lines of evidence:

- NWT document and data review
- Cross jurisdictional / International literature review
- Key stakeholder interviews (n=31) / Informal interviews (n=5) / NWT family physician consultation (n=5)
- Focus group sessions (Total: n=3 sessions; Fort Smith: n=1 session (6 participants and one interview participant) and Yellowknife: n=2 session (11 participants and 10 participants)
- Financial data review
- Hay River chart audit

CONTEXT FOR PRESENTED MODELS:

The models presented within this report have been designed to align with the following organizations, key guiding documents and legislation as well as the standards, clinical guidelines, principles, priorities and key elements which they support:

- Society of Obstetricians and Gynaecologists of Canada
- Canadian Association of Midwives
- Caucus of the 17th Legislative Assembly Priorities
- 2011-2016 NWT Health and Social Services Strategic Plan
- NWT Integrated Service Delivery Model
- NWT Midwifery Legislation

CURRENT NWT PERINATAL SITUATION:

Birthing statistics reveal that from 1995 to 2010, the average number of births per year in the NWT was 701. Statistics based on the mother's community of residence show annual birth rates ranging from 0.1 (e.g., Reliance) to 297 (Yellowknife). Most deliveries occur in Yellowknife, Inuvik, Alberta, Fort Smith or other locations (outside of the NWT and Alberta), reflecting the availability of health care facilities (e.g.,

hospitals) and health care professionals who provide maternity services (e.g., obstetricians, family physicians, midwives) for low and/or high risk clients. Evacuation for birth generally occurs between 36 – 38 weeks and is largely dependent on the availability of birthing services, client risk level, as well as the degree of competency and comfort community health nurses have with labour and delivery.

The NWT currently supports the Fort Smith Health and Social Service Authority (FSHSSA) Midwifery Program; a highly successful community-based midwifery program staffed by two full-time registered midwives. Since its inception in 2005, a total of 244 birthing women in Fort Smith (92% of all birthing women) have utilized the midwifery services. There is evidence supporting positive health outcome trends (e.g., decreased number of premature deliveries, deceased caesarean-section rates, increased breastfeeding initiation) and high client satisfaction with the program. While Yellowknife was the site of a community-based program (Yellowknife Health and Social Service Authority (YHSSA) Midwifery Program), in the spring of 2011 a decision was made to suspend the program pending the recommendations of this review.

CRITERIA FOR ASSESSMENT OF MIDWIFERY MODELS:

The primary criteria for assessment of proposed models were 1) degree to which the model promotes the cost effectiveness of perinatal care services and 2) the degree to which the model impacts health outcomes of maternity care recipients. Factors such as access, cultural appropriateness, integration and standardization were also included as a means of assessment.

Very few studies systematically examine the costs of midwifery-led care versus the costs of other types of maternity-led care due to: (1) the varying nature of health care within and between countries; (2) inconsistencies in measurements of costs; and (3) difficulties surrounding hidden costs associated with both midwifery models of care and other health professional models of maternity care. The few international studies conducted have demonstrated small cost savings or equal cost associated with midwifery-based care compared to other maternity models of care. A small number of recent Canadian studies show some cost savings (range from approximately $100 to $1000/client) associated primarily with place of birth (home versus hospital), lower intervention rates, fewer hospital re-admissions and shorter hospital stays. None of the studies conducted to date include costs associated with evacuating women for birth.

Research has revealed that there are specific positive health/social outcomes associated with receiving midwifery care. The 2009 Cochrane Review, identified 10 out of 39 health outcome measures in which midwifery-led care demonstrated statistically significant differences than those represented in other models of care for childbearing women and their infants. These included positive outcomes such as increased chance of spontaneous delivery, decreased incidences of fetal loss or neonatal death less than 24 weeks and increased rates of breastfeeding initiation. Other studies that have examined the health benefits associated with midwifery care for rural and remote communities have reported: (1) improved social functioning (e.g., decreases in domestic violence and sexual assaults); (2) enhanced autonomy (e.g., increased control over decision-making associated with the birth); (3) bringing birth closer to home (e.g., increased continuity of care, decreased stress, improved access to culturally appropriate care); and

(4) increased opportunities for health promotion and disease prevention activities (e.g., screening for conditions such as preeclampsia and diabetes; monitoring of fetal growth and development, and monitoring existing mental health and addictions problems).

Additionally, the extent to which a model may enhance continuity of care (a key concern identified during all aspects of data collection), bring birth closer to home, allow for informed choice, and be sustainable were also added.

Case Study Comparison:

To ascertain the cost and health outcome differentials, between midwifery care and physician/nurse-led care provided at the community level, a case study was conducted. Two communities of similar size, access to health professionals and equipment, demographic composition and geographic setting were selected for comparison. The two communities chosen for this comparison were Hay River and Forth Smith. The findings indicate that while it is difficult to quantify the long- and short-term health benefits of the Fort Smith program, evidence indicates that the addition of midwifery services at the community level confers social, psychological and physical benefits. Currently the cost savings associated with the program do not offset its operational costs; it should be noted that the program has shown continued community buy-in which in the future may aid in its fiscal viability.

MIDWIFERY MODELS FOR CONSIDERATION:

Three models were put forth for consideration based on information obtained and analyzed from all lines of evidence. In keeping with the information presented in the 2008 Midwifery within the NWT ISDM Planning Document (which is still highly relevant), our findings lead to community-based, regional and territorial options for the expansion and provision of midwifery services in the NWT.

Community-based Model:

The community model is based on the need to bring birthing (and health care more generally) back to the community. Providing the option to birth in the community reduces the need to evacuate low risk women to health facilities where they may wait for weeks to give birth alone in an unfamiliar setting. The absence of women from communities for extended periods of time has been linked to family and community breakdown. Additionally, evidence suggests that evacuation for low risk women may contribute to postpartum depression and increased rates of maternal and newborn complications. On the other hand, the return of birth to the community supports cultural revitalization, self-determination and enhanced familial and community relationships.

Based on available data it has been determined that a minimum of 25 births per year would be required to ensure the continuing competency of midwives and cost-effectiveness of the program. Four communities within the territory satisfy this requirement: Hay River, Inuvik, Yellowknife and Behchoko. Programs would employ two midwives (for every 50 births within the community). The addition of midwifery services at the community level would serve to eliminate the need to be evacuated for low

risk clients who opt to utilize the service thereby mitigating a number of social and economic outcomes associated with the current practice. Midwifery services would also reduce the amount of time women spent outside of their home community by accommodating later fly out times and allowing women to return home earlier after birth. Further benefits associated with a community based program include: increased potential for improved health outcomes (though increased access to and continuity in care), support of family and community health by allowing both to be a part of the birth event, improvements in culturally appropriate health care and enhanced female autonomy. Some of the challenges associated with the community based model include limited integration of the program into territorial initiatives, access to the services is restricted to individual community residents, success is highly dependent on community buy-in and the recruitment and retention of qualified and dedicated staff and changes in demographic over time could impact the viability and cost effectiveness of the program.

The annual cost of running the program in Hay River, Inuvik, and Behchoko is estimated (exclusive of operating and infrastructure costs) to be $427,779.00. Due to population size, and therefore necessity of more midwives, the cost of running a community program in Yellowknife is estimated (exclusive of operating and infrastructure costs) to be $1,187,595.00.

Regional Model:

The regional model is intended to keep birth as close to home as possible. While women will still be expected to travel to regional centres to birth, the care they receive and the people who provide that care are "…closer to their experience and expectations". Additionally, by keeping birthing closer to home, there is an increased likelihood that family members may be able to accompany the pregnant woman to the regional centre to take part in the birthing process.

The regional model is designed to offer communities within a specified region, that lack the critical minimum number of births to develop a sustainable community-based midwifery program, to access midwifery services offered at a centrally located regional birthing centre thereby providing choice of care provider, improving continuity of care and decreasing the length of stay outside of the home community. Women who choose to birth with a midwife will be flown to the centre at between 37 – 38 weeks gestation. Perinatal care will be carried out by nurses in communities in consultation with midwives. Additionally midwives will fly out to communities within their region one to two times annually to provide support to women, families and community nurses.

Given the availability of Level B/C facilities, or higher, the following regions and regional centres are suggested: Beaufort Delta (Inuvik regional centre); Sahtu (Norman Wells regional centre); Dehcho (Fort Simpson regional centre); and Tlicho (Behchoko regional centre).

In order to operate effectively the regional model would require three midwives (to accommodate up to 50 women who wish to utilize the regional centre). A regional model would increase the capacity of community nurses in perinatal and well women care, improve coordination of maternity care services through the development and maintenance of a Regional Women's Health Program, and enhance the likelihood of family support. Alternatively, the program represents limited functionality in reducing costs

associated with delivering perinatal care services, in that it does not impact medical travel costs associated with flights and accommodation as well, it represents a potential duplication of medical services and increased costs associated with midwife mobility.

Based on the existing demographics within each region the operating costs (exclusive of operating and infrastructure costs) would be $890,717.50 for the Beaufort Delta Region, $671,987.00 for the Sahtu Region, $687,987.50 for the Dehcho Region, and $667,987.50 for the Tlicho Region.

Territorial Model:

The territorial model is intended to address the long-term sustainability of perinatal care services throughout the NWT, enhance the perinatal knowledge and skill capacity of community nurses through continued interaction and support, in concert with the NWHP improve continuity of care for women from outlying communities, foster interdisciplinary perinatal care teams, ensure standardization of programming and health outcome data, increase knowledge and awareness of midwifery across the territory and support the education and training of local residents interested in pursuing a career in midwifery practice.

Given that Stanton Territorial Hospital is located in Yellowknife and that the majority of health care professionals are located in the Yellowknife, it is suggested that the territorial model of midwifery be operated from this locale. Eight midwives would be required to run the program – at any one time, two focused on administrative aspects of the program and six focused on service delivery. A territorial model would be beneficial for increasing collaboration and system-wide integration of multidisciplinary perinatal care teams, as well as providing additional supports to residents of Yellowknife and the Northern Women's Health program. It would also support the long term sustainability of perinatal care services though out the territory by improving academic and training opportunities for local residents and diversifying the number of health professionals available to provide services. Alternatively the model supports a centralized model of care (which is in opposition to the priorities established by the Caucus of the 17th Legislative Assembly) and would be associated with high human resources and operational costs.

To operate a program that would sustain the choice of maternity care provider for 46% of Yellowknife residents (number derived from utilization in Fort smith)an operational budget (exclusive of operation and infrastructure costs) of $1,279,355.00 would be required.

RECOMMENDED MODEL:

A community-based model of midwifery care is recommended for implementation. The community-based model was determined to be the most cost effective (due primarily to a decrease in travel costs) and to have the most evidence available that supports the existence of (and the potential for) enhanced health/social outcomes as a result of increased access to local care and increased continuity of care. This model also strongly supports the importance of culturally appropriate health care, which requires respect for choice of community-based birth.

ACRONYMS

AB	Alberta
ALARM	Advances in Labour and Risk Management
ALSO	Advanced Life Support in Obstetrics
BC	British Columbia
BCPDR	BC Perinatal Database Registry
BMI	Body Mass Index
CAM	Canadian Association of Midwives
CBC	Complete Blood Count
CCHS	Canadian Community Health Survey
CHN	Community Health Nurse
CIHI	Canadian Institute for Health Information
CPHR	Canadian Perinatal Health Report
CPR	Cardiopulmonary Resuscitation
CPS	Canadian Paediatric Society
CPSS	Canadian Perinatal Surveillance System
EMR	Electronic Medical Records
FAU	Fetal Assessment Unit
FP	Family Practitioner
FSHSSA	Fort Smith Health and Social Services Authority
FTE	Full-time Equivalent
F/T/P	Federal/Territorial/Provincial
GNWT	Government of the Northwest Territories
GP	General Practitioner
HSS	Department of Health and Social Services
HSSA	Health and Social Services Authority
IRH	Inuvik Regional Hospital
ISDM	Integrated Service Delivery Model
IUGR	Intrauterine growth restriction
IVH	Intraventricular Hemorrhage
LGA	Large for Gestational Age

MCC	Maternity Care Committee
MD	Medical Doctor
MWF	Midwifery
NFLD	Newfoundland and Labrador
NRP	Neonatal Resuscitation Program
NSAPD	Nova Scotia Atlee Perinatal Database
NTDs	Neural Tubal Defects
NWHP	Northern Women's Health Program
NICU	Neonatal Intensive Care Unit
NWT	Northwest Territories
OB	Obstetrics
OBGYN	Obstetrician/Gynaecologist
ON	Ontario
PCC	Primary Community Care
PHCTF	Primary Health Care Transition Fund
PTSD	Post Traumatic Stress Disorder
RN	Registered Nurse
SGA	Small for Gestational Age
SOGC	Society of Obstetricians and Gynaecologists of Canada
STH	Stanton Territorial Hospital
STHA	Stanton Territorial Health Authority
THAF	Territorial Health Access Fund
THSSI	Territorial Health System Sustainability Initiative
TOR	Terms of Reference
TSH	Thyroid Stimulating Hormone
YHSSA	Yellowknife Health and Social Services Authority

1. INTRODUCTION

1.1 Project Purpose

The primary intent of this project is to provide recommendations to help enhance the quality of perinatal care available to NWT families by increasing access to midwifery services and further integrating midwifery into the existing NWT framework of perinatal care. The goal of this document is to present a range of evidence-based midwifery models of care that vary in their cost effectiveness, ability to impact health outcomes, sustainability, cultural appropriateness, accessibility, and ability to support integrated care. All of the models presented are aligned with existing national and territorial policies, procedures, standards and best practices. These models have been developed to represent the findings obtained from all lines of evidence – document review, literature review, focus group, key informant interviews, financial review, Hay River chart review - as well as national and international literature on the efficacy and safety on perinatal care by service provider. These models are intended to build upon existing program successes and mitigate existing or potential challenges.

1.2 Structure of the Report

This report is structured as follows:

- Section 1: Introduction
- Section 2: Methodology
- Section 3: Context for the Presented Models
- Section 4: Current Perinatal Situation in the NWT
- Section 5: Criteria for Assessment of Midwifery Models
- Section 6: Key Issues
- Section 7: Midwifery Models for Consideration
- Section 8: Recommended Model

The report includes seven appendices:

- Appendix A: Bibliography
- Appendix B: Standards of Practice for Registered Midwives in the NWT
- Appendix C: Recommendations for Consideration Related to Perinatal Standards of Care
- Appendix D: Fort Smith Health and Social Service Authority Midwifery Program Financials
- Appendix E: Estimated Cost of Physician-provided Perinatal Care Services to Yellowknife Residents
- Appendix F: Maternity Care Worker Certificate Program
- Appendix G: NWT Midwifery Program Evaluation Framework

2. METHODOLOGY

The models presented in this report are based on a number of lines of evidence, each is briefly described below.

2.1 NWT Document and Data Review

In order to obtain background information on midwifery and perinatal programming in the NWT, a review of NWT documents and datasets, as well as other any other pertinent reports obtained from the GNWT HSS was conducted. In addition to NWT-wide information, reports and data specific to the Fort Smith and Yellowknife midwifery programs were reviewed.

Documents were obtained from the Client and from Steering Committee members (specifically Fort Smith and Yellowknife midwives); information was also collected from the Territorial Epidemiologist and the Manager of Maternall/Child Services at Stanton Territorial Health Authority.

A bibliography of review materials is located in Appendix A.

2.2 Cross-Jurisdictional / International Literature Review

A cross-jurisdictional/international review of literature (professional, academic, organizational, grey) was carried out to identify best/promising/innovative practices associated with midwifery models of perinatal care (particularly those relevant to the unique context of the NWT (e.g., geographical locale (northern, remote), demographic make-up, culture)) that may be appropriate for the NWT.

Information was obtained by the DPRA (formerly Terriplan) team through a search of publicly available resources. The list was also supplemented by suggested additions identified by the Client and Steering Committee members and/or through reference materials provided during key stakeholder interviews.

A bibliography of reviewed materials is located in Appendix A.

2.3 Key Stakeholder Interviews

Key stakeholder interviews were carried out to collect information on the perceptions, opinions and knowledge of individuals involved in the administration and/or delivery of perinatal/midwifery care within the NWT and outside as well as individuals with expertise in the area of midwifery/rural and remote maternity care.

A total of 31 individuals provided information through a formal telephone or in-person interview. Key stakeholder interviews were conducted with individuals representing the following positions / organizations:

- NWT Medical Director's Forum representatives

- NWT Maternal-Perinatal Committee representatives
- NWT Midwifery Advisory Committee representatives
- Midwifery Steering Committee members
- Midwives registered/practicing in NWT
- Midwives from other relevant Canadian jurisdictions
- Stanton Territorial Hospital and Inuvik Regional Hospital representatives
- Northern Women's Health Program representative
- Canadian Association of Midwives representatives
- Topical experts

Informal discussions were also held in-person and via email with individuals such as: Territorial Epidemiologist, GNWT HSS; Manager, Medical Travel, Stanton Territorial Health Authority; Chief Financial Officer, Stanton Territorial Health Authority; Manager, Maternal/Child Services Stanton Territorial Health Authority; Manager, Information Services, Stanton Territorial Health Authority; and Senior Health Analyst, Corporate Planning, Evaluation and Analysis Unit, Corporate Planning, Reporting and Evaluation Division, GNWT HSS.

Input was requested from physicians providing maternity care in the NWT. Although two focus group sessions were organized, due to scheduling conflicts, only one of the physicians attended. In lieu of the sessions, five (5) physicians did email their opinions regarding the potential expansion of midwifery services in the NWT and/or responded to the three questions that were intended to be asked during the focus group session:

1. What do you see as the potential benefits of expanding midwifery care in the NWT?
2. What concerns do you have regarding the expansion of midwifery care in the NWT?
3. If a decision was made to expand midwifery care throughout the NWT, what would your priorities be in terms of when, where and how it would be done?

2.4 Focus Group Sessions

Recognizing the importance of public involvement in the project, three focus group sessions were held in the NWT communities that have or had midwifery services – one focus groups in Fort Smith and two focus groups in Yellowknife – in order to collect information on the perceptions, opinions and knowledge of residents regarding maternity care in the NWT.

The focus group conducted in Fort Smith was held on July 19th at the Fort Smith Health Centre and was organized by the two midwives. It was composed of six participants who were current or past midwifery clients (one woman who was unable to attend provided her responses to the questions during an interview session). The focus groups held in Yellowknife were carried out on Wednesday, October 12, 2011 (7:00-8:30pm) and Thursday, October 13, 2011 (7:00-8:30pm) at the office of DPRA Consultants. Posters were placed around Yellowknife advertising the event. Additionally, a poster was sent via email to a member of the NWT Citizens for Midwifery who then sent on the information to individuals that she knew as well as posting it on Facebook. The first focus group had 11 participants and the second had 10.

One individual, who was unable to attend, emailed her responses to the questions. The sessions lasted from one-hour to over two hours in length. Detailed notes were taken during the sessions and transcribed to computer.

2.5 Financial Data Review

Based on the Terms of Reference, and consultation with the Client and the Midwifery Review Steering Committee, a financial data review was carried out with the intent of performing a comprehensive fully burdened cost analysis of the current NWT's perinatal system that focused on:

- Cost of prenatal care delivered in NWT clinics, hospital and health centres by physicians, nurses, nurse practitioners and midwives, including the Northern Women's Health Program
- Cost of care for birthing services, including inpatient births in NWT facilities and Southern facilities and planned home births, as well as on-call/stand-by costs directly associated with these services
- Medical travel costs for all travel related to pregnancy and birthing services, including medevac, routine travel, and the cost associated with women travelling to and being accommodated in regional centres while awaiting delivery (as well the cost of medical travel on the family (e.g., loss of wages) is to be considered)
- Costs associated with midwifery and nursing personnel who provide perinatal care which may to include inpatient labour and delivery and post-partum care at Stanton Territorial Hospital and Inuvik Regional Hospital
- Estimate of the percentage of family physician services at YHSSA and Inuvik Regional Hospital currently spent providing pre and post-natal care as well as birthing and other obstetric services and the cost of that time (is not to include the cost of specialist care associated with perinatal care nor the cost of diagnostic services (e.g., ultrasound, laboratory)

Financial information was obtained from: Finance Department, Stanton Territorial Health Authority; Financial Planning and Control Department, GNWT Health and Social Services; Corporate Planning, Reporting and Evaluation Division Department, GNWT Health and Social Services; Medical Travel, Stanton Territorial Health Authority; Regional Health Authorities; Tlicho Government; and Inuvik Regional Hospital. This information was collected through the issuing data requests (via email and telephone), telephone interviews, and face-to-face meetings with representatives from the organizations mentioned above. The Client assisted DPRA in their efforts to collect the required data.

2.6 Hay River Chart Review

In consultations with members of the Steering Committee it was decided that a comparison of perinatal costs and health outcomes of two demographically similar communities – one offering the choice of community-based midwifery services (Fort Smith) and the other offering no choice but requiring family physician-based maternity care (Hay River) – would be beneficial to the development of midwifery models in the NWT. Accordingly, the Client, with the help of another Nurse Consultant, conducted chart reviews on maternity clients in Hay River for fiscal years 2008-2009, 2009-2010 and 2010-2011. The

following information was obtained, when available, from each of the 143 charts (n=43, n=48, n=52, respectively):

- Number of Prenatal Visits
- Number of Postnatal Visits
- Number of Caregivers
- Weeks at Delivery
- Type of Delivery (and Reason)
- Fetal Complications (and Explanation)
- Maternal Complications (and Explanation)
- Number of Days in Hospital
- Medical Travel (Prenatal, Delivery, Other)
- Medevac (and Reason)

Information was recorded by hand on a data collection sheet; one sheet per client. The completed forms were sent to DPRA where the information was entered, by fiscal year, into an Excel spreadsheet and analyzed.

2.7 Midwife Guidance

The DPRA team included two midwives (both practicing, both whom have or continue to work in the north and one who is a university professor and teaches midwifery students) who were involved in the data identification, data collection, data interpretation and/or recommended model development. Their knowledge and expertise and their networks in the field of midwifery greatly assisted in carrying out the project. Moreover, the assistance provided by the NWT's three registered midwives was instrumental in the completion of this project.

2.8 Project Limitations

While the collection of information from multiple sources and using multiple methods helped to improve the reliability and validity of the findings through the triangulation of results, the findings of this review and expansion project are limited by the following factors:

- Numerous communications with the Senior Analyst, Medical Travel, STHA, revealed that the medical travel information provided to the project team was of limited utility due to a number of factors including: (1) health centre staff sometimes send client forms to medical travel without the International Classification of Disease (ICD) codes filled in – a medical travel officer with no medical background is then responsible for determining the correct code; (2) a woman may be take a scheduled flight or be medevac'd out of a community for a medical reason that is not related to her pregnancy – once in Yellowknife, she may unexpectedly give birth – this is not captured by the medical travel records; (3) medical travel information does not capture anyone who travelled to give birth without using the system (e.g., a man in Behchoko drives his partner to Yellowknife to birth); (4) boarding costs are based on an average of 21 days of confinement –

a woman may be at the boarding house for a much shorter period of time to get a test done or for a much longer period of time (e.g., six weeks) awaiting delivery; and (5) it is not possible to accurately determine the number of trips (i.e., one way or return) due to variability in cost of flights (i.e., an expensive flight may represent return costs or it may reflect the late booking of a one way ticket).

- The lack of specific perinatal cost and health/social outcome data from all communities/regions across the NWT, restricts the ability to recommend one location over another based on these specific parameters.
- The lack of an existing NWT perinatal surveillance system limits the ability of this review to compare maternal and neonatal health outcomes across communities, region and territory over time.
- The costing component of the Hay River perinatal services is based on a broad formula that may not capture all of the expenses associated with the perinatal care in the community.
- At both the international and national levels, there is very limited information available on cost comparisons between midwifery care and other types of perinatal care providers. This limits the ability of this review to refer to make general statements about which type of care is more cost effective.
- Hay River information was collected via individual chart reviews while Fort Smith data is based on annual averages and some annual numeric data, not raw data as was provided for Hay River.
- The project scope did not include stakeholder consultations in order to determine ahead of time, interest in midwifery services.
- Due to time constraints, DPRA was unable to consult with Denendeh Health Committee members representing the Deh Cho, Gwich'in, Akaitcho and Tlicho as well as a select group of women residing in the Deh Cho Region and representatives from Aboriginal organizations (e.g., Native Women's Association) in order to gather information on their experiences (past and present) regarding the provision of community-based maternity care.

3. CONTEXT FOR THE PRESENTED MODELS

The models presented within this report have been designed to align with the following organizations, key guiding documents and legislation as well as the standards, clinical guidelines, principles, priorities and key elements which they support.

3.1 Society of Obstetricians and Gynaecologists of Canada

The Society of Obstetrics and Gynaecologists of Canada (SOGC) was founded in 1944 and operates "to promote optimal women's health through leadership, collaboration, education, research and advocacy in the practice of obstetrics and gynaecology".[1] In 2003, 87% of obstetricians and gynaecologists in Canada were SOGC members. One of the mandates of the organization is to develop clinical practice guidelines that help set the standards of care for healthcare for its members. Guidelines are developed

[1] The Society of Obstetricians and Gynaecologists of Canada (2004). The Past Fifteen Years: Celebrating 60 years of Excellence 1944-2004 pp.9

through a peer review process and have the potential to be reviewed by as many as 40 individuals representing clinical practices in all regions of the country.[2]

The SOGC has released two policy statements and a report that pertain specifically to the role of midwifery: Returning Birth to Aboriginal, Rural and Remote Communities[3], a Policy Statement on Midwifery[4] and a Report on the Best Practices for Returning Birth to Rural and Remote Aboriginal Communities.[5] In these documents the SOGC acknowledges and highlights the importance of choice for women and their families in the birthing process.[6] The documents also recognize the shortage of maternity care providers and recommends the integration of midwives and collaborative community care teams to support existing services both within community and hospital settings. Furthermore the SOGC promotes "the building of inter-professional relationships between midwives and other obstetrical care providers in the interests of providing excellent care for women and their babies".[7]

The SOGC also recognizes the increasing trend of intervention during childbirth and recommends education campaigns and national practice guidelines that encourage normal birth.[8] Normal birth is defined as

> "…spontaneous in onset, is low-risk at the start of labour and remains so throughout labour and birth. The infant is born spontaneously in vertex positions between 37 and 42 +0 completed weeks of pregnancy. Normal birth included the opportunity for skin-skin holding and breastfeeding in the first hour after birth".[9]

The SOGC "…supports the continuing process of establishing midwifery in Canada as a regulated, publically funded profession with access to hospital privileges".[10]

[2] The Society of Obstetricians and Gynaecologists of Canada (2004). The Past Fifteen Years: Celebrating 60 years of Excellence 1944-2004.
[3] The Society of Obstetricians and Gynaecologists of Canada (2010). Returning birth to aboriginal, rural and remote communities. *Journal of Obstetrics and Gynaecology Canada* 32(12):1186-1188.
[4] The Society of Obstetricians and Gynaecologists of Canada (2009). Policy statement on midwifery. Journal of Obstetrics and Gynaecology Canada 31(7): 662.
[5] Couchie, C. and Sanderson, S. (2007). A report on best practices for returning birth to rural and remote aboriginal communities. Journal of Obstetrics and Gynaecology Canada 188: 250-254
[6] The Society of Obstetricians and Gynaecologists of Canada (2008). Joint policy statement on normal childbirth. Journal of Obstetrics and Gynaecology Canada 227:662-663.
[7] The Society of Obstetricians and Gynaecologists of Canada (2009). Policy statement on midwifery. Journal of Obstetrics and Gynaecology Canada 227:662-663.
[8] The Society of Obstetricians and Gynaecologists of Canada (2008). Joint policy statement on normal childbirth. Journal of Obstetrics and Gynaecology Canada 221: 1163-1165.
[9] The Society of Obstetricians and Gynaecologists of Canada (2008). Joint policy statement on normal childbirth. Journal of Obstetrics and Gynaecology Canada 221: 1163-1165.
[10] The Society of Obstetricians and Gynaecologists of Canada (2009). Policy statement on midwifery. Journal of Obstetrics and Gynaecology Canada 227:662-663.

3.2 Canadian Association of Midwives

The Canadian Association of Midwives (CAM) views "pregnancy as a state of health and childbirth as a normal physiological process". The mission of CAM is to "provide leadership and advocacy for midwifery as a regulated, publicly funded and vital part of the primary maternity care system in all provinces and territories". The vision of CAM is that "midwifery is fundamental to maternal and newborn health services, and that every woman in Canada will have access to a midwife's care for herself and her baby".[11]

The definition of a midwife used by the Canadian Association of Midwives (CAM) is as follows:[12]

> A midwife is a person who, having been regularly admitted to a midwifery educational programme, duly recognized in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practise midwifery.
>
> The midwife is recognised as a responsible and accountable professional who works in partnership with women to give the necessary support, care and advice during pregnancy, labour and the postpartum period, to conduct births on the midwife's own responsibility and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance and the carrying out of emergency measures.
>
> The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women's health, sexual or reproductive health and child care.
>
> A midwife may practise in any setting including the home, community, hospitals, clinics or health units.

The CAM website notes that while midwifery legislation and regulations are specific to each province and territory, the midwifery model of care is, for all intents and purposes, the same across the country.[13] The foundation of the Canadian midwifery model is woman and family centred care that:

- Meets individual needs

[11] CAM. 2008). About CAM -Vision and Mission. http://www.canadianmidwives.org/vision-and-mission.html [adopted by CAM Board on November 2008]
[12] CAM. Definition of the Midwife. Adopted by the International Confederation of Midwives Council meeting, 19th July, 2005,Brisbane, Australia Supersedes the ICM "Definition of the Midwife" 1972 and its amendments of 1990 http://www.internationalmidwives.org/Portals/5/Documentation/ICM%20Definition%20of%20the%20Midwife%202005.pdf
[13] CAM. Midwifery Models and Outcomes in Canada. Fact Sheet. http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_FACT_SHEET_Models_Outcomes_ENG_July_2010.pdf

- Promotes the healthy, normal process of pregnancy and birth
- Values the profound meaning of the childbearing experience in women's lives

Other guiding principles of the Canadian midwifery model of care include:

- Continuity of care
  - Midwifery care is provided on a continuum throughout pregnancy, labour, birth and the postpartum period, enabling clients to build a relationship of mutual understanding and trust with their midwife or midwives. Practices are organized so that a midwife known to the woman is available to attend the birth.
- Informed choice
  - The woman is encouraged to make informed choices about her own care. Midwives support the woman as the primary decision-maker and contribute their knowledge and evidence-based recommendations in a non-authoritarian manner. Midwifery visits allow adequate time for open, interactive discussion and education.
- Choice of birthplace
  - Midwives respect the woman's right to choose where she would like to give birth and are prepared to provide intrapartum care in hospital and out-of-hospital settings, in accordance with professional standards and guidelines.[14]

This model also incorporates a variety of standards and best practices that support physiologic (natural) birth and help to enhance women's childbirth experiences. These include components (which are aligned with the principles noted above) such as:

- Providing continuity of care to build trust and partnership with the woman
- Sharing information and offering choices, including the choice of birthplace
- Actively supporting client decision-making and autonomy
- Allowing adequate time for discussion of individual needs and concerns
- Preparing women for the realities of labour while anticipating a normal birth
- Creating a calm and intimate birth environment
- Providing a familiar presence and continuous support during active labour
- Using non-pharmacologic methods to help women work with normal labour pain
- Encouraging free movement and instinctual behaviour in labour
- Encouraging fluid intake and nourishment as needed
- Encouraging spontaneous second stage "pushing" in the woman's preferred position
- Supporting early labour at home as appropriate
- Supporting birth at home or in a birthing centre as appropriate[15]

[14] CAM. Midwifery Models and Outcomes in Canada. Fact Sheet.
http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_FACT_SHEET_Models_Outcomes_ENG_July_2010.pdf
[15] CAM. (2010). Midwifery Care and Normal Birth. Position Statement on Normal Birth, January 2010.
http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_ENG_Midwifery_Care_Normal_Birth_FINAL_Nov_2010.pdf

3.3 Caucus of the 17th Legislative Assembly Priorities

On November 17th, 2011 the Caucus identified a small number of priorities under the theme of *Believing in People and Building on the Strengths of Northerners*, that they want to achieve or make progress on over the next four years.[16] Of specific relevance to this review and expansion analysis project is the following priority:

- **Ensure a fair and sustainable health care system** by investing in prevention, education and awareness and early childhood development, enhancing addictions treatment programs using existing infrastructure, and addressing our health facilities deficit.[17]

More generally, the priorities highlight the importance of decentralization and diversification of employment opportunities and infrastructure investments (i.e., away from Yellowknife to the outlying communities and regions).

While the Caucus is committed to moving forward with these priorities to the extent possible, it cautions residents to temper their expectations due to the fiscal climate of the GNWT.

3.4 2011-2016 NWT Health and Social Services Strategic Plan

In an attempt to further effective and collaborative planning to improve the overall health of all NWT residents the health and social services system published its 2011-2016 Strategic Plan. The document identifies six strategic priorities:

1. Enhance services for children and families
2. Improve the health status of the population
3. Deliver core community health and social services through innovative service delivery
4. Ensure one territorial integrated system with local delivery
5. Ensure patient/client safety and system quality
6. Outcomes of health and social services are measured, assessed and publicly reported

While the plan only directly recognizes midwifery services as a component of Priority #3 – to deliver core community health and social services through innovative service delivery – the models presented in this report will strive to address all of the above mentioned strategic priorities as well as promote the guiding principles identified as propelling the plan forward. Suggested models will help encourage personal responsibility by providing access to services that help to educate, inform and support individual choice, foster collaboration through the integration that encourages multidisciplinary teams, incorporate opportunities for community engagement and ensure patient/client safety.

[16] Caucus of the 17th Legislative Assembly. (November 17, 2011). Caucus identifies Priorities for the 17th Legislative Assembly.
[17] Caucus of the 17th Legislative Assembly. (2011). Believing in People and Building on the Strengths of Northerners.

3.5 NWT Integrated Service Delivery Model

In 2004 the NWT Health and Social Services system adopted an integrated service delivery model (ISDM) in order to provide care that increased access to different types of health care providers as well as focused more on health promotion and disease prevention initiatives. The ISDM is defined as:

> A primary, vertically integrated health and social services organization based on the Regional Health and Social Services Authority / Departmental structure; that has formal linkages with other health and social service providers in the NWT and elsewhere; and that has established delivery system processes, procedures, and tools that are rooted in a collaborative approach to client care in all core services areas, particularly at the primary community care level, but radiating outward to secondary and tertiary levels of care.[18]

The system is designed to go beyond the Primary Health Care approach by not just integrating care at the community level but also considering the inclusion of secondary and tertiary levels of care as well through the recognition of core services, improved information access, standardizing processes, and improved system wide consistency.[19] The three key elements of the ISDM are:

1. Services integration and collaboration
2. Organizational integration and collaboration
3. Description of core services

The ISDM founded on two sets of principles.[20] Set #1 was one originally identified in the Department's strategic plan, *Shaping Our Future* (1998). It consists of the following values:

- Personal responsibility
- Basic needs
- Sustainability
- Continuum of care
- Universality
- Prevention-oriented system
- People-oriented system

[18] GNWT HSS. (March 2004). ISDM for the NWT HSS System: A Detailed Description. Available on line at http://www.hlthss.gov.nt.ca/pdf/reports/health_care_system/2004/english/isdm/isdm_a_detailed_description.pdf P. iii.
[19] NWT Health and Social Services (2004). Integrated Service Delivery Model for the NWT Health and Social Services System: A Detailed Description. Available on line at http://www.hlthss.gov.nt.ca/pdf/reports/health_care_system/2004/english/isdm/isdm_a_detailed_description.pdf
[20] NWT Health and Social Services (2004). Integrated Service Delivery Model for the NWT Health and Social Services System: A Detailed Description. Available on line at http://www.hlthss.gov.nt.ca/pdf/reports/health_care_system/2004/english/isdm/isdm_a_detailed_description.pdf P.2.

The second set of principles was developed specifically for the ISDM by the ISDM Task Team Health and Social Services and highlighted in the Task Team's report. It includes:

- Patient and client focus
- Ease and equitable access to services
- Competent care
- Information driven
- Sustainable and single system of service
- Personal responsibility
- Adaptability
- Accountability
- Transparency in communications

3.6 NWT Midwifery Legislation

In 2005, the NWT passed legislation regulating the practice of midwifery under the *Midwifery Profession Act, S.N.W.T. 2006, c.24,* and the following regulations: *Midwifery Profession General Regulations, N.W.T. Reg. 002-2005; Prescription and Regulation of Drugs and other Substances Regulations, N.W.T. Reg. 003-2005;* and *Screening and Diagnostic Tests Regulations, N.W.T. Reg. 004-2005.* Since the implementation of the legislation, two midwifery programs have been introduced: one in Fort Smith and the other in Yellowknife. While the Yellowknife Program was recently terminated pending the findings of this review, the Fort Smith Program is an example of a successful community-based midwifery service. The following sections outline the definitions, scope of practice, principles, codes, and standards under which Midwifery in the NWT is expected to operate.

3.6.1 Goal of Midwifery

The goal of midwifery care in the NWT is – *Women in the community, along with their babies and families have healthy pregnancy, birthing and postpartum experiences.*

3.6.2 Definition of Midwifery

In the NWT, a midwife is defined as:

> …a person who has acquired the requisite qualifications to be licensed to practice midwifery in the NWT. The midwife must be able to give the necessary care and advice to women prior to and during pregnancy, labour and the postpartum period, to conduct deliveries on his/her own responsibility, and to car for the infant and the mother.[21]

[21] GNWT HSS. (2006). Draft NWT Midwifery Practice Accountability Framework. May 23, 2006.

3.6.3 Scope of Practice

The scope of practice of a midwife in NWT, as cited in the *Midwifery Profession Act* s. 2(1):[22]

"A registered midwife is entitled to apply midwifery knowledge, skills and judgment

a) to provide counselling and education related to childbearing;
b) to carry out assessments necessary to confirm and monitor pregnancies;
c) to advise on and secure the further assessments necessary for the earliest possible identification of pregnancies at risk;
d) to identify the conditions in the woman, fetus or newborn that necessitate consultation with or referral to a medical practitioner or other health care professional;
e) to care for the woman and monitor the condition of the fetus during labour;
f) to conduct spontaneous vaginal births;
g) to examine and care for the newborn in the immediate postpartum period;
h) to care for the woman in the postpartum period and advise her and her family on newborn and infant care and family planning;
i) to take emergency measures when necessary;
j) to perform, order or interpret prescribed screening and diagnostic tests[23];
k) to perform episiotomies and amniotomies and repair episiotomies and lacerations not involving the anus, anal sphincter, rectum and urethra;
l) to prescribe and administer drugs in accordance with the regulations[24]; and
m) on the order of a medical practitioner relating to a particular client, to administer any drugs by the route and in the dosage specified by the medical practitioner."

As cited within the *Midwifery Profession Act* s. 4*,* a registered midwife is recognized as an autonomous primary health care provider:[25]

"A registered midwife may, in accordance with this Act, the regulations and the Midwifery Practice Framework, engage in the practice of registered midwives as a primary health care provider who

a) is directly accessible to clients without referral from a member of another profession;
b) is authorized to provide the services of a registered midwife without being supervised by a member of another professional; and

[22] *Midwifery Profession Act*. S.N.W.T. 2003, c.21, In force January 29, 2005; SI-001-2005. Amended by .N.W.T. 2006, c.24, In force April 2, 2007; SI-001-2007. S.N.W.T. 2010, c.16,
[23] The Screening and Diagnostic Tests Regulations – an amendment to the *Midwifery Profession Act* – details the screening and diagnostic tests that a registered midwife may order, collect samples for, perform, receive the reports or results of, and interpret the reports or results of. [Midwifery Profession Act. Screening and Diagnostic Tests Regulations R-004-2005. In force January 29, 2005].
[24] In accordance with *Midwifery Profession Act* s.2910 (l) and pursuant to the *Pharmacy Act* s. 20(1)(c), registered midwifery are authorized to prescribe, and administer the drugs listed in the Appendix I-C of the Midwifery Practice Framework.
[25] *Midwifery Profession Act*. S.N.W.T. 2003, c.21, In force January 29, 2005; SI-001-2005. Amended by .N.W.T. 2006, c.24, In force April 2, 2007; SI-001-2007. S.N.W.T. 2010, c.16,

c) consults with medical practitioners or other health care professionals if medical conditions exist or arise that may require management outside the scope of the practice of registered midwives."

3.6.4 Standards of Practice

There exist standards of practice for registered midwives in the NWT (which are aligned with the *Midwifery Profession Act*).[26] The standards of practice document (refer to Appendix B) outlines the following:

- General competencies of registered midwives
- Standards of collaborative care, guidelines for medical consultation and transfer of care to a physician
- Standards for birth in a hospital
- Standards for birth outside of a hospital with specialist care
- Standards of records
- Standard on informed choice
- Standard for responding to client request for care against midwifery

3.6.5 Code of Conduct

Registered midwives in the NWT (and Nunavut) are bound by a code of conduct that states:

> Registered midwives act, at all times, in such a manner as to justify public trust and confidence, to uphold and enhance the god standing and reputation of the profession, to serve the interests of society and above all, to safeguard the interest of their clients.[27]

3.6.6 Continuing Competency

NWT and Nunavut midwives are also responsible for demonstrating their continuing competency. This competency is determined through a practice audit conducted once every three years. A midwife must:

- Attend 15 women[28] as primary midwife[29] over three years of registration
- Complete clinical practice forms
- Attend four peer case review meetings per registration year
- Carry out self-assessment and reflection
- Participate in continuing education/professional development activities
- Evaluate the program through the collection of client feedback[30]

[26] GNWT HSS. (2005). Standards of Practice for Registered Midwives in the NWT. February 2005.
[27] Midwives Association of the Northwest Territories and Nunavut. (2005). Code of Conduct for Registered Midwives in the NWT. January 25, 2005.
[28] Of those 15 cases, a minimum of 10 must demonstrate continuity of care which means providing care to the same woman through at least four prenatal visits, labour and delivery, the new born examination and at least one postnatal visit.
[29] Primary midwife means a midwife who assumes primary responsibility for providing all aspects of midwifery care including prenatal, intrapartum and postpartum care of the newborn.

3.6.7 Guiding Principles

The guiding principles of midwifery practice in the NWT as outlined in the Midwifery Practice Framework involves:

- Midwives as autonomous healthcare providers
- Accessibility of midwifery care
- Community input
- Community-based practice and practice sites
- Choice of birth setting
- Two attendants at each birth
- Partnership with women
- Informed choice
- Continuity of care
- Collaborative care
- Accountability and evaluation of practice
- Research
- Education

3.6.8 Midwifery Program Objectives

Within the scope of the NWT Midwifery Practice Framework and in compliance with the *Midwifery Professional Act*, the objectives of the program are:

- To provide safe and appropriate care to women and their babies including: preconception care, prenatal care, intra-partum care, and postnatal care in accordance with the NWT Midwifery Practice Framework, the *Midwifery Profession Act* and NWT Standards of Practice for Midwives.
- Create opportunities for women, their families, and health care providers to share responsibility for maternity care.
- To develop and share midwifery knowledge and best practices consistent with the NWT Midwifery Practice Framework.[31]

The NWT Midwifery Program is intended to be of benefit to a wide range of residents: (1) direct beneficiaries, including women and their newborns and (2) indirect beneficiaries, including families and communities as a whole.

[30] Midwives Association of the Northwest Territories and Nunavut. (2005). Continuing Competency Program for Registered Midwives in the NWT. January 31, 2005.
[31] GNWT HSS. (2006). Draft NWT Midwifery Practice Accountability Framework. May 23, 2006.

4. CURRENT PERINTATAL SITUATION IN THE NWT

The following sections highlight aspects of the current perinatal situation/environment that should be considered in an expansion of the midwifery in the NWT.

4.1 NWT Birthing Statistics

Table 1 provides information on the number of births by region and by mother's community of residence for the last 16 years. This table reveals whether a critical mass (25 per community/year) exists in a community to support the sustained services of a midwifery program. Based on the average number of births from 1995 to 2010[32], the communities of Behchoko (n=46.8), Fort Smith (n=36.7), Hay River (n=56.5), Inuvik (n=67.6) and Yellowknife (n=297.6) are currently well placed to benefit from, and sustain, a community-based midwifery program, given community interest and buy-in.

[32] Given that the 2009 and 2010 data are preliminary and subject to change, caution should be taken in reviewing average values. See notes below Table 2.

Table 1: NWT Births by Region and Mother's Community of Residence, 1995-2010

	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	Average
Northwest Territories	653	667	721	725	687	712	698	701	635	613	673	659	678	722	814	868	701.6
Aklavik	5	16	10	13	8	13	8	6	11	12	7	2	13	14	12	11	10.1
Behchokǫ̀	47	64	51	45	34	40	46	45	55	43	45	53	50	45	36	49	46.8
Colville Lake	1	5	2	6	9	2	4	3	6	3	2	4	1	4	3	2	3.6
Déljne	8	4	12	9	4	9	8	8	8	10	14	11	9	10	20	23	10.4
Detah	2	2	1	1	1	-	-	2	4	3	-	3	3	1	6	-	1.8
Enterprise	2		1	1	2	1	-	1	1	-	1	1	-	1	-	1	0.9
Fort Good Hope	8	9	9	9	12	16	7	10	9	13	8	5	16	10	18	13	10.8
Fort Liard	5	7	8	6	10	11	17	10	9	11	12	9	12	11	8	15	10.1
Fort McPherson	12	14	16	12	12	3	11	20	15	9	14	16	12	13	13	23	13.4
Fort Providence	11	8	8	8	16	9	7	11	15	12	12	13	11	20	16	20	12.3
Fort Resolution	6	3	12	6	12	8	8	7	5	7	10	11	4	12	13	8	8.3
Fort Simpson	15	14	21	16	13	14	17	16	17	15	18	20	13	25	27	28	18.1
Fort Smith	46	27	40	46	37	40	39	34	27	29	33	34	33	33	39	50	36.7
Fort Smith, Unorg.			-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.1
Gamètì	7	6	3	4	6	7	5	4	7	3	1	6	11	10	11	11	6.4
Hay River	38	34	40	62	49	54	54	55	43	51	55	75	64	75	66	89	56.5
Hay River Reserve	1	-	6	-	-	-	-	1	-	1	-	-		-	1	-	0.7
Inuvik	70	73	76	68	63	67	65	79	48	52	68	58	71	60	88	75	67.6
Jean Marie River	-	-	4	1	2	-	-	-	1	1	-	1	1	-	2	2	0.9
Kakisa	-	-	-	1	-	1	-	-	-	1	-	-	-	-	1	-	0.3
Łutselk'e	5	4	3	3	7	8	8	5	3	16	9	6	11	8	5	9	6.9
Nahanni Butte	1	1	-	1	-	3	-	-	-	3	-	-	3	4	1	2	1.2
Norman Wells	10	7	8	15	12	14	15	17	7	12	15	10	10	14	16	18	12.5
Paulatuk	8	6	2	5	5	5	3	4	5	3	3	9	3	3	7	5	4.8

	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	Average
Reliance			-	-	-	-		-	-	-	-	-	-	-	1	-	0.1
Sachs Harbour	1	1	5	1	4	-	4	-	2	3	3	1	2	6	2	5	2.5
Trout Lake	-	-	1	3	3	3	2	1	1	3	-	1	-	-	-	-	1.1
Tsiigehtchic	1	2	-	2	5	7	4	4	5	3	3	5	5	5	3	2	3.5
Tuktoyaktuk	23	24	13	20	11	19	21	16	22	20	24	17	16	14	25	28	19.6
Tulita	6	9	8	7	5	13	7	8	7	3	2	12	11	9	12	8	7.9
Ulukhaktok	10	15	6	9	11	9	8	11	8	7	10	3	6	6	11	19	9.3
Wekweètì	1	2	3	3	2	2	2	4	4	4	3	2	1	2	2	2	2.4
Whatì	15	10	8	16	8	13	13	10	7	9	10	11	9	12	6	8	10.3
Wrigley	2	1	2	2	-	2	4	3	2	2	3	3	3	5	9	3	2.9
Yellowknife	286	299	342	324	324	316	265	305	279	249	288	256	273	290	334	331	297.6
Community Unknown	-	-	-	-	-	3	46	1	2	-	-	1	1	-	-	13	4.2

Notes prepared by Department of Health and Social Services

1) Source: Statistics Canada Vital Databases (1995-2008)- Prepared by NWT Bureau of Statistics; Health Services Administration Vital Statistics (2009-2010)-Prepared by Dept. of HSS
2) Community Unknown refers to births where the specific community is not known.
3) Out of territory births from NWT residents are not included in 2009 and 2010 data. Data from 2009 and 2010 are preliminary and subject to change.

Table 2 highlights the communities in which births have actually occurred in the last seven years. The majority of births per year occur in Yellowknife, Inuvik, Alberta, Other and Fort Smith. These figures support the fact that with the exception of Fort Smith, in which about half of pregnant women birth in the community, a large number of women residing in the NWT are being evacuated to other communities in order to birth. The destination of these evacuations are influenced by the availability of health care facilities (e.g., hospitals) and health care professionals who provide maternity services (e.g., obstetricians, family physicians) for low and high risk clients.

Table 2: NWT Births by Community of Occurrence, 2004-2010

	2010	2009	2008	2007	2006	2005	2004
Northwest Territories	653	667	698	711	687	725	721
Aklavik							1
Behchoko	1	4	1	3		2	1
Deline	1				1		
Detah							1
Fort Good Hope		1					
Fort Liard	2			1	1	1	2
Fort McPherson					1		
Fort Providence	1	1			2	1	
Fort Simpson							2
Fort Smith	22	18	22	24	14	4	4
Hay River		2	1	2		2	3
Inuvik	129	147	122	117	106	124	121
Lutselk'e						1	
Pearce Point				1			
Rae Lakes					1		
Tuktoyaktuk	1	1		1	1		1
Tulita					1		
Ulukhaktok		1	2				
Yellowknife	496	492	526	515	490	504	473
Alberta			29	49	52	52	62
Other			18	12	17	20	27

Notes prepared by Department of Health and Social Services

1) Source: Statistics Canada Vital Databases (2004-2008); Health Services Administration Vital Statistics File (2009-10)
2) Other refers to births from NWT residents outside of the territory and Alberta.
3) Out of territory births from NWT residents are not included in 2009 and 2010. Data from 2009 and 2010 are preliminary and subject to change.

4.2 Community Travel Information and Birthing Service Availability

With the assistance of the Client and Community Health Nurses, facility and travel information specific to each community was gathered. Table 3 highlights what communities are required to fly women out for an ultra sound, for physician visits, for nurse visits, and for delivery as well as indicating where those women are travelling to for prenatal and birthing care. This table also indicates what level of facility currently exists in each of the communities.

Table 3 illustrates that ultrasound capability is only available in Hay River, Fort Smith, Inuvik and Yellowknife. All other residents of the Northwest Territories must travel out of their home communities to Inuvik or Stanton Territorial Hospital[33]. All communities, with the exception of Kakisa, are serviced by local or locum physicians. Access to community nurses is also consistent with the exception of some communities within the Dehcho Health and Social Services Authority. While access to physicians and community health nurses is reliable throughout most regions, continuity of care provider has been noted as an issue as a result on reliance on locums and high turnover associated with recruitment and retention concerns. Evacuation, which generally occurs between 36 – 38 weeks, is largely dependent on the availability of birthing services and the competency and comfort community health nurses have with labour and delivery. Women from the Beaufort-Delta Health and Social Services Authority and Fort Good Hope and Colville Lake are flown to Inuvik while all others (with the exception of Fort Smith) evacuations are routed to Yellowknife. While this practice serves to ensure safety and minimize risk, it has been associated with heavy social and economic costs to the individual, community and public health system.

Table 3: Routine Prenatal Travel by Community

Authorities	Communities	Average Births by Residence (1995-2010)	Level Facility	Ultrasound Travel?	Physician travel?	Nurse Travel?	Evacuation to await delivery (week)
BDHSSA	Inuvik	67.6	Level D	N/A	No	No	N/A
	Tuktoyaktuk	19.6	Level B	Yes X 1 – IRH	No	No	38 weeks – IRH
	Aklavik	10.1	Level B	Yes X 1 – IRH	No	No	38 weeks – IRH
	Fort McPherson	13.4	Level B	Yes X 1 – IRH	No	No	36-38 weeks – IRH
	Paulatuk	4.8	Level B	Yes X 1 – IRH	No	No	36-38 weeks – IRH
	Sachs Harbour	2.5	Level B	Yes X 1 – IRH	No	No	36-38 weeks – IRH
	Ulukhaktok	9.3	Level B	Yes X 1 – IRH	No	No	36-38 weeks – IRH
	Tsiigehtchik	3.5	Level A	Yes X 1 – IRH	No	No	36-38 weeks – IRH[1]
SHSSA	Norman Wells	12.5	Level B/C	Yes x 1 – IRH	No	No	38 weeks – YK
	Fort Good Hope	10.8	Level B	or STH for all (appointments	No	No	38 weeks – IRH
	Colville Lake	3.6	Level A	more	No	No	38 weeks – IRH
	Tulita	7.9	Level B	accessible at	No	No	38 weeks – YK
	Deline	10.4	Level B	IRH)	No	No	38 weeks – YK
DHSSA	Fort Simpson	18.1	Level B/C	Yes x 1 – STH	No	No	36 weeks – YK
	Fort Liard	10.1	Level B	Yes x 1 – FN[2]	No	No	36 weeks – YK
	Fort	12.3	Level B	Yes x 1 – HRH	No	No	36 weeks – YK

[33] With the exception of resident of Enterprise, Fort Providence, Kakisa and Hay River Reserve (who travel to Hay River) and Fort Liard (who generally travel to Fort Nelson, BC)

Authorities	Communities	Average Births by Residence (1995-2010)	Level Facility	Ultrasound Travel?	Physician travel?	Nurse Travel?	Evacuation to await delivery (week)
	Providence						
	Wrigley	2.9	Level A	Yes x 1 – STH	No	Yes [3]	36 weeks – YK
	Trout Lake	1.1	Level A	Yes x 1 – STH	No	Yes [3]	36 weeks – YK
	Nahanni Butte	1.2	Level A	Yes x 1 – STH	No	Yes [3]	36 weeks – YK
	Jean Marie River	0.9	Level A	Yes x 1 – STH	No	Yes [3]	36 weeks – YK
	Kakisa	0.3	Level A	Yes x 1 – HRH	Yes[4]	No	36-37 weeks – YK
	Hay River Reserve	0.7	Level A	Yes x 1 – HRH	No	No	37 weeks – YK
TCSA	Behchoko	46.8	Level B/C	Yes x 1 – STH	No	No	36 weeks – YK
	Whati	10.3	Level B	Yes x 1 – STH	No	No	36-37 weeks – YK
	Gameti	6.4	Level B	Yes x 1 – STH	No	No	
	Wekweeti	2.4	Level A	Yes x 1 – STH	No	No	36 weeks – YK
HRHSSA	Hay River	56.5	Level C	No – US in HR	No	No	37 weeks – YK
	Enterprise	0.9	N/A	Yes x 1 – HRH	Yes – HRH[5]	No	37 weeks – YK
FSHSSA	Fort Smith	36.7	Level C	No	No	No	38 weeks high risk only and elective
YHSSA	Yellowknife	297.6	N/A	N/A	N/A	N/A	N/A
	Fort Resolution	8.3	Level B	Yes x 1 – STH	No	No	
	Lutselk'e	6.9	Level B	Yes x 1 – STH	No	No	N/A
	Dettah	1.8	N/A	No [6]	No	No	

1. Women are sent out between 37-38 weeks as there is no nurse in the community.
2. Fort Liard patient generally travel to Fort Nelson, BC to receive routine ultrasound, etc. services. They receive other specialty services from Stanton and deliver at Stanton.
3. Trout Lake, Wrigley, Nahanni Butte and Jean Marie River receive monthly visits from a CHN and a physician. At 30 weeks gestation women begin bi-weekly visits, and as such must travel to Fort Simpson to see a CHN for their prenatal appointment for every 2nd visit falling between community visits, until evacuation at 36 weeks. Typically this would be for a total of 2 visits.
4. Kakisa is supposed to receive regular visits from Fort Providence, however due to staffing instability in Ft. Providence, no regular visits have occurred x 2 years. As such, clients would likely travel to Hay River for all routine prenatal care. There are currently no prenatal clients in Kakisa.
5. Enterprise patients drive to Hay River to receive services. As there is no local facility or provision of services, they are entitled to reimbursement for mileage when to all appointments.
6. As Dettah is considered part of Yellowknife, no Medical Travel is provided to residents.

4.3 Northern Women's Health Program

The NWHP was initially funded through the Primary Health Care Transition Fund (PHCTF) money (NWT allocated $4.77 million dollars to fund 11 projects collectively aimed at supporting the transition of NWT's HSS system to a primary community care model (PCC). The program was developed in response to the challenges that existed with access to coordinated and effective primary care for women who were referred to Yellowknife from outlying communities for maternity care. These challenges included lack of timely access to ultrasound, absence of fetal assessment unit and shortage of family physicians providing primary care obstetrics. The NWHP was initially proposed to help coordinate obstetric and

maternal care services, particularly for women in Yellowknife who have no family physician and women from communities outside of Yellowknife (including the Kitikmeot Region of Nunavut and excluding the Beaufort Delta Region where women are referred to Inuvik Regional Hospital).[34]

The goal of the program is to improve women's health through:

- Collaborating with the health authorities to transition to a health care model with a "single point of reference" for coordinated prenatal care referrals for women of the NWT and the Kitikmeot Region of Nunavut.
- Becoming a best practice centre for NWT primary healthcare providers delivering prenatal care services to access information, advice and support in their practice.
- Establishing a collaborative interdisciplinary site with an educational program where practitioners can provide prenatal care and birthing services in a supportive environment.[35]

The NHWP, which is coordinated by the Stanton Territorial Health Authority (STHA), supports a health care model that is aligned with the principles of PCC and provides a single route of access to prenatal care services that are required for both maternal and fetal wellbeing. The program is focused on collaborative care, health promotion and disease prevention.[36]

The program established a toll free line for health care professionals and facilitates monthly telehealth meetings to allow for increased opportunities for education, training and the sharing new policies and best practices regarding perinatal care through enhanced communication with the Obstetrical Team in Yellowknife. The program, in partnership with the Community Health Nurse Development Program, also provides opportunities for nurses to get obstetrical experience prior to being assigned to work in the communities.[37]

An evaluation of the program revealed that in addition to the NWHP having been relevant to Territorial health needs and STHA priorities and having been cost effective (e.g., no duplication of services), it had been successful in a number of different areas including:

- Helping to improve communication and teamwork (both within STHA, and between STHA and healthcare providers in the communities) with respect to women's reproductive health services;
- Improving coordination of patient care as a result of having a dedicated coordinator;

[34] Northern Research and Evaluation. (2006). Final Evaluation of the Northern Women's Health Program: Summary Report. Prepared for the Coordinator, NWT Primary Health Care Transition Fund Initiative, Department of Health and Social Services, GNWT. September 30, 2006.
[35] RNANT/NU. RNANT/NU Newsletter. The Northern Women's Health Program began in 2003. http://www.rnantnu.ca/Portals/0/Nwslt_Spring09.pdf
[36] Northern Research and Evaluation. (2006). Final Evaluation of the Northern Women's Health Program: Summary Report. Prepared for the Coordinator, NWT Primary Health Care Transition Fund Initiative, Department of Health and Social Services, GNWT. September 30, 2006.
[37] GNWT HSS. (2007). HSS Annual Report, 2006-2007. http://pubs.aina.ucalgary.ca/health/66655.pdf

- Through improved monitoring of high risk clients via the Fetal Assessment Unit (FAU), allowing those clients to stay in their home communities for as long as possible before coming to Yellowknife;
- Sharing of maternal care best practices with PCC providers throughout the NWT (via the toll-free line and via bi-monthly prenatal care Tele-Health sessions);
- Increasing the opportunities for expanded hands-on experience for service providers (i.e., some Community Health Nurses were able to spend a week in the program in Yellowknife); and
- Providing the opportunity for ultrasound services after the purchase of the portable ultrasound machine.[38]

The evaluation cited a number of lessons learned during the design, implementation and delivery of the program from 2002/03 to 2005/06 including: (1) the importance of having a dedicated coordinated who was able to focus on the program without being pulled in other directions as a result of competing priorities and responsibilities; (2) the importance of leadership recognizing the challenges that existed and supporting the need to address those issues; (3) the importance of partnerships at all levels to support the successful achievement of program goals; and (4) the importance of sustained funding to support the continuation of the program.[39]

A number of key stakeholders commented on the success of the program in helping to improve the continuity of care for women and the sharing of information between health care providers.

4.4 Maternity Care Committee

A Maternity Care Committee (MCC) was established with the initiation of the NWT Midwifery Program. The committee includes midwives, physicians and nurses. The MCC is an ongoing mechanism for communication and coordination of care between the local midwifery program and the regional centre (namely Stanton Territorial Hospital). The committee meets regularly, every two weeks by telephone, to discuss the care of women – who is term, normal or high risk at any time. This provides the regional centre with a clear picture of what is going on in the community and what type of care each woman needs or may need. Communication within the committee is open. Protocols are jointly agreed upon for continuing competency. A reciprocal relationship has been formed within the committee.

4.5 Midwifery in the NWT

The NWT currently supports the Fort Smith Health and Social Service Authority (FSHSSA) Midwifery Program. While Yellowknife has also been the site of a community-based program (Yellowknife Health and Social Service Authority (YHSSA) Midwifery Program), in the spring of 2011 a decision was made to suspend the program pending the recommendations of this review. The following sections provide an

[38] Northern Research and Evaluation. (2006). Final Evaluation of the Northern Women's Health Program: Summary Report. Prepared for the Coordinator, NWT Primary Health Care Transition Fund Initiative, Department of Health and Social Services, GNWT. September 30, 2006. P.3-4

[39] Northern Research and Evaluation. (2006). Final Evaluation of the Northern Women's Health Program: Summary Report. Prepared for the Coordinator, NWT Primary Health Care Transition Fund Initiative, Department of Health and Social Services, GNWT. September 30, 2006.

overview of both the Fort Smith and the Yellowknife programs. Additional information on health outcomes and costs associated with the Fort Smith program will be presented in Section 5.3 of this report.

4.5.1 Fort Smith Health and Social Service Authority (HSSA) Midwifery Program

BACKGROUND – TIMELINE[40,41]

- Prior to the medicalization of childbirth in Fort Smith in the early 20th century, birthing was considered a normal part of life with help and support for the process provided by family and traditional midwives.
- Birthing services were provided by nurses and physicians from 1914 to 1979 at St. Ann's Hospital and then at the Fort Smith Health Centre until 1995.
- As a consequence of decreasing numbers of physicians willing to provide obstetric care in the region during the early- to mid-1990s, birthing services were discontinued and women were required to deliver their babies in Yellowknife at Stanton Territorial Hospital.
- By 2000, more than half of childbearing families were turning to midwifery care (primarily pre- and post-natal, but also birthing services) offered outside of the health centre.
- As a result of community advocacy and through a process of community consultation it became obvious that the integration of midwifery services into the publicly-funded health care system would be required to help ensure the sustainability of the full scope of maternity care in Fort Smith.
- Two midwives were hired on April 11, 2005. The positions were initially funded through Primary Health Care Transition Funding. Now, one position receives core funding while another is supported through Territorial Health System Sustainability Initiative (THSSI).
- Fort Smith Health Centre midwifery-specific renovations completed December 2005.
- January 2006 marked the opening ceremony for the program.

LOCATION

The FSHSSA Midwifery Program operates out of the Fort Smith Health Centre (FSHC), a 25 in-patient bed accredited facility that also includes the Allied Health Services areas and offices (administration, social services, public health, midwifery led maternity care and coordinated home care), a medical clinic and an emergency ward, as well as the Northern Lights Special Care Home. The facility provides services to approximately 3000 individuals; the majority of whom reside in Fort Smith but some of whom are transient or reside in Fort Fitzgerald, Salt River and Peace Point.[42]

Within the Centre, the program has an allocated office space, a clinic room and a birthing room.[43]

[40] Paulette, L. (2007). Fort Smith Health and Social Services Authority Midwifery Program. *EpiNorth*. 19(1):7-9.
[41] Becker, G and Paulette, L. (n.d.). FSHSSA Midwifery Program: Outcomes April 1, 2005 to March 31, 2008. PowerPoint Presentation.
[42] FSHSSA. (2006). Registered Midwife – Job Description. Revised June 5, 2006.
[43] Becker, G and Paulette, L. (n.d.). FSHSSA Midwifery Program: Outcomes April 1, 2005 to March 31, 2008. PowerPoint Presentation.

CHOICE OF BIRTHPLACE

Clients have the option to birth in Fort Smith (FSHC and home), Stanton Territorial Hospital or in another setting. However, NWT will only cover the cost of medical travel to the nearest centre that provides the requisite medical services (specifically Yellowknife, Stanton Territorial Hospital) unless a client or her baby is deemed high risk and in need of special care elsewhere (e.g., Edmonton).[44]

The FSHSSA Midwifery Program has an Informed Choice of Birth policy that is meant to guide midwives in facilitating and documenting an informed choice process with their clients with respect to choice of birthplace and setting:

> Throughout the course of care, midwives facilitate an informed choice discussion about birth place and setting with each of the clients in a manner that is individualized and sensitive to changes in the woman's situation and experience. In accordance with the Standards and Authority policy, midwives recommend birth in a hospital with specialist services where the level of risk suggests that this would be most appropriate. [45]

STAFFING

The program continues to be staffed by two full-time registered midwives with locum midwives[46] hired to cover annual leave. Additionally, the program has at times received part-time and/or short-term support for administrative services.[47]

The program is based on a caseload model (as known as a continuity of care model) of midwifery care in which a woman has a specified (primary/lead) midwife during the pregnancy, labour, birth and the postpartum periods and a second midwife who covers time off.

The midwifery program is situated in the maternity program which is administered by the FSHSSA. The midwives report to the Director of Health Programs and Services for administrative purposes and reports to the Medical Director on clinical issues.[48]

TARGET POPULATION

The FSHSSA Midwifery Program is available to all pregnant women, new mothers and newborns in Fort Smith. The program accepts clients with uncomplicated 'low-risk' pregnancies as well as those with pregnancy complications and medical risk factors.[49]

[44] FSHSSA. (2009). A Place of Birth Handbook for Midwifery Clients.
[45] FSHSSA. (2005). FSHSSA Informed Choice of Birthplace.
[46] The use of locum midwives in the NWT is a relatively new practice.
[47] FSHSSA. (2011). FSHSSA Midwifery Program Annual Report to March 31, 2011, With Outcomes from April 1, 2005 to March 31, 2011.
[48] FSHSSA. (2006). Fort Smith Registered Midwife – Job Description.
[49] FSHSSA. (2011). FSHSSA Midwifery Program Annual Report to March 31, 2011, With Outcomes from April 1, 2005 to March 31, 2011.

Additionally, the program provides services to women who:

- Are temporary residents of Fort Smith (e.g., college students)
- Require episodic or short-term care for the management and follow-up of as miscarriage or referral for termination
- Require preconception care and other reproductive services
- Have come to Fort Smith from other regions specifically to deliver with a midwife in attendance[50]

The program was developed with the intent of providing service to a minimum of 70 pregnant women and new mothers as well as their infants and other family members each year.

RESPONSIBILITIES

Midwives working in the FSHSSA Midwifery Program are expected to fulfill the following responsibilities (and associated activities - not identified here):

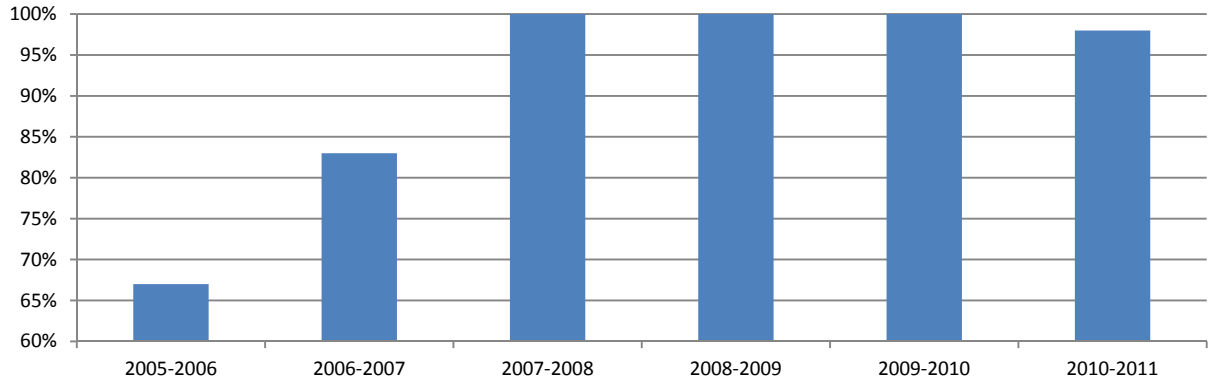
1. Provide primary midwifery care in accordance with the Midwifery Profession Act, the NWT Midwifery Practice Framework and other relevant regulations, standards, policies and guidelines to support health and well-being of childbearing women, infants and their families.
2. Plan, implement and evaluate community health promotion initiatives designed to help community members grow, make healthy choices and achieve optimum health potential.
3. Apply expert and specialized knowledge of community-based midwifery practice in the development, management and evaluation of midwifery services within an integrated service delivery model.
4. Participate in education and training activities and risk management initiatives designed to enhance client safety and ensure the competency of team members providing maternity and newborn care.[51]

PROGRAM PROFILE AND UTILIZATION

From April 2005 to March 31, 2011, a total of 244 birthing women (out of a total of 264) utilized midwifery services (meaning that during that time period, an average of 92% of all birthing women turned to midwifery for their maternity care) (refer to Figure 1). During this timeframe, 64.7% of birthing clients identified themselves as being of Aboriginal ancestry.

[50] FSHSSA. (2011). FSHSSA Midwifery Program Annual Report to March 31, 2011, With Outcomes from April 1, 2005 to March 31, 2011.
[51] FSHSSA. (2006). Fort Smith Registered Midwife – Job Description. Revised June 5, 2006.

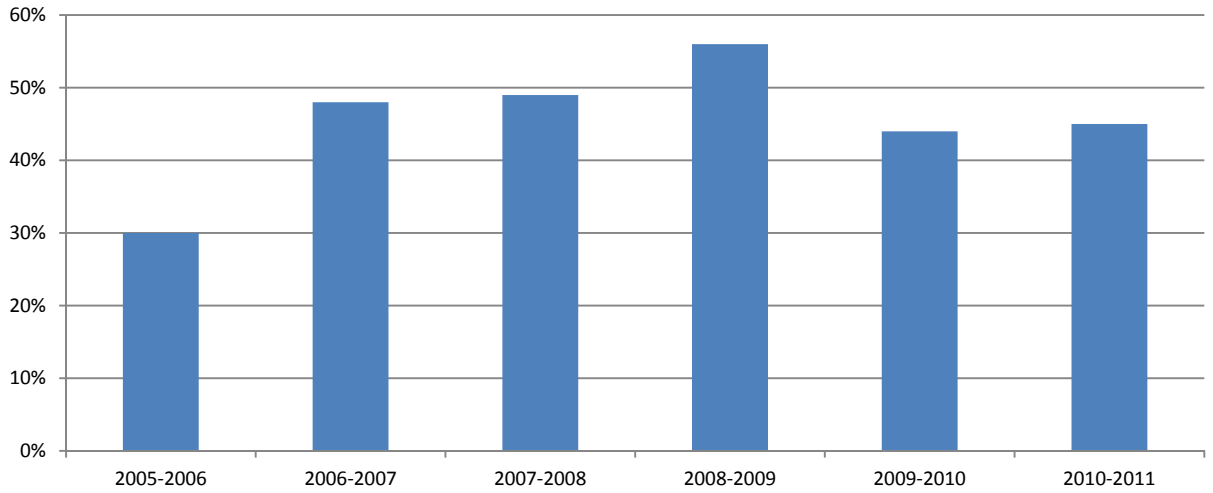
Figure 1: Percentage of Birthing Women Served by the FSHSSA Midwifery Program, 2005/06 - 2010/11



Indicator(s)	05/06	06/07	07/08	08/09	09/10	10/11
Utilization of service: # of birthing women served by the midwifery program / total # of birthing women in the community	23 / 34 (67%)	40 /48 (83%)	51 /51 (100%)	34 /34 (100%)	43 /43 (100%)	53 / 54 (98%)

The proportion of women who chose to birth in Fort Smith (of all the women using the Midwifery Program) has, over time, ranged from 30% to 56% (refer to Figure 2).

Figure 2: Percentage of Women who Birthed in Fort Smith using the FSHSSA Midwifery Program, 2005/06 - 2010/2011

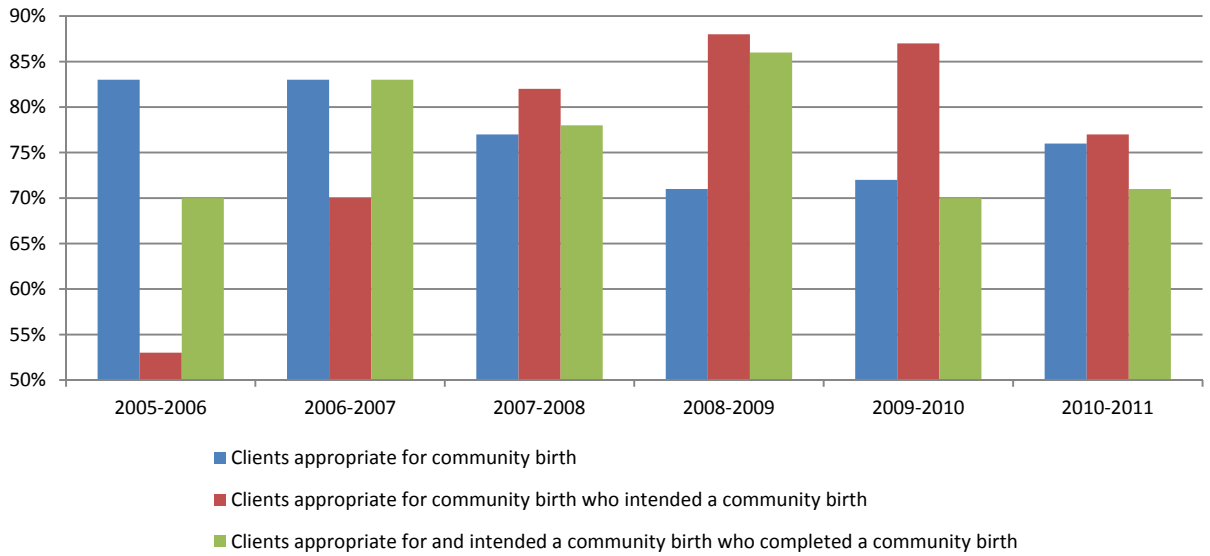


Indicator(s)	05/06	06/07	07/08	08/09	09/10	10/11
Total community births: # of women who birthed in Fort Smith (of all women using MWF program)	7 (30%)	19 (48%)	25 (49%)	19 (56%)	19 (44%)	24 (45%)

Figure 3 highlights the fact that since the start of the program, between 71% and 83% of the clients served by the program have been assessed by the Maternal Care Committee (MCC) as being appropriate for community birth (i.e., low risk maternity clients). Of those clients deemed appropriate for

community birth, 53% (first year of program – proportion increased significantly in subsequent years) to 88% indicated their intent to birth in the community (i.e., low risk maternity clients who expressed their decision in carrying out a community birth). Of those clients considered appropriate for community birth and who intended to birth in the community, 70% to 86% actually completed a community birth (i.e., low risk maternity clients who expressed desire to birth in the community and completed a birth in the community).

Figure 3: Percentage of Clients Appropriate for Birth in Fort Smith, Intended to Birth in Fort Smith and Completed Birth in Fort Smith, 2005/06 - 2010/11

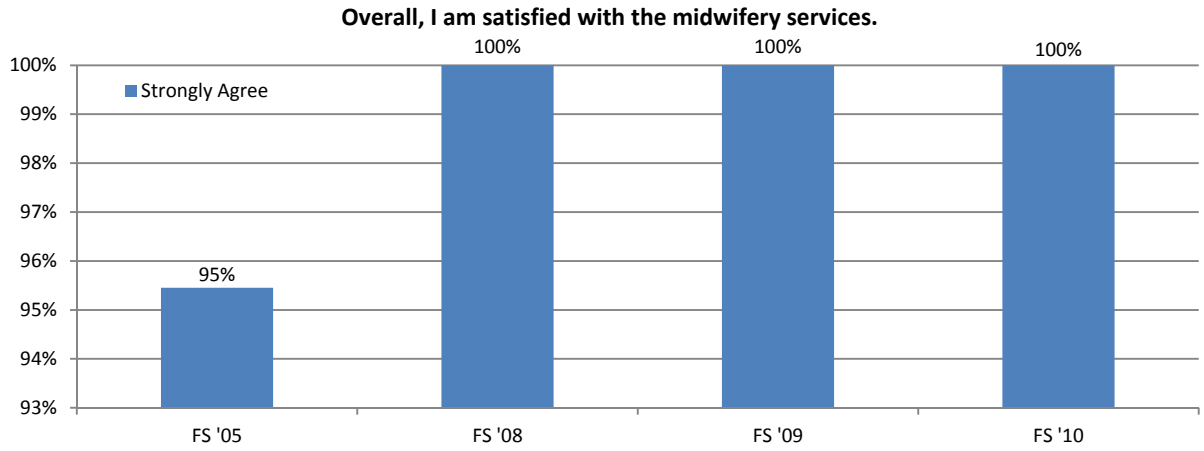


Indicator(s)	05/06	06/07	07/08	08/09	09/10	10/11
Clients Appropriate for community birth (as per MCC assessment/37 weeks)	19 / 23 (83%)	33 / 40 (83%)	39 / 51 (77%)	24 / 34 (71%)	31 / 43 (72%)	40 / 53 (76%)
Proportion of clients appropriate for community birth who intended a community birth: # of women appropriate for community birth (as per MCC assessment/37 weeks) who intended a community birth	10 /19 (53%)	23 / 33 (70%)	32 / 39 (82%)	21 / 24 (88%)	27 /31 (87%)	31 / 40 (77%)
Proportion of clients who were appropriate for and intended a community birth who completed a community birth: # of women who birthed in Fort Smith (of those appropriate for community birth at 37 weeks as per MCC review who intended a community birth)	7 / 10 (70%)	19 / 23 (83%)	25 / 32 (78%)	18 / 21 (86%)	19 / 27 (70%)	22 / 31 (71%)

PROGRAM SATISFACTION[52]

Information collected via the Midwifery Program Satisfaction Questionnaire[53] reveals that there is a very high level of satisfaction with the program. Figure 4 shows that overall, 98% of clients 'strong agreed' that they were satisfied with the midwifery services (n=112/114).

Figure 4: Overall Satisfaction Level with the FSHSSA Midwifery Program, 2005/06 – 2010/11



4.5.2 Yellowknife Health and Social Service Authority (HSSA) Midwifery Program

BACKGROUND - TIMELINE

- The YHSSA Midwifery Program was initiated in 2006 with the hiring of a midwife
- Six months later the position was vacant and remained so until the fall of 2007
- In February 2008, client care was again re-established
- Client care continued until December 2010
- Spring 2011 a decision was made by the YHSSA to suspend the program pending the findings of this review project

LOCATION

The YHSSA Midwifery Program operated out of an office in the Jan Stirling Building, located in the downtown area of Yellowknife. The office consisted of a clinic room as well as an area that served as both waiting room and an office. The midwife also practiced in the obstetrics unit of Stanton Territorial Hospital, client's homes and temporary living spaces (e.g., boarding homes).

[52] It was beyond the scope of this review to determine the level of satisfaction maternity clients have with family practitioners offering perinatal care in the NWT. As such, no comparison can be made.
[53] The Midwifery Program Satisfaction Questionnaire collects client feedback information that is intended to let midwives know what they are doing well and what can be improved upon. The questionnaire is structured such that the majority of questions are close-ended and provide a range scale ('Strongly agree', 'Agree', 'Disagree', and 'Strongly disagree', 'Excellent', 'Good', 'Fair' and 'Poor') while a few are open-ended allowing clients to express their experiences and opinions regarding the program

STAFFING

From February 2008 through to December 2010, the program was staffed by one registered midwife working a 0.8 full-time equivalent position (30 hours per week).[54] During the summer months, a student was hired to help with the administrative duties of the program. On call services were provided 24 hours a day, seven days a week.

TARGET POPULATION

The intent of the YHSSA Midwifery Program was to target a clientele composed of at risk, disenfranchised and/or disadvantaged individuals including:

- Single or teenage parents to be
- Aboriginal families
- Immigrant or English as a Second Language (ESL) families
- Families experiencing additional stressors (e.g., financial, housing, lifestyle issues, isolation, and/or mental health issues)
- Referral from another health care professional

The goal was for 50% of program participants to represent this cohort.

RESPONSIBILITIES

See Fort Smith responsibilities section above.

Without a second midwife or a second birth attendant as part of the Yellowknife program, birthing outside of the hospital setting was not an option . The limited staffing also resulted in a lower than normal caseload and an inability to offer all of the care identified within the legal scope of practice for NWT midwives.

PROGRAM PROFILE AND UTILIZATION

Over the three year period, a total of 96 women and their families received midwifery care (refer to Table 4). The caseload varied from 2-4 clients per month expecting to birth.

Table 4: Number of YHSSA Midwifery Program Clients, 2008 - 2011

Timeframe	Number of Clients
Year 1 (February 2008 – March 2009)	27
Year 2 (April 2009 – March 2010)	41
Year 3 (April 2010 – December 2010)	28
Year 4 (January 2011 – May 2011)	0
Total	**96**

[54] Although the program was suspended in May 2011, services halted in December 2010 due to the fact that the midwife went on medical leave from January to May 2011.

As a result of limited human resources and scheduled leave, there was more interest in the program than the program could accommodate[55] (e.g., in Years 1 through 4, a total of 100 women were declined service).

Overall, the age for clients ranged from 15 to 43 years with most falling into the 30-39 age cohort (50%), followed by the 20-29 age group (38%), 15-19 age cohort (4%) and those over 40 years (1%). The majority of clients resided in Yellowknife (89%) while the remainder lived in Fort Smith (7%), Edzo (2%), Ndilo (1%) and Fort Simpson (1%).

The large majority of clients were self-referred to the program (86%), with the rest being referred by another midwife (8%), a general practitioner (2%), a nurse practitioner (2%), a psychiatrist (1%) and a Social Worker (1%).

In total 36% (n=35/96) of program clients fulfill the target population characteristics, with some women fitting into more than one category (thus explaining the total number exceeding 35) (refer to Table 5).

Table 5: Priority Population Criteria

Criteria	Number (n=35)
Aboriginal heritage	11
Mental health issues	9
Midwifery referral	8
Single women	5
Teenagers	4
Isolation	2
Social Service involvement	2
New immigrant	1
English as a second language (ESL)	1

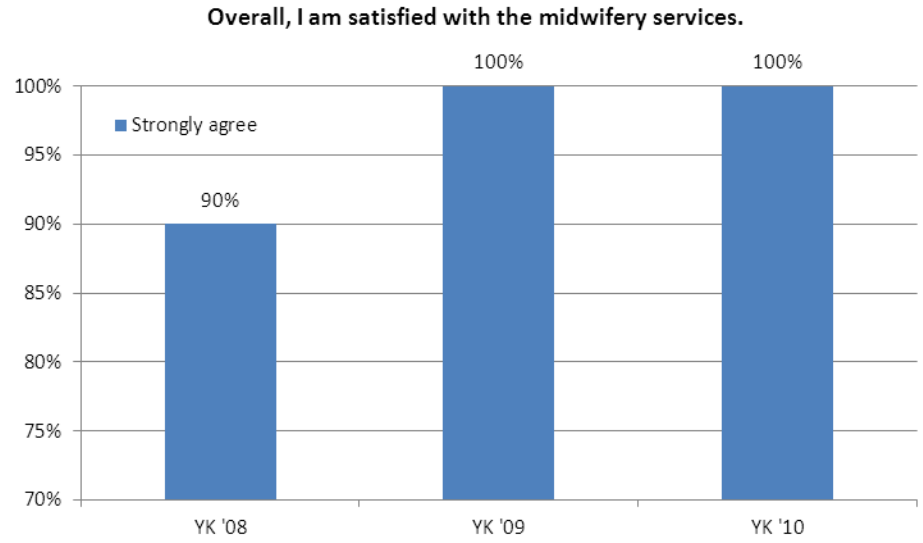
More than 60% of women who received midwifery care (59/96) birthed with the midwife present while approximately 19% gave birth while the midwife was away (18/96). For the remainder, 10 women experienced early pregnancy losses, six moved during their pregnancy, two moved to Yellowknife during their postpartum period and one woman who lived in Yellowknife, birthed elsewhere.

PROGRAM SATISFACTION

Information collected via the Midwifery Program Satisfaction Questionnaire reveals that there is a very high level of satisfaction with the program. Figure 5 shows that overall, 94% of clients 'strong agreed' that they were satisfied with the midwifery services (n=47/50).

[55] If a client was expected to birth in a month when the midwife was scheduled to be on leave, the client was not accepted.

Figure 5: YHSSA Midwifery Program Overall Satisfaction Level



5. CRITERIA FOR ASSESSMENT OF MIDWIFERY MODELS

Based on discussions with the Client and selected Steering Committee members, the following two variables were identified as the primary criteria upon which the models would be assessed:

- The degree to which the model promotes the cost effectiveness of perinatal care services.
- The degree to which the model impacts health outcomes of maternity care recipients.

5.1 Cost Effectiveness

There are very few studies that systematically examine the costs of midwifery-led care versus the costs of other types of maternity-led care due to the varying nature of health care within and between countries, inconsistencies in measurements of costs, and difficulties surrounding hidden costs associated with both midwife-led and other health professional-led models of maternity care.

5.1.1 Cochrane Review Findings

The Cochrane Review[56,57], however, identified five international studies that have been carried out with large enough populations to address these cost differences at a statistically significant level. The following estimated cost information was presented:

- Flint (1989) estimated the costs of antenatal care and admission to be 20% to 25% in cost savings for women in the midwife-led care group driven in large part due to differences in staff costs. There was also a reduction in the number of epidurals performed for women birthing with midwives (£19,360 versus £31,460 for care of 49 women).[58]
- Kenny (1994) observed slight cost savings for high-risk and low-risk women treated within a midwifery model with midwife-led care costing, on average, $1,122 per woman as opposed to $1,220 in the control.[59]
- Rowley (1995), based his research of the Australian national cost weights for diagnostic related care groups, found that the average cost per delivery was slightly higher in the standard care group ($3,475) when compared to a team-midwifery group ($3,324).[60]
- Young (1997) adopted an individual patient-based costing approach. Based on a median caseload of 29 women per midwife, it was determined that there was no statistically significantly difference in cost between medically-led and midwife-led care. However when the caseload was increased to 39 women per midwife, a lower cost was associated with antenatal care (however postnatal care costs remained higher for midwife-led care).[61,62,63]
- Homer (2001), taking into consideration all aspects of care (including salaries, equipment and goods and services), demonstrated a cost savings of $902 per woman when the team midwifery care was compared to standard care ($2,579 versus $3,483, respectively).[64]

In summation, the majority of these studies demonstrated small cost savings or equal cost associated with midwifery-based care. Attention should be paid to the fact that none of the above mentioned studies encompassed the practice of evacuating women out for birth and therefore boarding and travel costs have not been included in their analysis.

[56] Hatem M, Sandall J, Devane D, Soltani H, Gates S. 2009. Midwife-led versus other models of care for childbearing women (Review). Cochrane Database of Systematic Reviews Issue 3.
[57] Refer to Section 5.2 for further information on the Cochrane Review process.
[58] Flint C, Poulengeris P, Grant AM. The 'Know your midwife' scheme - a randomised trial of continuity of care by a team of midwives. *Midwifery* 1989;**5**:11–6.
[59] Kenny P, Brodie P, Eckerman S, Hall J. *Final Report. Westmead Hospital Team Midwifery Project Evaluation*. Sydney: University of Sydney, 1994.
[60] Rowley MJ, Hensley MJ, Brinsmead MW, Wlodarczyk JH. Continuity of care by a midwife team vs routine care during pregnancy and birth: a randomised trial. *Medical Journal of Australia* 1995;**163**:289–93.
[61] Young D, Lees A, Twaddle S. The costs to the NHS of maternity care: midwife-managed vs shared. *British Journal of Midwifery* 1997;**5**(8):465–72.
[62] Young D, Shields N, Holmes A, Turnbull D, Twaddle S. Aspects of antenatal care. A new style of midwife-managed antenatal care: costs and satisfaction.. *British Journal of Midwifery* 1997;**5**:540–5.
[63] No mention was made in this study of costs associated with intrapartum care The higher post-natal care costs may reflect more care which implies improved quality of care.
[64] Homer C, Davis G, Brodie P, Sheehan A, Barclay L, Wills J, et al. Collaboration in maternity care: a randomised controlled trial comparing community-based continuity of care with standard hospital care. *BJOG: an international journal of obstetrics and gynaecology* 2001**;108**:16–22.

5.1.2 Other Study Findings

CAM released a fact sheet in 2010 that included an overview of the cost effectiveness of midwifery-led care in Canada. The sheet notes that since midwifery services in the Canadian health care system are relatively new, information on the cost-effectiveness of midwifery in Canada is still limited. However, information from three programs/pilot studies was highlighted:[65]

- A recent pilot study (2010) comparing the costs of Alberta participants involved in a midwifery integration project and individually matched women (criteria: antenatal risk score, maternal age within 5 years, parity and postal code) who received standard perinatal care (control group) during the same time period found that midwifery care resulted in an average saving of $1,172 per course of care, without adversely affecting maternal or neonatal outcomes.[66,67]
- Evaluation of the Ontario midwifery program by the Ontario Ministry of Health and Long-Term Care in 2003 estimated that the cost to the health care system of a midwife-attended birth in hospital was about $800 less than a birth with a family physician. For a midwife-attended birth at home, the cost was about $1,800 less. Savings were due to lower intervention rates (e.g., caesarean section rates were found to be 30% lower for midwives than family practitioners and episiotomy rates were less than half) , fewer re-admissions to hospital (65% lower for midwives than other providers), and shorter hospital stays double the rate of early discharges for low risk patients). The study also noted additional, broader savings to the health care system, including reduced nursing staff time, reduced emergency room visits, and reduced use of walk-in clinics. Moreover, the study makes reference to the fact that midwifery leads to direct savings for hospitals. They provide an example reported in The Ottawa Citizen, in which the Ottawa Hospital estimates that a midwife-assisted birth costs the hospital about $450 while a physician-assisted birth costs $1,400.[68]
- A study of Quebec midwifery pilot projects compared the cost of midwifery services in birth centres to services provided by physicians. A total of 1,000 midwifery clients who gave birth between January 1995 and July 1996 were matched (based on socio-demographic characteristics and obstetric risk) with 1,000 clients under the care of a physician. Overall, the average cost per client amounted to $2,294 (range: $2,062-2,930)in the midwifery group and $3020 (range: $3,016-3,027) in the physician group. The difference in cost was attributed to more frequent use of physician services and longer and more expensive stays in hospitals than in birth centres.[69] However, a more sensitive analysis of the data showed that the upper limits of

[65] CAM. (2010). Midwifery Models and Outcomes in Canada. P.2. http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_FACT_SHEET_Models_Outcomes_ENG_July_2010.pdf

[66] "Midwives were paid $1995 from the research grant for each course of care. If payment to midwives was publicly funded at that rate, the average cost per course of care would increase to $4445, and the difference between midwifery care and standard care would be reduced to $1172 per course. With a 6% home birth delivery rate and 40 000 births per year in Alberta, this would result in yearly provincial savings of over $2.8 million". P.653

[67] O'Brien B, Harvey S, Somerfeldt S, Beischel S, Newburn-Cook C, Schopflocher D: *Comparison of Costs and Associated Outcomes Between Women Choosing Newly Integrated Autonomous Midwifery Care and Matched Controls: a Pilot Study.* Journal of Obstetrics and Gynaecology Canada 32:7 (July 2010) p.653.

[68] Association of Ontario Midwives: Benefits of Midwifery to the Health Care System (May 2007)

[69] Reinharz D, Blais R, Fraser W, Contandriopoulos A, L'Equipe d'Evaluation des Projets-Pilotes Sages-Femmes. *Cost-effectiveness of midwifery services vs. medical services in Quebec.* Canadian Journal of Public Health 91:1 (2000)

the possible cost per midwifery client ($2,930) is only slightly less than the average cost per physician client ($3,020).

While the Canadian data shows a cost savings associated with midwifery care, these findings should be interpreted cautiously given the limitations noted at the start of this section.

It is important to note that it is crucial that a midwife's caseload is sufficiently large enough to ensure optimal efficiency and sustainability of the program. If the services are under-utilized the cost per maternity increases and will compare less favourably to other models of care.[70]

5.2 Health Outcomes

5.2.1 Cochrane Review Findings

The Cochrane Collaborations was established in 1998 to help health care providers, policy-makers, patients, and their advocates and carers make well-informed decisions about health care services available to them. This is achieved by carrying out systematic reviews by topical experts on the best available research. Authors represent world leaders in their fields and the collaboration is an independent and democratic entity that strives to support evidence-based decision making.[71] In 2009, the Cochrane Pregnancy and Childbirth Group collaborated to review midwife-led versus other types of maternity-led care for childbearing women.

The international review identified 54 citations relating to 31 studies; of these, 11 trials including 12,276 women were included in the review. Included studies represented Australia, Canada, New Zealand and the United Kingdom. Two studies detailed a caseload model of care while nine represented team models of care, seven studies were designed to compare midwife-led models of care to shared models of care, three compared midwife-led to medical-led models and one compared midwife-led care to various options for care.[72] Authors of the report have gone to extensive efforts to ensure the accuracy of the report, including, but not limited to contacting authors of included trials and omitting trials that did not adhere to their predefined inclusion criteria.[73]

Table 6 represents the outcome measures in which midwifery-led care demonstrated statistically significant differences than those represented in other models of care for childbearing women and their infants. The review identifies 10 out of 39 outcome measures that demonstrated statistically significant differences. While mean length of neonatal hospital stay is shorter for midwifery-led care, the information upon which it is based is not robust enough to state the findings are significant.

[70] Devane, D., M. Brennan, C. Begley, M. Clark, D. Walsh, J. Sandall, P. Ryan, P. Revill, C. Normand (2010). Socioeconomic Value of the Midwife: A Systematic Review, Meta-analysis, Meta-synthesis, and Economic Analysis of Midwife-led Models of Care. Royal College of Midwives: London.
[71] The Cochrane Collaboration. About us available at http://www.cochrane.org/about-us
[72] Sandall, Hatem M., D. Deane, H. Soltani, and S. Gates (2009). Midwife-led versus other models of care for childbearing women (Review). *The Cochrane Library* 3.
[73] Devane, D., M. Brennan, C. Begley, M. Clark, D. Walsh, J. Sandall, P. Ryan, P. Revill, C. Normand (2010). Socioeconomic Value of the Midwife: A Systematic Review, Meta-analysis, Meta-synthesis, and Economic Analysis of Midwife-led Models of Care. Royal College of Midwives: London.

Table 6: Outcomes Associated with Midwifery-led Models of Care versus Other Models of Care

Outcome Measures	Statistically Significant		Number
	more likely	less likely	
Antenatal			
Antenatal hospitalization		X	five trials (n=4,337)
Fetal loss and neonatal death less than 24 weeks		X	eight trials (n=9,890)
Labour			
No interpartum analgesia/anesthesia	X		five trials (n=7,039)
Regional analgesia (epidural/spinal)		X	eleven trials (n=11,892)
Attendance by known carer	X		six trials (n=5,525)
Instrumental vaginal birth (forceps/vacuum)		X	ten trials (n=11, 724)
Spontaneous vaginal birth	X		nine trials (n=10,926)
Episiotomy		X	eleven trials (n=11, 872)
Mean length of neonatal hospital stay		Shorter	two trials (n=259)
Maternal Postpartum			
Breastfeeding initiation	X		one trial (n=405)
High perceptions of control during labour and childbirth	X		one trial (n=471)

Each of these statistically significant, positive outcomes associated with the delivery of midwifery care are discussed below.

ANTENATAL HOSPITALISATION

The Cochrane Review indicated that women were less likely to require antenatal hospitalization if they received their care within a midwifery-led model. Antenatal hospitalization in Canada from 1991-2003 was most commonly the result threatened preterm labour, hypertensive disorders, hemorrhage, severe vomiting, mental disorder, genitourinary complications, intestine, liver or gallbladder disorders, diabetes, cervical incompetence, known or suspected fetal problems, premature rupture of membranes, and abdominal pain. From 2002-2003, the top five causes for non-delivery antenatal hospitalization in Canada were threatened preterm labour (23.6%), antenatal hemorrhage (10.1%), hypertensive disorders (8.1%), severe vomiting (7.0%), and diabetes (5.8%).[74]

Along with the clear physical risks associated with antenatal hospitalization studies have also demonstrated a great psychological cost to women who are hospitalized prior to giving birth including feelings of powerlessness, fear, anxiety, guilt, and uncertainty.[75] It should be noted however that antenatal hospitalization rates can be mitigated by antenatal home care[76] and higher rates of antenatal hospitalization within physician-led models may also be driven by patient composition.

[74] Liu, S., Heaman, M., Sauve, R., Liston, R., Reyes, F., Bartholomew, S., Young, D., and Kramer, M.S. (2007). An analysis of antenatal hospitalization in Canada, 1991-2003. *Maternal and Child Health Journal* 11(2): 181-187.
[75] Markovic, M., Manderson, L., Schaper, H., and Brennecke, S. (2006). Maternal identity change as a consequence of antenatal hospitalization. *Health Care for Women International* 27: 762-776.
[76] Salvador, A., Davies, B., Fung, K.F.K., Clinch, J., Coyle, D., and Sweetman, A. (2003). Program evaluation of hospital-based antenatal home care for high risk women. *Hospital Quarterly* Spring 67:73.

FETAL LOSS OR NEONATAL DEATH LESS THAN 24 WEEKS

The Cochrane Review indicated that women who relied on midwives as their primary care provider experienced fewer incidences of fetal loss or neonatal death with fetuses less than 24 weeks. It is often difficult to assess the causes for fetal loss in earlier stages of pregnancy, although some evidence indicates that antenatal screening for congenital anomalies has resulted in an increase in termination of pregnancy.[77]

REGIONAL ANALGESIA/ANAESTHESIA AND NO INTERPARTUM ANALGESIA/ANESTHESIA

Women who birthed with a midwife were less likely to receive regional anesthesia and analgesia. While regional anesthesia and analgesia is generally safe to the mother and child, some maternal and fetal consequences have been noted. Maternal complications include hypotension (a reduction in the mother's blood pressure) which in severe cases has been shown to decrease in utero-placental blood flow which could impede oxygen flow to the baby, itchiness, drowsiness, shivering, fever, urinary retention (which may necessitate the insertion of a catheter), accidental puncture of the dura, and severe headache.[78] Epidural analgesia has also been suggested to impact the course of labour causing mal-positions of the fetal head, prolonged labour, increased use of oxytocin and instrumental deliveries. Suggested fetal implications include lower cord pH values, greater need for fetal resuscitation and lower infant blood sugar in the first hours after birth.[79] A systematic review of the literature found evidence for increased incidences of instrumental delivery and a slight (but not statistically significant) increase in the rates of caesarean sections. No statistically significant differences were noted for maternal satisfaction with plain relief, long-term backache or immediate adverse effects on the infant.[80] One of the contributing factors to decreased reliance on regional analgesia/anesthesia for mothers utilizing midwifery-led care is that women who receive one-to-one support during labour were less likely to give birth without the use of analgesia or anesthesia.[81]

INSTRUMENTAL BIRTH

Midwifery-led models of care were also associated with a decreased likelihood of instrumental (forceps and vacuum) delivery. Unintended consequences are often tied to user familiarity with tools used to assist birth. Overall instrumental delivery results in significant increases in perineal trauma, reported sexual problems, perineal pain and bowel problems (i.e., incontinence of flatus and/or feces).[82]

---

[77] Smith, L.K., Budd, J.L.S., Field, D.J. and Draper, E.S. (2011). Socioeconomic inequalities in outcome of pregnancy and neonatal mortality associated with congenital anomalies: population based study. British Medical Journal 343:1-9

[78] Eberle, R.L., and Norris, M.C. (1996). Labour analgesia. A risk-benefit analysis. *Drug Safety* 14(4): 239-51; Liang, C.C., Wong, S.Y., Tsay P.T., Chang S.D., Tseung, L.H., Wang, M.F. (2002). The effect of epidural analgesia on postpartum urinary retention in women who deliver vaginally. *International Journal of Obstetric Anesthesia* 11:164-9; Liberman, E. and O'Donoghue C. (2002). Unintended effects of epidural analgesia during labour. *American Journal of Obstetrics and Gynecology* 186(5): S31-S64.

[79] Anim-Somuah, M., Smyth, R., and Howell, C. (2005). Epidural versus non-epidural or no analgesia in labour. The *Cochrane Database of Systematic Reviews*, Issue 4 Art. No.: CD000331.

[80] Anim-Somuah, M., Smyth, R., and Howell, C. (2005). Epidural versus non-epidural or no analgesia in labour. The *Cochrane Database of Systematic Reviews*, Issue 4 Art. No.: CD000331.

[81] Hodnett, E.D., Gates, S., Hofmeyr, G.J., Sakala, C. (2007). Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD003766

[82] Thompson, J.F., Roberts, C.L., Currie, M., and Ellwood, D.A. (2002). Prevalence and persistence of health problems after childbirth: Associations with parity and method of birth. *Birth* 29(2): 83-94.

EPISIOTOMY

Episiotomy is a surgical incision to increase the vaginal outlet to facilitate birth and is one of the most common surgical procedures performed worldwide.[83] A systematic review of episiotomy recommends restrictive rather than routine use[84] for while the procedure can infer some advantages (including lowering the risk of severe perineal trauma, posterior perineal trauma, need for suturing perineal trauma and healing complications at seven days), recent studies have demonstrated that women who underwent episiotomies experienced greater and more persistent pain between one and six weeks, had more symptoms of urinary incontinence at three months[85] and were at an increased risk of spontaneous obstetric laceration in subsequent deliveries.[86]

ATTENDANCE AT BIRTH BY KNOWN CARER

There are two main camps of thought on this issue. While there is a general consensus that continuity in care provided is important, authors disagree as to how this consistency is to be achieved. Some scholars stress the importance of a known care provider, while others have demonstrated importance in knowledge transfer/continuity. The first body of literature attests that attendance at birth by a known care provider has been recognized as one of the benchmarks of quality midwifery care.[87] Continuity of care models built into Canadian midwifery systems attempt to balance having a known care provider through antenatal, intrapartum and postpartum care, with creating sustainable work systems for midwives, usually within group practices, with each woman meeting no more than four midwives. In the international literature antenatal continuity is associated with a decrease in likelihood of prenatal hospital admissions, and increased attendance at prenatal education programs.[88,89] The most significant impact on continuity of care on clinical outcomes has been observed in the intrapartum period where attendance by a known care provider results in decreased use of pharmacologic pain relief, electronic fetal monitoring oxytocin augmentation, episiotomy and instrumental delivery. In Sweden incidences of transfers from home to hospital were higher when women were attended by a midwife who did not provide antenatal care to them. [90] Women with known attendants were more likely to have a shorter second stage of labour and a spontaneous vaginal delivery[91,92,93,94] Neonatal benefits included a

[83] Carroli, G. and Mignini, L. (2009). Episiotomy for vaginal birth. *Cochrane Database of Systematic Reviews* 1: CD000081.

[85] Chang, S-R., K-H. Chen, H-H Lin, Y-M Chao and Y-H Lai (2011). Comparison of the effects of episiotomy and no episiotomy on pain, urinary incontinence, and sexual function 3 months postpartum: a prospective follow-up study. *International Journal of Nursing Studies* 48: 409-418.

[86] Alperin, M., Krohn, M.A. and Parviainen, K. (2008). Episiotomy and increase in the risk of obstetric laceration in a subsequent vaginal delivery. *Obstetrics and Gynecology* 111(6): 1274-1278.

[87] Evans, J. (2010) Midwifery 2020 Programme: Measuring Quality Workstream Final Report 31 March. Available at: http://www.midwifery2020.org/documents/2020/Measuring_Quality.pdf Accessed Feb 6, 2012.

[88] Sandall, J, Hatem, M, Devane, D, Soltani, H, Gates, S. (2009) Discussions of findings from a Cochrane review of midwife-led versus other models of care for childbearing women: continuity, normality and safety. *Midwifery* 25:8-13.

[89] Health Canada. (2000). Family-centred maternity and newborn care: national guidelines. Minister of Public Works and Government Services, Ottawa, Available online at http://www.phac-aspc.gc.ca/dca-dea/publications/fcmc00-eng.php

[90] Lindgren, HE, Hildingsson, IM, Christensson, K, Radestad, IJ. (2008) Transfers in planned home births related to midwife availability and continuity: a nationwide population-based study. *Birth* 35:9-15.

[91] Sandall, J, Hatem, M, Devane, D, Soltani, H, Gates, S. (2009). Discussions of findings from a Cochrane review of midwife-led versus other models of care for childbearing women: continuity, normality and safety. *Midwifery* 25:8-13.

[92] Hicks, C, Spurgeon, P, Barwell, F. (2003) Changing childbirth: a pilot project. Journal of Advanced Nursing 42:617-628.

decreased likelihood of resuscitative measures being required and an increase in initiation of breastfeeding.[95,96]

Other authors reject the desire to amalgamate the concepts of continuity of care with continuity of carer. While the two can be intimately connected it is also possible to achieve patient satisfaction and continuity of care without the availability of a fixed health care provider. 'Continuity of care' refers to care that is not fragmented and supported by good communication and consistent policies within and between all caregivers. Continuity of carer, on the other hand, directly relates to the number and consistency of care providers (usually ideally envisioned as one or two health care providers).[97] Studies looking at the relationship between the presence of a known care provider at birth and maternal satisfaction suggest that the value does not lie in continuity for its own sake (i.e., the presence of a known birth attendant), but rather is contingent on the consistency of care provided (i.e., having a care provider who is familiar with your medical history and provide quality care). While antenatally many women state that being cared for in labour by someone they know is important, postnatally most of those individuals who did not have this experience found that it did not matter.[98] It is suggested that instead of placing the emphasis on the consistency of the individual providing care, the onus should be placed on women's experience of the quality of the care they received (for example whether she ever experienced conflicting/confusing/inconsistent advice, whether there was someone available when she required it, whether she felt adequately informed, whether she felt in control of what her caregivers did, and whether care was felt to be deficient in any way).[99]

SPONTANEOUS VAGINAL BIRTH

The Cochrane Review indicates that patients who birth utilizing midwifery services are more likely to experience a spontaneous vaginal birth. This is driven by the higher rates of induction and augmentation experienced by women birthing with midwives in comparison to other care providers.[100] It is very

[93] McLachlan H, Forster, DA, Davey, MA, Lumley, J, Farrell, T, Oats, J, Gold, L, Waldenstrom, U, Albers, L, Biro, MA. (2008) COSMOS: comparing standard maternity care with one-to-one midwifery support: a randomized controlled trial. *BMC Pregnancy and Childbirth* 8:35-46.
[94] Carolan, M, Hodnett, E. (2007) 'With woman' philosophy: examining the evidence, answering the questions. Nursing Inquiry 14:140-152.
[95] Sandall, J, Hatem, M, Devane, D, Soltani, H, Gates, S. (2009) Discussions of findings from a Cochrane review of midwife-led versus other models of care for childbearing women: continuity, normality and safety. *Midwifery* 25:8-13.
[96] Health Canada. Family-centred maternity and newborn care: national guidelines. (2000). Minister of Public Works and Government Services, Ottawa, available online at: http://www.phac-aspc.gc.ca/dca-dea/publications/fcmc00-eng.php
[97] Sandall, J., Devane, D., Soltani, H., Hatem, M., and Gates, S. (2010). Improving quality and safety in maternity care: the contribution of midwife-led care. *Journal of Midwifery and Women's Health* 55: 255-261; Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196.
[98] Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196.
[99] Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196.
[100] Janssen, P.A., Lee, S.K., Ryan, E.M., Etches, D.J., Farquharson, D.F., Peacock, D., and Klein, M.C. (2002). Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia. Canadian Medical Association Journal 166(3): 315-323; Hutton, E.K., Reitsma, A.H., and Kaufman, K. (2009). Outcomes associated with planned home and planned hospital births in low-risk women attended by midwives in Ontario, Canada, 2003-2006: A retrospective cohort study. *Birth* 36(3):180-189; Janssen, P.A., Sexall, L., Page,L.A., Klein, M.C., Liston, R.M. and Lee, S.K (2009). Outcomes of planned home birth with registered midwife versus hospital birth with midwife or physician. Canadian Medical Association Journal 181(6-7): 377-383.

difficult to obtain comparative statistics on the rates of augmentation as they are often differentially defined (i.e. from breaking of water to administration of labour-inducing drugs).

BREASTFEEDING INITIATION

While there are inherent challenges to assessing the long term health benefits of breastfeeding (i.e., establishing adequate duration, socioeconomic differences associated with breastfeeding adoption, and isolating effects of that are driven by the consumption of breast milk) numerous studies have found advantages to exclusively breastfeeding. Breastfeeding has been demonstrated to protect against infectious disease through secretory IgA antibodies, protective factors found in mother's milk (for example lactoferrin and oligosaccharides) and the transfer of numerous cytokines and growth factors.[101] Studies have also demonstrated protective effects against diabetes[102] and obesity[103] in breastfeed children. Reasons for this vary from the optimal caloric intake associated with breast milk to patterns of overfeeding associated with formula.[104] While the duration of nursing required to protect against preschool obesity is still debated researchers generally agree that exclusive breastfeeding for at least three months is optimal.[105] Finally research has also demonstrated a correlation between breastfeeding and improved cognitive development.[106]

HIGH PERCEPTIONS OF CONTROL DURING LABOUR

High control and support during labor are associated with improved birth outcomes and increased maternal satisfaction with the birth experience.[107] There is also increasing evidence that negative birth experiences may be associated with postnatal symptoms of post-traumatic stress disorder (PTSD) and depression.[108]

---

[101] Duijts, L., M.K. Ramadhani and H.A. Moll (2009). Breastfeeding protects against infectious disease during infancy in industrialized countries. A systematic review. *Maternal and Child Nutrition* 5: 199-210

[102] Pettitt. D.J, Foreman, M.R., Hanson, R.L., Knowler, W.C. and Bennett, P.H. (1997). Breastfeeding and incidence of non-insulin-dependent diabetes mellitus in Pima Indians
The Lancet 350(9072): 166-168.

[103] Feig, D.S., L.L. Lipscombe, G. Tomlinson, and I. Blumer (2011). Breastfeeding predicts the risk of childhood obesity in multi-ethnic cohort of women with diabetes. *The Journal of Maternal-Fetal and Neonatal Medicine* 24(3): 511-515; Arenz, S., R. Rockerl, B. Koletzko, and R. Von Kries (2004). Breast-feeding and childhood obesity – a systematic review *International Journal of Obesity and Related Metabolic Disorders* 28: 1247-1256.

[104] Feig, D.S., L.L. Lipscombe, G. Tomlinson, and I. Blumer (2011). Breastfeeding predicts the risk of childhood obesity in multi-ethnic cohort of women with diabetes. *The Journal of Maternal-Fetal and Neonatal Medicine* 24(3): 511-515; Arenz, S., R. Rockerl, B. Koletzko, and R. Von Kries (2004). Breast-feeding and childhood obesity – a systematic review *International Journal of Obesity and Related Metabolic Disorders* 28: 1247-1256.

[105] Twells, L. Adn L.A. Newhook (2010). Can exclusive breastfeeding reduce the likelihood of childhood obesity in some regions of Canada. Canadian Journal of Public Health 101(1): 36-39.

[106] Kramer, M.S., F. Aboud, E. Mironova, I. Vanilovich, R.W. Platt, L. Matush, S. Igummov, E. Fombonne, N. Bogdanocivh, T. Ducruet, J-P. Collet, B. Chalmers, E. Hodnett, S. Davidocsky, O.Skugarevsky, O. Trofimovich, L. Kozlova, and S. Shapiro (2008). Breastfeeding and child cognitive development: New evidence from a large randomized trial. Archives of General Psychiatry 65(5): 578-584.

[107] Ford, E., Ayers, S. and Wright, D.B. (2009). Measurement of maternal perceptions of support and control in birth (SCIB). *Journal of Women's Health* 18(2): 245-252.

[108] Ayers S, and Pickering A.(2001) Do women get posttraumatic stress disorder as a result of childbirth? A prospective study of incidence. *Birth* 2:111–118; Righetti-Veltema M, Conne-Perreard E, Bousquet A, and Manzano
J. (1998) Risk factors and predictive signs of postpartum depression.J Affect Disord 49:167–180.

MATERNAL SATISFACTION

The Cochrane Review also assessed maternal satisfaction as a component of their review. While the review cautioned against the strength of their findings (in part driven by variance in consistency in conceptualization of satisfaction, poor response rate and inconsistencies in scale, timing and instruments of analysis) there was enough evidence to indicate increased material satisfaction in midwife-led models when compared to other models of care.

5.2.2 Other Study Findings

In addition to the findings of the Cochrane review, a number of other studies have examined the health benefits and risks associated with birth aided by midwives within rural and remote areas. The following section highlights the findings of these studies. It should be noted that the comparison between Fort Smith and Hay River (found below) supports these findings.

IMPROVED SOCIAL FUNCTIONING AND ENHANCED AUTONOMY

The establishment of local birthing centres as a component of community development have been associated with decreases in domestic violence and sexual assaults as well as increases in male investment in newborn and partner care.[109] There is also evidence of improved feelings of dignity and self-esteem.[110] Research has further demonstrated that women who selected a midwife as their primary birth attendant reported feeling more knowledgeable about the birth process, having more control over their birth attendant's decisions, feeling more satisfied with their delivery decisions, and being more autonomous in their pregnancy decision making.[111]

BRINGING BIRTH CLOSER TO HOME

Evacuation for birth has been documented as a stressful event as it removes birthing mothers from their home communities, supports, family and children. Recent reports demonstrate that women residing in communities without access to local maternity services (defined as services provided by at least one specialist) were 7.4 times more likely to experience stress regarding location of birth than women with local services available.[112] This outcome was further articulated in a series of in-depth interviews with Northern residents.[113] Respondents noted, almost uniformly, that they viewed the act of being removed

[109] Van Wagner, V. et al. (2007). Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada. *Journal of Midwifery and Women's Health* 52(4): 384-391; Kildea, S. and Van Wagner, V. (2012). 'Birthing on Country': Maternity Service Delivery Models, A Review of the Literature.
[110] Kildea, S. and Van Wagner, V. (2012). 'Birthing on Country': Maternity Service Delivery Models, A Review of the Literature
[111] Bodner-Adler, Barbara, K. Bodner, O. Kimberger, P. Lozanov, P. Husslein, and K. Mayerhofer (2004). Influence of the birth attendant on maternal and neonatal outcomes during normal vaginal delivery: A comparison between midwife and physician management. *Wien Klin Wochenschr* 116(11-12): 379-384.
[112] Kornelsen, Jude, Stoll, Kathrine and Grzybowski, Stephan (2011). Stress and anxiety associated with lack of access to maternity services for rural parturient women. *Australian Journal of Rural Health* 19:9-14.
[113] Becker, Gisela (2006). Women's Experiences of Culturally Safe Birthing with a Midwife in a Remote Northern Community. Master of Arts Thesis: Thames Valley University, Faculty of Health and Human Sciences; Chamberlin, M., Nair, R., Nimrod, C., Moyer, A., and England J. (1998). Evaluation of a Midwife Birthing Centre in the Canadian North. International Journal of Circumpolar Health. 57(Suppl. 1):116-120; Kornelson, J. and Grzybowski, S. (2005) Rural Women's Experiences of Maternity Care: Implications for Policy and Practice. Library and Archives Canada Cataloguing in Publication: Ottawa; O'Neil, J.D., Kaufert,

from their community to birth in a southern hospital as a stressful event due to the absence of their family and community members as well as the increased financial burden of telephone calls and the cost of travel for fathers to accompany their partners. These interviews also revealed that birth in the community is important in order to remain connected to family and community members, but also to secure the position of the newborn infant as a member of the community. In one NWT study, a community member is quoted as saying the following:

> I felt safe in the community. I thought that my midwife would make the right decision at the right time. I mean the midwives are as much interested in a safe outcome as the parents are (laughs). I thought if I have to be medivaced (air-lifted) to Yellowknife so it will be. That's part of life in a northern community (08/05-2).[114]

Findings from studies carried out on the Inuulitsivik midwifery services in Nunavik reveal that evacuation is viewed by communities as recreating the trauma and social dislocation of the residential school policy (i.e., viewed as a colonialist approach to health care). Taking birth out of the community is considered a symbol of disrespect and neglect. Moreover, evacuation is associated with loss of autonomy, poor diet, substance use, family stress, lack of information, lack of 'tender loving care' and higher rates of intervention. On the other hand, birth in the community is viewed as: (1) building capacity in the community; (2) restoring skills and pride; (3) building family and community relationships and intergenerational support and learning; (4) a model of respect for traditional knowledge; and (5) promoting health behaviours. [115]

The return of birth to Fort Smith has resulted in lower rates of caesarean section. Figure 6 reveals that the caesarean section rate for Fort Smith (14.3%) is lower than the territorial rate (21.3%) and is almost half the national average (26.9%).[116] Caesarean sections are associated with a number of risk such as maternal infection and blood loss as well as possible injury to the infant during the procedure. Additional health outcome comparisons can be found in Section 5.3.

IMPROVED HEALTH PROMOTION AND DISEASE PREVENTION

There is little academic evidence to support the direct link between midwifery care and improved success- (compared to other maternity care providers) in relation to disease prevention and health promotion strategies. This dearth of data is not the result of a lack of support for the connection, but rather, reflects a difficulty making positive correlations between the two factors when both are influenced by a number of determinants. That said evidence collected for this review and expansion project indicates that midwifery care has the potential to lead to reductions in alcohol and drug

P., and Postl, B. (1990). Final Report. Study of the Impact of Obstetric Evacuation of Inuit Women and their Families in the Keewatin District, NWT. NHRDP, Ottawa.

[114] [114] Becker, Gisela (2006). Women's Experiences of Culturally Safe Birthing with a Midwife in a Remote Northern Community. Master of Arts Thesis: Thames Valley University, Faculty of Health and Human Sciences; Chamberlin, p.59.

[115] van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].

[116] FSHSSA. (2011). FSHSSA Midwifery Program: Annual Report to March 31, 2011. Comparison data from "2010 CIHI Health Indicators". CIHI 2010.

consumption, cigarette smoking, and other high risk behaviors as well as improvements in health screening (for conditions like preeclampsia and diabetes) and disease prevention strategies (breastfeeding initiation, screening for preexisting health conditions, vaccination, and monitoring of fetal growth). Many of these factors were attributed to improved continuity of care and an increased number of prenatal, post-natal and newborn visits.

5.2.3 Risk

As has been articulated within this report, there is significant support by the SOGC and the CMA to return birth to Aboriginal, rural and remote communities. However, concerns about the safety associated with remote maternity care still serve as a barrier to the implementation of community-based maternity programs. To date there is limited data available to quantifiably address perceived safety issues. The evidence available is reliable but limited population sizes make analysis through statistical survey or other quantitative measures difficult. Additionally, confounding factors that may increase risk during pregnancy - for example, maternal age, parity, educational level, household income, ethnicity, lone parent status, previous complications with pregnancy and pre-existing health conditions - make interpreting data from local birthing centres problematic.

One of the most comprehensive studies of birth outcomes in the Canadian north was conducted on the Inuulitsivik maternity services in Nunavik, Quebec. Data collected from 2000-2007 supports the premise that safe care can be provided in remote communities and in those locales without caesarean section capacity. This research indicated that there may be a slightly greater risk of mortality of very preterm babies for women living in remote communities related to distance from a neonatal intensive care unit (NICU). It is important to caution, however, that this elevated risk is the result of where the mother lives rather than the availability of local birthing (i.e., if a baby is born early, the mother would not have been close to an NICU regardless of having birthing services close to home). As well, this research demonstrated that birth in the community does not cause hemorrhage. It appears, in this socio-economically challenged community, that rates of hemorrhage are higher than the general Canadian population but there is no indication in the research that maternal outcomes were worse (i.e., the levels of blood transfusion or hysterectomy were not high) if they gave birth locally and there was no evidence of increased risk of fetal and neonatal mortality.[117]

These finding are supported by research in North America from Rankin Inlet[118], Puvirnituq[119], Zuni-Pueblo and Ramah Navaho communities of New Mexico[120]. International literature from Australia and Scotland also support the notion that safe care can be provided by well-trained midwives operating within communities with strong support.

[117] Van Wager, Vicki. (2012). Personal Communication.
[118] Chamberlain, M. (1997). Challenges of clinical learning for student midwives. *Midwifery* 13(2): 85-91.
[119] Morewood-Northrop, M. (2000). Community birthing project: Northwest Territories. IN The New Midwifery Page L., & Percival P. (eds). Edinburgh: Churchill Livingstone.
[120] Leeman L. & Leeman, R (2002). Do all hospitals need cesarean delivery capability?: An outcomes study of the maternity care in a rural hospital without on-site cesarean capability. The Journal of Family Practice 51: 129-134.

Risk can be mitigated in a number of ways in northern communities:

- Developing protocols for clinical care for the community birth initiative and the referral centre.
- Instituting an ongoing mechanism for communication and collaboration with all health care providers.
    - In the NWT, the Maternity Care Committee was established with the initiation of the NWT Midwifery Program. As noted earlier in this report, the Committee meets regularly to discuss the care of maternity clients (refer to Section 4.4).
- Ensuring that continuous monitoring and evaluation of risk during pregnancy and labour are understood to be critical and are in place at all times.
- Ongoing documentation and annual review of experience.
- Implementation of a comprehensive risk screening process.

Midwifery is regulated in certain Canadian provinces and territories (including the NWT). The Colleges of midwives are the regulatory body for the profession of midwifery. The goal of a College is to register qualified, competent midwives to provide safe, high quality care to women and their families.[121] In order to ensure this level of care, each Province and Territory has its own standards and clinical practice guidelines for registered midwives. As noted earlier (refer to Appendix B), there are Standards of practice in place for registered midwives in the NWT (February 2005).

As a component of this review, a complement of Perinatal Standards of Care based on current Canadian and international best practices, the NWT's unique demography, geography, population and service distribution, culture, and clients, communities and systems' view of acceptable risk, was to be developed. The general consensus from all lines of evidence indicated that very few changes need to be made to the existing standards. Appendix C highlights some standards recommendations to be considered for future midwifery programming.

5.3 Hay River and Fort Smith Comparison

Given the unique demographic, social, political and geographic components of the Northwest Territories it was decided that while international standards would be considered in determining the efficacy of perinatal care services provided by midwives in comparison to other health care providers, it was also necessary to consider the impacts of midwifery-based care in the north and at the territorial level. Since available data was not suitable for comparison and gathering data from the entire territory was prohibitive, the decision was to compare two communities of similar size, access to health professionals and equipment, demographic composition and geographic setting to assess the differences between a community that currently offers midwifery services and one that does not on the basis of health outcomes and cost. The two communities chosen for this comparison were Hay River and Forth Smith.[122]

[121] CAM. (2012). Midwifery Practice – Standards and Guidelines. http://www.canadianmidwives.org/standards-guidelines.html
[122] It is important to note that data and figures generated to capture perinatal care services within Hay River were collected via a chart review, whereas estimates for Forth Smith were extracted from existing annual reports and a theoretical workload document.

Hay River is located on the southern shore of Great Slave Lake and is home to approximately 3,724 residents.[123] It is served by a Level C facility with ultrasound capability and consistent access to family physicians and nurses, thus no travel for regular testing and check-ups is required. Maternity clients are evacuated from the community at 37 weeks to give birth in Yellowknife.

Fort Smith is located in the northern boreal forest along the Slave River and is home to approximately 2,483 residents.[124,125] Fort Smith is also served by a Level C facility with ultrasound and no travel is required to obtain the services of physician or nurses. Since 2005 midwifery services have been provided to all maternity clients. Low risk women have the choice to birth with the midwives. High risk women and those that do not choose to utilize the services of midwives for delivery are flown to Yellowknife to birth at 38 weeks.

Table 7 presents a summary of the perinatal findings of the comparison between Hay River and Fort Smith.

On average women in Hay River receive approximately nine prenatal visits (with a range of zero to 19 visits) throughout the course of their pregnancy compared to women in Fort Smith who attend approximately 15 visits. The SOGC recommends a prenatal visit every 4 – 6 weeks until 30 weeks gestation; every 2-3 weeks until 36 weeks gestation; and then every 1 to 2 weeks until delivery.[126,127] Based on birth at 40 weeks this results in a range of 9 – 14.5 visits; both Hay River and Fort Smith fall within these parameters. Assuming the cost of the initial perinatal visit (by nurse/physician or midwives) to be $105, and all subsequent visits to be $50, the cost of perinatal care in Hay River is $518.50 and $805.00 in Fort Smith. It should be noted that this calculation is presented for illustrative purposes only, and as the NWT does not operate on a fee-for-service basis, its applicability is not entirely valid. Please refer to appendix D for current costs of perinatal care within the two communities highlighted.

Table 7: Perinatal Comparison of Hay River and Fort Smith

Category	Hay River (value range)	Fort Smith
Prenatal Visits	~ 9.27 (0 -19)	15
Postnatal Visits	~ 1.08 (0-8)	12
Newborn Visits	~ 4.5 (4-5)[128]	10
Total Number of Visits	14.85	37[129]

[123] Northwest Territories Health and Social Services (2011). Northwest Territories Health Status Report available online at http://www.hlthss.gov.nt.ca/pdf/reports/health_care_system/2011/english/nwt_health_status_report.pdf
[124] Town of Fort Smith (2010). Community Profile available online at http://www.fortsmith.ca/cms/content/community-profile
[125] In addition to its local residents, Fort Smith Health Centre also provides services to an additional 700 (more or less) who are comprised of transients and residents from Fort Fitzgerald, Salt River, Peace Point.
[126] Schuurmans, N., and Lalonde, A. (2000). Healthy Beginnings: Your Handbook for Pregnancy and Birth, Vicars and Associates (eds). Edmonton: The Society of Obstetricians and Gynecologists of Canada.
[127] In Nunavik, the average number of visits is 13-14 (and is viewed as a marker of quality care). In Ontario, the average number of visits is 12-13 prenatal and 6 postnatal for mother and baby.
[128] Neonatal visits are carried out by Community Health Nurses who average 4-5 visits in the first 6 weeks of life
[129] Numbers not actual, determined from Fort Smith workload document. Midwives from the community confirmed the number of appointments to be accurate

Category	Hay River (value range)	Fort Smith
Number of Identified Caregivers[130]	4.80 (0-8)	1 - 2[131]
Premature Delivery	12/124 (9.7%)	5/242 (2%)
Spontaneous Vaginal Delivery	100/126 (79%)	209/244 (87%)[132]
SVD and Augmentation/Induction	33/100 (33%)	0[133]
Caesarean Section	26/127 (20.5%)	35/242 (14.0%)
Fetal Mortality (Stillbirth)	1	2
Number of Days in Hospital	2.60 (1-30)	unknown
Number of Days Out of Community	~ 30.60[134]	~ 23.60[135]
Breastfeeding Initiation	118/144 (81.9%)	98% (09/10) >90% (10/11)
Transfer for Delivery	111/143 (78%)	131/244 (46%)
Medevacs	19 (2008-2011) 6.33/yr or ~13%	26 (2005-2011) 4.33/yr or ~11%

In Hay River, mothers typically engage in one postnatal visit (with a range of zero to eight visits) whereas mothers from Fort Smith receive 12 postnatal visits.[136] Additionally, newborns in Hay River are seen by a public health nurse approximately four to five times while midwives in Fort Smith reported an average of 10 visits in the first 6 weeks of life. In Fort Smith, the postnatal and newborn visits are conducted during the same appointment. Postnatal visits for mothers can be influenced by numerous physical, social and psychological factors. According to Canadian data, on average women are seen by physicians once postpartum[137] (although this does not encompass community-based nursing and telehealth utilization). While there is no threshold for the minimum number of visits a newborn and/or mothers should receive, the SOGC recommends the placement of programs for postpartum care in communities stating that these additional programs may decrease neonatal mortality, morbidity, and readmissions.[138] The average cost for postnatal and newborn care in Hay River (assuming the cost of an average appointment is $50) is $226.80 and $1,100 in Fort Smith. As above, the same caution should be applied with interpreting these numbers.

[**NOTE:** Providing more prenatal care is considered a quality of care indicator particularly since this usually indicates early access to care and screening. The argument has been made that providing more prenatal care should not be regarded as an increase in cost (i.e., less and therefore cheaper does not equate to better). In a salaried system of care provision, providing more care does not result in increased costs. However, it should be noted that the provision of more comprehensive care (i.e., more

[130] Caregiver category captures prenatal care and does not encompass specialists, birth attendants or postnatal care.
[131] Estimate provided by midwives working in Fort Smith.
[132] Number based on number of births minus caesarean section rate for all women using MWF program, regardless of risk status
[133] Only captures intervention and augmentation rate of women who birthed at Fort Smith Birth Centre and does not capture women from the community who birthed in Yellowknife.
[134] Based on evacuation at 37 weeks and birth at 40 weeks plus 2.60 days in hospital.
[135] Only includes individuals who choose to fly out and high risk individuals, based on evacuations at 38 weeks plus 2.60 days in hospital
[136] Part of the discrepancy between these numbers may be driven by the fact that midwives attend to mothers for the first year after birth and the Hay River data my not capture this whole time period.
[137] Canadian Institute for Health Information (2006). Giving Birth in Canada: The Costs. Ottawa: Canadian Institute for Health Information.
[138] Cargill, Y. and Martel, M-J (2007). Postpartum Maternal and Newborn Discharge *JOGC* 29(4):357–359

visits) may mean that less clients will be able to receive care – so there is a trade-off: more comprehensive care and less clientele or less comprehensive care (but still within the acceptable range and quality care) and a greater reach.]

The average number of recorded care providers for prenatal care in Hay River was 4.8, with some women receiving care from as many as eight physicians and/or nurse practitioners while others received no care. Fort Smith reported an average of one to two care providers per woman. For both communities, these figures do not include care providers that women encounter while birthing in Yellowknife. Due to the difficulty of differentiating confounding factors contributing to maternal and neonate morbidity there are very few studies that are able to link health outcomes to number of care providers. However, studies that examine patient satisfaction show strong correlations between fewer caregivers and increased maternal satisfaction.[139] When patients are asked to globally rate how well they know their provider, high scores are linked to increased compliance with treatments such as medication, as well as improved ability on the part of patients to cope with illness and facilitation of diagnosis and management.[140]

The number of premature deliveries between Hay River (12/124) and Fort Smith (5/242) is statistically significantly different. This difference may be driven by small sample size, however, anecdotal evidence suggests it may be a by-product of increased practitioner investment. Kramer identifies 23 factors related to likelihood of preterm birth including four genetic and constitutional factors (infant sex, race, maternal height, pre-pregnancy weight), five maternal demographic and psychosocial factors (age, education, insurance status, marital status, planned pregnancy), eight obstetrical factors (parity, outcome of last pregnancy, histories of induced abortions, spontaneous abortions, and stillbirths, uterine exposure to diethylstilbestrol (DES), incompetent cervix, uterine anomaly), one nutritional factor (weekly weight gain), one maternal morbidity factor (urinary tract infection), three substance intake factors (smoking, caffeine, marijuana), and one prenatal care factor (late or no prenatal care). [141] Many of these factors can be identified and monitored through regular prenatal care with a consistent care provider (or within a system that maintains comprehensive health records).

The rates of spontaneous vaginal delivery are 8% higher in Fort Smith than Hay River. The intervention and augmentation rate of women who birth in Fort Smith is 0% (compared to 33% all women who were flown to Yellowknife from Hay River to give birth). Caesarean section rates are also lower in Fort Smith by approximately 6.5%.[142] Lower rates of intervention are associated with lower overall costs and

[139] Ford, E., Ayers, S. and Wright, D.B. (2009). Measurement of maternal perceptions of support and control in birth (SCIB). *Journal of Women's Health* 18(2): 245-252; Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196

[140] Defusing the confusion: Concepts and measures of continuity of healthcare. Final Report
Reid R, Haggerty J, McKendry R. March 2002. Prepared for the Canadian Health Services Research Foundation, the Canadian Institute for Health Information, and the Advisory Committee on Health Services of the Federal/Provincial/Territorial Deputy Ministers of Health.

[141] Kramer MS (1987). Determinants of low birth weight: methodological assessment and meta-analysis. *Bull World Health Organ*: 65:663-737.

[142] It should be noted that overall the Territories have the lowest National rate of C-sections.

minimized health risks.[143] For example, women who undergo caesarean section experience a two-fold increase in the risk for severe maternal morbidity and mortality and up to five times the risk of postpartum infection.[144] Risks for the mother include higher rates of hysterectomy, postpartum hemorrhage, venous thromboembolism, and hospital readmission.[145] There is also evidence that caesarean delivery is associated with increased adverse obstetric and perinatal outcomes in subsequent births.[146] Women utilizing the services of midwives, as identified in the international literature, also experience shorter hospital stays.

The presence of midwifery services also results in decreased time outside of an individual's community of residence. For mothers who choose to birth within the community (46% in Fort Smith from 2005-2011), cost of accommodation ($107/day) and costs associated with being flown to Yellowknife ($644.70 from Hay River to Yellowknife, return and $730.80 from Fort Smith to Yellowknife, return) are eliminated. Due to the presence of the midwifery program in Fort Smith, women are also able to remain in their home community for an additional week thereby reducing the stress associated with being away from home and associated accommodation costs for that week ($749.00). It was reported that women in Fort Smith remained in the health centre to birth on average 24 hours.[147] Information was not available for the associated costs of stay within the health centre, but if this figure is comparable to the cost of one days accommodation within the hospital ($2,500), the average savings associated with birth within the community is $4,000 per woman.

Breastfeeding initiation within these two communities supports international data that midwives have higher success rates of supporting women to commence breastfeeding. The chart review for Hay River indicated that approximately 82 % of women initiated breastfeeding compared to 94% in Fort Smith. The national average for breastfeeding initiation in Canada is 87.9%[148] placing Hay River slightly below the national average and Fort Smith somewhat above. Anecdotal evidence from interviews also suggests that Fort Smith has higher rates of continued breastfeeding beyond the first six weeks of life. While it is difficult to directly assess the monetary costs associated with breastfeeding health outcomes, it is known that the practice of breastfeeding is associated with improved immunity against infectious disease,[149] protective effects against obesity, [150] and positive correlations with improved cognitive development.[151]

[143] Canadian Institute for Health Information (2006). Giving Birth in Canada: The Costs. Ottawa: Canadian Institute for Health Information

[144] Villar, J, G. Carroli, N. Zavaleta, A. Donner, D. Wojdyla, A. Faundes, A. Velazco, V. Bataglia, A. Langer, A. Narváez, E. Valladares, A. Shah, L. Campodónico, M. Romero, S. Reynoso, K.S. de Pádua, D. Giordano, M. Kublickas, and A. Acosta (2007). Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ 335(7628): 1025-19036 available at http://www.bmj.com/content/335/7628/1025.full.pdf.

[145] Ehrenthal, D.B., Jiang, X., and Strobino, D.M. (2010). Labour induction and the risk of a caesarean delivery among nulliparous women at term. *Obstetrics and Gynecology* 116(1): 35-42.

[146] Kennare, R., Tucker, G., Heard, A., and Chan, A. (2007). Risk of adverse outcomes in the next birth after a first caesarean delivery. Obstetrics and Gynecology 109(2 part 1): 270-276.

[147] Data was not available for women who traveled from Fort Smith to Yellowknife to birth thereby resulting in an absence of information on the number of days in hospital

[148] Health Canada (2010). Breastfeeding Initiation in Canada: Key Statistics and Graphics 2007-2008. Available on line at http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/prenatal/initiation-eng.php

[149] Duijts, L., M.K. Ramadhani and H.A. Moll (2009). Breastfeeding protects against infectious disease during infancy in industrialized countries. A systematic review. *Maternal and Child Nutrition* 5: 199-210

The presence of a birthing room in Fort Smith provides women with not only improved choice in care provider but also increased choice regarding the location of birth. Between 2005 and 2011, 46% of women receiving care within the Fort Smith Midwifery Program delivered in Fort Smith and 54%, through necessity or choice were flown to Yellowknife (or elsewhere as determined by the MCC). In Hay River 82% of women were evacuated to Yellowknife to deliver.[152] The practice of birthing in the community is associated with significant cost savings related medical travel and accommodation. Community birthing in Fort Smith from 2005-2011 amounted to $367,928.00.[153]

A comparison of the two communities indicates that fewer medevac trips were required from Fort Smith (4.33/year) than from Hay River (6.33/year). Interview data suggests that an increase in medevac trips from Hay River could be the by-product of nurses choosing to err on the side of caution due to a lack of confidence in their skills and the appropriate facilities to deliver a baby. It is possible that communities with midwifery programs could actually experience an increase in medevacs due to the fact that women who would have been in Yellowknife awaiting delivery when emergent care was needed are now still in the community. Medevac evacuation represents an important factor for health outcomes and program cost effectiveness (cost of a one way medevac trip is $10,000).

While it is difficult to quantify the long and short term health benefits of the Fort Smith program evidence indicates that the addition of midwifery services at the community level confers social, psychological and physical benefits. Currently the cost savings associated with the program do not offset its operational costs,[154] although it should be noted that the program has shown continued community buy-in which in the future could aid in its fiscal viability.

5.4 Average Estimated Cost of Perinatal Care by Community

Based on information provided to Terriplan, Table 8 highlights the estimated average cost of vaginal birth by community.

[150] Feig, D.S., L.L. Lipscombe, G. Tomlinson, and I. Blumer (2011). Breastfeeding predicts the risk of childhood obesity in multi-ethnic cohort of women with diabetes. *The Journal of Maternal-Fetal and Neonatal Medicine* 24(3): 511-515; Arenz, S., R. Rockerl, B. Koletzko, and R. Von Kries (2004). Breast-feeding and childhood obesity – a systematic review *International Journal of Obesity and Related Metabolic Disorders* 28: 1247-1256.

[151] Kramer, M.S., F. Aboud, E. Mironova, I. Vanilovich, R.W. Platt, L. Matush, S. Igummov, E. Fombonne, N. Bogdanocivh, T. Ducruet, J-P. Collet, B. Chalmers, E. Hodnett, S. Davidocsky, O.Skugarevsky, O. Trofimovich, L. Kozlova, and S. Shapiro (2008). Breastfeeding and child cognitive development: New evidence from a large randomized trial. Archives of General Psychiatry 65(5): 578-584.

[152] The chart review indicates that the majority of women who did not travel to Yellowknife opted to return home to birth (for example to Edmonton, Vernon, Nanaimo or Grand Prairie) or were flown to Edmonton to receive specialized care. It is assumed that the costs associated with these elective birthing locations was paid for by the client.

[153] This amount is calculated using an average of 23.6 days(at $107/day) outside of the community and the cost of a return flight from Fort Smith to Yellowknife($730.80)

[154] See Appendix D for a detailed account of costs associated with the program

Table 8: Average Cost of Perinatal Care by Community (with available scheduled flight information) in the NWT

Communities	Average Births by Residence (1995-2010)	Ultrasound Travel?	Evacuation to await delivery (week)	Cost of Flight	Estimated Cost	
					High	Low
Tuktoyaktuk	19.6	Yes X 1 – IRH	38 weeks – IRH	$441.00	$11,470.64	
Aklavik	10.1	Yes X 1 – IRH	38 weeks – IRH	$200.00	$10,988.64	
Fort McPherson	13.4	Yes X 1 – IRH	36-38 weeks – IRH	$354.90	$12,796.44	$11,298.44
Paulatuk	4.8	Yes X 1 – IRH	36-38 weeks – IRH	$1,226.40	$14,539.44	$13,041.44
Sachs Harbour	2.5	Yes X 1 – IRH	36-38 weeks – IRH	$1,526.70	$15,140.04	$13,642.04
Ulukhaktok	9.3	Yes X 1 – IRH	36-38 weeks – IRH	$1,946.50	$15,979.64	$14,481.64
Norman Wells	12.5	Yes x 1 – IRH or STH for all (appointments more accessible at IRH)	38 weeks – YK	$1,092.00	$12,772.64	
Fort Good Hope	10.8		38 weeks – IRH	$584.18	$11,757.00	
Colville Lake	3.6		38 weeks – IRH	$1,072.90	$12,734.44	
Tulita	7.9		38 weeks – YK	$1,560.30	$13,709.24	
Deline	10.4		38 weeks – YK	$1,701.00	$13,990.64	
Fort Simpson	18.1	Yes x 1 – STH	36 weeks – YK	$918.20	$13,923.04	
Behchoko	46.8	Yes x 1 – STH	36 weeks – YK		$12,086.64	
Whati	10.3	Yes x 1 – STH	36-37 weeks – YK	$420.00	$12,926.64	$12,177.64
Gameti	6.4	Yes x 1 – STH		$530.00	$13,146.64	$12,397.64
Wekweeti	2.4	Yes x 1 – STH	36 weeks – YK	$440.00	$12,966.64	
Hay River	56.5	No – US in HR	37 weeks – YK	$644.70	$11,875.34	
Enterprise	0.9	Yes x 1 – HRH	37 weeks – YK	$644.70	$11,875.34	
Fort Smith	36.7	No	38 weeks high risk only and elective	$730.80	$12,050.24	$2,796.11

The estimated average cost was calculated using the formula provided below (refer to Table 9). This formula is based on a formula provided to DPRA by the client.

Table 9: Formula for Calculating the Estimated Average Cost of Perinatal Care for Spontaneous Vaginal Delivery for Communities in the NWT

	Assumption	Cost
Prenatal	9 x 30 min (cost of standard prenatal appointment $50)	$450.00
	4 hours admin (assumption done by Community Health Nurse (step 4 of 8) with a mean rate of pay of $48.73/hour)	$194.92
	1 physician visit (assumption 1 hour =$ 172.40 based on a daily FP locum rate of 1293.00 day)	$172.40
Ultrasound	Travel (return flight, standard airfare, booked 6 weeks in advance)	Variable
	boarding (1 day)	$107.00
	2 after hours callback (assumption performed by community health nurse)	$97.46

	Assumption	Cost
Delivery	Flight (return flight, standard airfare, booked 6 weeks in advance)	Variable
	Accommodation ($107/day from evacuation to 40 weeks)[155]	Variable
	Hospital days (based on Hay River average of 2.6[156])	$6500.00
	Vaginal Delivery (based on provided calculation of standard cost)	$550.00
	1 home visit 60 min (performed by CHN with mean rate of pay of $48.73/hr.)	$48.73
Postnatal	1 postpartum visit - 60 min (family physician)	$172.40
	1 hour admin (performed by community health nurse)	$48.73

The calculated per birth costs do not include the price of the ultrasound (technician or physician/midwife interpretation), medevac trips, intervention or augmentations during birth (including C-section) or costs associated with specialist care (i.e. OB/GYNs). Additionally, costing pricing information is based on an average of births taking place at 40 weeks (range 38-42) and an average of 2.6 days in hospital after birth. The minimum cost of birth at Fort Smith was calculated using a midwifery model of care (37 perinatal visits, 7 hours of call back and administration time, and the cost associated with a standard vaginal delivery). The average cost of perinatal care services is $12,560.16, with the highest rate associated with Ulukhaktok ($15,979.64) (driven by early evacuation and higher flight costs), and the lowest represented by the midwifery model of community in Fort Smith ($2,796.11), which is not inclusive of travel and accommodation.[157]

6. KEY ISSUES

A number of key issues have been identified which must be considered during program expansion and implementation. These issues build upon the considerations and general assumptions outlined in the 2008 Midwifery within the NWT ISDM Planning Document, while at the same time reflect current issues revealed during the data collection phase of this project.

6.1 Key Considerations

- A critical mass, defined for the purposes of this report as 25 pregnant women[158] per year, must be present to ensure the continuing competency of practicing midwives as well as cost efficiency of the program.
- The utilization of regional clustering is a feasible and appropriate means by which to create economies of scale, thereby ensuring continuity of care as well as sustainable midwifery services.

[155] The standard cost for accommodation when flown out at 36 weeks (35 days) is $3745.00, 37 weeks (28 days) is $2996.00 and 38 weeks (21 days) is $2247.00
[156] See the section above for a complete discussion of Hay River.
[157] Estimated cost of perinatal care services provided by physicians in Yellowknife see Appendix E.
[158] This figure is based on recommendations of minimum staffing requirements put forth by Young et al. (1997) and Chamberlain et al. (1998) as well as the practice audit requirements of the Midwives Association of the Northwest Territories and Nunavut which state that midwives must act as the primary midwife for 15 women over three years of registration

- Enhanced education and awareness associated with the practice of midwifery is critical to program success. Consistent efforts must be dedicated to dispelling myths regarding the safety and scope of practice of midwives as well as the safety of the act of birth itself.
- Before locations for community and regional centres are determined, community engagement sessions should be carried out to determine community readiness (the degree to which a community is prepared to take action on an issue).[159]
- There are currently a significant number of dedicated family physicians interested and invested in providing perinatal care to residents of the NWT. Expansion of midwifery services at any level must recognize the existence of these family practitioners while at the same time acknowledging that high staff turnover in the north is a reality and that not all incoming family practitioners may be interested in providing perinatal care (there is currently no succession plan in place to address future trends in family physician availability). It is important to address the tension that may arise if family practitioners feel they are being pressured to stop providing perinatal care. The intent of the expansion is to provide choice and improved continuity of care; two components of the current perinatal care system that are lacking.
- Upon further integration of midwives into the health care system, roles and responsibilities of all primary care team members should be revisited to ensure effective collaboration and reduction in service delivery overlaps and gaps.
- Expansion of midwifery services should be integrated with the Northern Women's Health Program.
- The expansion of midwifery services requires a phased in approach largely dictated by community, practitioner, leadership and HSSA management buy-in. Trust and effective knowledge transfer must guide this process.
- A communication strategy must be developed, at all levels, to help facilitate successful expansion of the program.
- A minimum of two midwives are required in any one location to ensure appropriate coverage and program stability.
- In an effort to address anticipated recruitment and retention issues, consideration should be given to investing in the education and training of local residents (with a focus on Aboriginal individuals) who are interested in, and committed to, learning and implementing the practice of midwifery in the territory. Partnering with academic institutions currently offering a midwifery curriculum could facilitate this endeavour.[160] Since the critical mass for university-based midwifery education does not exist in the NWT, it is suggested that interested applicants pursue their education (1.5 years) outside of the territory and that the GNWT establish formal

[159] Refer to the following report for information on assessing community readiness for change: Plested, B.A., Edwards, R.W. and Jumper-Thurman, P. (April, 2006). *Community Readiness: A Handbook for Successful Change*. Fort Collins, CO: Tri-Ethnic Center for Prevention Research.

[160] The following intuitions/locations currently offer midwifery education programs: University of British Columbia (BC), Mount Royal University (Alberta), McMaster University (Ontario), Ryerson University (Ontario), Laurentian universities (Ontario), Université du Québec à Trois Rivières (Quebec), Kanaci Otinowawosowin (Aboriginal midwifery) baccalaureate (KOB) program at the University College of the North in Manitoba, Aboriginal Midwifery programs in Arctic College Nunavut and Inuulitisivik Health Centre Nunavik at Six Nations Health Centre in Ontario. Bridging Programs in BC, Alberta, Manitoba, and Ontario, have been established for certification of midwives trained outside of Canada or in non-university settings within Canada.

arrangements for residents to return to the territory to complete the 2.5 years of clinical placement and academic education through distance formats.

- While the focus of increased capacity for local women (interested in midwifery) should be on obtaining a midwifery degree, there may be some utility in providing access to maternity care worker certificate programs. It is recognized that these programs can be a successful means by which to increase access to culturally appropriate care (refer to Appendix E). In order to optimize the efficacy of the program and ensure its ability to promote increased capacity within communities, access to midwifery education programs must be established first, as well efforts should be put forth to ensure that credits awarded through the maternity care worker certificate program (where appropriate) be transferable toward Midwifery Degree programs.
- While the number of midwives graduating from recognized Canadian institutions is increasing, recruitment of experienced midwives will remain a challenge.
- Choice of location and attendant at birth should be retained. Medical travel to the nearest appropriate facility should remain available to all women regardless of availability of local midwifery services.
- Due to the unique geography and demographic composition of the NWT expansion programs should be designed to be flexible and adaptable.
- Opportunities to foster collaboration and communication should be integrated into the existing and expanded models of perinatal care through routine participation in OB rounds and maternity care meetings.

6.2 General Assumptions

- Midwives are autonomous primary health care providers, and as such should have the ability to make decisions in partnership with clients and assume full responsibility for the provision of primary health services that fall within their scope of practice.
- Midwives should assume all hospital privileges provided to general practitioners providing perinatal services.
- Midwifery view pregnancy as a state of health and childbirth as a normal physiological process.
- Midwifery services enhance continuity of care and provide choice.
- Pre- and postnatal care by midwives is appropriate for all women, however, births for women defined as high risk should ideally be attended by trained obstetricians.
- Fully integrating midwives into existing perinatal care models will require leadership, change management time and trust building until models can be fully operational. This time must be invested to ensure the sustainability of perinatal care throughout the territory.
- Midwives represent a valuable resource for building capacity of local/community nurses as well as providing education to NWT residents about the safety and scope of practice of midwifery – based services.
- A portion of midwives time/client base should be devoted toward outreach and care for hard to reach populations.
- HSSAs will implement and integrate midwives in the primary community care teams according to the recommended models that they help to define and operationalize.

- "[R]egardless of birth location and choices women make around childbirth, there is no guarantee to experience a risk free birth".[161]

7. MIDWIFERY MODELS FOR CONSIDERATION

The following sections highlight the three models that are being put forth for consideration based on the information obtained and analyzed from all lines of evidence. In keeping with the information presented in the 2008 Midwifery within the NWT ISDM Planning Document (which is still highly relevant), our findings lead to community-based, regional and territorial options for the expansion and provision of midwifery services in the NWT. All options are intended to align with the 2011 Caucus of the 17th Legislative Assembly, NWT HSS 2011-2016 Strategic Plan as well as the existing NWT Midwifery Framework and the NWT Integrated Service Delivery Model.

NWT MIDWIFERY PROGRAM EVALUATION FRAMEWORK

There currently exists a 2006 NWT Midwifery (Evaluation) Practice Accountability Framework[162]. Modifications have been made to this framework based on the findings of this review and expansion project and the development of a 2007 Fort Smith Midwifery Program Performance Measurement Strategy[163], the 2008 Midwifery Practice: Client and Performance Indicators – NWT Outcome Measures[164] and the 2008 FSHSSA Midwifery Program Logic Model[165] (Refer to Appendix F).

7.1 Community Midwifery Model

The following model is based on the Fort Smith Midwifery Program 2007 workload and staff projections document and annual reports, the 2008 ISDM Midwifery Planning Document, Collective Agreement between the Union of Northern Workers and the Minister Responsible for the Public Service, and both formal and informal discussions with the Fort Smith midwives. Since the Fort Smith Midwifery Program has proven to be successful, the option detailed below is modeled directly after that program.

7.1.1 Model Description

This model is based on the need to bring birthing (and health care more generally) back to the community. Providing the option to birth in the community reduces the need to evacuate low risk women to health facilities where they may wait for weeks to give birth alone in an unfamiliar setting. The absence of women from communities for extended periods of time has been linked to family and community breakdown.[166] Additionally, evidence suggests that evacuation for low risk women may

[161] Becker, Gisela (2006). Women's Experience of Culturally Safe Birthing with a Midwife in a Remote Northern Community. Masters Thesis: Thames Valley University, faculty of Health and Human Sciences
[162] GNWT HSS. (2006). NWT Midwifery Practice Accountability Framework (May 23, 2006)
[163] GNWT HSS. (2007). (Project: Fort Smith Midwifery Program) Performance Measurement Strategy (January 2007)
[164] GNWT HSS (2008). Midwifery Practice: Client and Performance Indicators – NWT Outcome Measures (April 4, 2008)
[165] GNWT HSS. (2008). Logic Model – FSHSSA Midwifery Program.
[166] van Wagner, V, Harney, E, Osepchook, C, Crosbie, C, Dennis, R., Tulugak, M. (n.d.) Remote Midwifery in Nunavik: Outcomes of Perinatal Care 2000-2007 for the Inuulitsivik Health Centre. In press.

contribute to postpartum depression and increased rates of maternal and newborn complications.[167] On the other hand, the return of birth to the community supports cultural revitalization, self-determination and enhanced familial and community relationships.

This community model is based on a caseload approach to midwifery. Caseload refers to the practice in which a midwife is responsible for a particular woman's care during pregnancy, labour, birth and the postpartum period. The woman has a specified (primary/lead) midwife throughout her pregnancy but is familiar with the other midwives in the same practice who may be on call during her labour. In this model, the lead midwife is available in a flexible 24 hour schedule with time off covered by other midwives in the practice (who are informed about the condition of the woman).[168] Caseload midwives are not part of a rotational system, instead, they work whatever hours (24/7) are needed to provide the necessary care for women. Appointments are scheduled based on times convenient to the midwife and the woman.[169] As per conversations with the Steering Committee, it was agreed that a maximum of 25 births per year as first attendant and 25 births per year as second attended would define a midwife's caseload in the NWT.

7.1.2 Communities for Consideration

Based on the critical mass required to sustain a community midwifery program (25 births per year), the need to ensure the continuing competency of the midwives, and the need for the program to be cost effective and sustainable, the following communities have been identified as potential sites for a community-based midwifery program:

- Hay River
  - Medical travel cost savings for scheduled flights and accommodation for approximately 50% of births (for 2 to 6 week evacuation period)
  - No duplication of maternity services
  - Increased staffing cost
- Inuvik
  - No savings in medical travel costs
  - Midwifery would result in duplication of maternity services since locum physicians are currently responsible for birthing
  - Increased staffing costs
- Yellowknife
  - No savings in medical travel costs
  - Midwifery would result in duplication of maternity services since there currently exist a number of family physicians who provide perinatal care

[167] Klein, M.C., Christilaw, J., Johnston, S. (2002). Loss of maternity care: the cascade of unforeseen dangers. *Can J Rural Med*, 7(2):120-1.
[168] Queensland Government, Queensland Health. (2008). Midwifery models of care. Implementation guide. http://www.health.qld.gov.au/qhpolicy/docs/gdl/qh-gdl-906.pdf
[169] Queensland Government, Queensland Health. (2008). Midwifery models of care. Implementation guide. http://www.health.qld.gov.au/qhpolicy/docs/gdl/qh-gdl-906.pdf

  - Targeting disenfranchised / disadvantaged populations of women, those not typically accessing prenatal care, could lead to decreases in health care system costs in the long-term for both mother and child
  - Capital or leasehold improvement costs (e.g., program space)
  - Increased staffing costs
- Behchoko
  - Decrease in medical travel costs to Yellowknife (mileage and accommodation)
  - Proximity to Yellowknife facilities and health care providers may be considered duplication of services
  - Increased staffing costs

7.1.3 Staffing Requirements

The community midwifery model requires the following staffing investment which is based on an employment model:

- A minimum of two (2) full-time employed (FTE) midwives. Additional midwives will be required in communities where consistently, more than 50 women choose to utilize midwifery services. Due to their increased scope of practice midwives are only able to provide primary care for to up to 25 women.
- 0.2 FTE administrative support staff
- At a minimum, locum midwife/ midwives to cover 20.4 weeks of unavailable work weeks per year (2 midwives x 10.2 weeks when provision of midwifery services is not available; 10.2 weeks of coverage will be required for each additional midwife hired).

7.1.4 Midwifery Client Load

- Associated maternity care client load is comprised of:
  - Babies born in that year and their mothers;
  - Women who are pregnant in that year but who give birth in the next calendar year ;
  - Women who birthed in the previous year and are still receiving postnatal care up to 12 months; and
  - Babies born the previous year still receiving care up to six weeks.
  - As well, the total number of clients includes women who will experience incomplete courses of prenatal care for a number of reasons (e.g., spontaneous abortions, therapeutic abortions, or women leaving the community) and referrals (self or other primary care provider) for preconception care (health counselling, assessment, and screening), reproductive health counselling or supportive care.

Table 10 shows how the estimate of direct client care workload hours per midwife are derived.

Table 10: Client Care Workload

Description	Variable / Equation
Number of babies born to families living in community	D=denominator
Number of babies-mothers followed by midwives	N=numerator

Description	Variable / Equation
Prenatal visits, average 15 per client	N x 15 = number of visits
Postpartum visits, average 12 per client	N x 12 = number of visits
Newborn visits, average 10 per client	N x 10 = number of visits
Total visits*, average 37 per client	N x 37 = total number of visits
Number of community births*	C = 50% of N
Intrapartum care, average 16 hours per client, primary attendant	C x 16 = number of hours
Intrapartum care, average 6 hours per client, second birth attendant	C x 6 = number of hours
Number of transfers (urgent prenatal, intrapartum, newborn)	T = 15% of N (estimated)
Transfer care, average 8 hours per client	T x 8 = number of hours
Other client contact: telephone triage, initial contacts, after-hours triage, follow-up contacts, preconception counselling, terminations, other consultations	25 contacts per week x 52 weeks = 1300 contacts (variable time)

*Based on Fort Smith numbers, approximately 50% of mothers birth in the community (this proportion reflects choice and the need the need for high risk clients to birth in Yellowknife

- Scheduled client visits:
  - Duration of 30-60 minutes (current standards within other provinces is 15 min for each appointment)
  - On average 45 minutes each although up to 90 minutes on occasion depending upon client/family need

- Direct course of care: 37-38 hour/pregnant woman/year (or approximate 1 week of work time)

- Midwives employed by regional health authorities are included in the Collective Agreement between the Union of Northern Workers and the Minister Responsible for the Public Service.
  - Article 22.19 of the Agreement stipulates the following provisions for midwives:
    a. In order to meet operational requirements Midwives may not be able to work the normal work week of five (5) work days followed by two(2) days of rest, and may sometimes be required to work in excess of five (5) consecutive days in one week. Because of this Midwives are allowed flexibility in scheduling their work week on an irregular basis to meet operational requirements.
    b. As a means of compensating these employees for any extra days worked as a result of their irregular work schedule, the Employer agrees that where a Midwife works in excess of the normal work days in a 28 day period, he/she shall be entitled to compensatory time off with pay for each extra hour worked. A midwife shall be provided compensatory leave at the rate of time and one half for all hours worked greater than 150 hours over a 28-day period.
    c. This compensatory leave must be taken at a time mutually agreeable to both the midwife and the Employer, and they must be used in the same fiscal year in which they are earned.
    d. At the end of the fiscal year, those accumulated hours which the midwife has been unable to use will be liquidated at the employee's current rate of pay, up to a maximum of fifteen (15) days [one hundred and twelve and on half (112.5) hours]. If the

employee has accumulated more than fifteen (15) days, those days in excess of fifteen (15) lapse. Under no circumstances will an employee be paid out for more than fifteen (15) days at the end of the fiscal year and there shall be no carryover of those days from one fiscal year to the next.

e. Midwives placed on standby shall be compensated in accordance with article 29.01 (1) for hours outside the normal hours of work. Hours worked while on standby shall be considered as employee scheduled hours outlined in 22.19 (b).

- Article 22.09 of the Agreement stipulates the following provisions for midwives:
  1. Where the Employer requires an employee to be available on standby during off-duty hours, an employee shall be entitled to a stand-by payment of one hour's pay at the employees base salary for each eight (8) consecutive hours or portion thereof that he/she is on standby, except on his/her days of rest and designated paid holidays. For each eight (8) consecutive hours or portion thereof that an employee is on standby on a day of rest or a designated paid holiday, he/she shall be paid one and one-half hours pay at the employee's base salary

- Additionally, the following Agreement provisions are taken into account in the planning of midwifery coverage and staffing requirements:
  - Standard yearly working hours are 1950
  - 11 paid designated paid holidays
  - 16.5 days annual vacation leave until the completion of the second year of continuous service is completed
  - 21.5 days annual vacation leave between two and seven years of continuous service
  - Sick leave 15 days annually (average of 7.5 days of absence used for calculations)
  - Employee scheduled time and compensatory leave at the rate of time and one half for all hours worked in excess of 150 hours over a 28-day period as per article 22.19 (b)
  - Compensatory leave not used by the end of the fiscal year, liquidated up to a maximum of 112.5 as per article 22.19 (d)
  - Stand-by compensation when on-call outside of normal work hours as per Article 29.01(1).

- Additionally 6 days of training and educational purposes for each midwife were included into the staffing calculations. Five days of mandatory leave without pay were also taken into account when calculating the actual days that midwives are available to provide service.

- Although flex time provisions exits, health and social service authorities will incur overtime costs when circumstances do not enable flex hours.

- Indirect client services (approximately 0.2 – 0.4 FTE): continuing competence activities, program and policy work, coordination and participation in Maternity Care Committee meetings and other committees of the FSHSSA, continuous quality improvement, etc.

7.1.5 Calculation of Annual Midwifery Coverage

Table 11 highlights the number of designated days when each midwife is available and not available to provide services. This is based on a five day work week and 52 weeks of work per year.

Table 11: Annual Midwifery Coverage Required

Each Midwife/ Year	Hours/Days/Weeks
Annual Leave	21.5 days (after two years)
Public Holidays	11 days
Absence/Sickness	7.5 days (on average)
Training/Education	6 days
Mandatory Leave without Pay	5 days
Total Unavailable Days/Year	51 days
Unavailable Work Weeks/Year	10.2 weeks
Available Work Weeks/Year	41.8 weeks

7.1.6 Estimated Workload and Activities

Table 12 reveals the estimated workload (direct and indirect client care activities) of a midwife working in this community-based model.

Table 12: Work Activities and Estimated Time Allocation (Weekly and Annually)

Work Activities	Weekly Allocation	Annual Allocation
Pre-conception counselling and health assessment	1 hour	41.8 hours
Prenatal care	9 hours	376.2 hours
Intrapartum care	5.3 hours	221.5 hours
Postpartum care	7.2 hours	300.9 hours
Group teaching and health promotion	1 hour	41.8 hours
Coordination of services for maternity care clients	2 hours[170]	83.6 hours
Coordination of Maternity Care Committee and participation in other committees of the HSSA	3 hours	125.4 hours
Program and policy development and evaluation	4 hours	167.2 hours
Client triage and telephone response (daytime and after hours) on average per midwife per week	4 hours	167.2 hours
Staff training and orientation	1 hour	41.8 hours
Total	**37.5 hours/week**	**1567.20 hours/year**

7.1.7 Midwifery Practice

- Midwives are recognized as “registered midwives” not “staff nurses”.
- As per the Midwifery Practice Framework, midwives are expected to fulfil their scope of practice.

[170] Reduced number of hours for coordination of services for maternity care clients from 3 to 2 given that an administrative assistant will likely be able to assist with this task. Additionally, the 5 hours of administrative and program maintenance has been removed to reflect the hiring of an 0.2 FTE administrative assistant.

- Birthing in the community is not dependent on the presence of a physician on site.
- Midwives must have access to appropriate health care providers by telephone/telehealth (videoconferencing) (e.g., obstetricians, paediatricians).
- Linked to the STHA NWHP.
- Client charts are shared with other midwives in the community, as occur with other health care professionals.
- Standard maternity care forms are to be used.
- Registered midwives are authorized to order medevacs.
- NIHB recognizes that midwives are authorized to prescribe drugs as per the regulations and schedules outlined in the Midwifery Practice Framework.

7.1.8 Other Associated Roles and Responsibilities

- Regular participation in the Maternity Care Committee of midwives, family physicians (if in community), nurses and midwife locums is required.
- Given that each midwife is unavailable to provide services for 51 days per year, investment in a locum midwife is necessary to provide consistent coverage for community births.
- Since midwives, and registered nurses and community health nurses to some extent, will be involved in providing neonatal care, neonatal resuscitation program (NRP) is required (all expected to have CPR). If a physician is on site for back-up, it is expected s/he will have cardiopulmonary resuscitation (CPR), NRP, Advances in Labour and Risk Management (ALARM) or Advanced Life Support in Obstetrics (ALSO).
- Specialist consultations by phone or medevac.
- A second birth attendant (e.g., nurse practitioner, registered nurse, physician) is required if only one midwife (full-time or locum) is available to attend a birth
    - Nurses who are properly trained and prepared to participate as a second attendant must be compensated accordingly for their time

7.1.9 Program Space

- In an effort to enhance integration with existing primary care teams and to promote linkages with existing health promotion programs, community-based midwifery programs will be located, where practical and appropriate, in community health centres/clinics (specifically in areas where healthy and sick clients will no mix).
- Creative scheduling and timing of clinics/classes/home visits may be required to maximize space availability and to accommodate client preferences.
- If birthing in the community health centre/clinic is an option, a dedicated space – not to be used for anything other than ultrasound – must be allocated.
- Space should be allocated for a birthing /postpartum room(s), prenatal clinic room, office for midwives and an area for family members accompanying a woman in labour.
- Allocation of a birthing space does not preclude a woman's choice to birth at home with the assistance of a midwife.
- Allocation of a midwifery program office does not preclude home visits for prenatal and postnatal care.

7.1.10 Implementation Timeline

As noted above, it is expected that prior to the development and implementation of any model presented, extensive community consultation will occur to determine the level of interest in, and commitment to, the expansion of midwifery. An SOGC policy statement on returning birth to Aboriginal, rural and remote communities notes that the support of the community is important and that women, community leaders and Elders all need to be involved in promoting the return of birth to their communities.[171]

The suggested timeline (refer to Figure 6) and activities for a community-based model:

- Consultation (Months 1-3): Community engagement sessions to be carried out by representatives from HSS or by a midwife consultant hired on a contract basis by HSS
- Recruitment (Months 4-9): Assuming community readiness, recruitment of two midwives and an administrative assistant
- Program Set-up (Months 10-15/18):
    - Determination of program location (may require existing health centre renovations or finding a space to lease)
    - Purchase of medical equipment and supplies
    - Capital purchases (e.g., desks, computers)
    - Equipment rentals (photocopier)
    - Phone system set-up
    - Office supply purchase
    - Organizing program space
    - Computer programming and software installation
    - Form retrieval
    - Advertising / Outreach
- Program Initiation
    - 15 to 18 months from start of community consultation
        - Heavily dependent on timeliness of consultations and recruitment.
        - There may be some overlap of the phases thereby reducing the initiation date.

Figure 6: Community Model Timeline

Description	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Consultation																		
Recruitment																		
Program Set-up																		
Program Initiation																		

[171] The Society of Obstetricians and Gynaecologists of Canada. (2010). Returning Birth to Aboriginal, Rural, and Remote Communities. *J Obstet Gynaecol Can*, 32(12):1186–1188.

7.1.11 Model Pros and Cons

Table 13 identifies potential pros and cons associated with a community-based midwifery model. These pros and cons are based on evidence collected from the various lines of inquiry.

Table 13: Potential Model Pros and Cons

Pros	Cons
▪ In comparison to the other two models, a cost effective approach to birthing since it does not require travel (or paid accommodation) to birth for low risk clients who choose to birth with the midwife. ▪ Increases potential for improved health outcomes as a result of increased access to local care and increased continuity of care (i.e., more opportunities to monitor client health, to conduct screening and to carry out health promotion/disease prevention training). ▪ Supports the importance of culturally appropriate health care which requires respect for choice of community based birth.[172] ▪ Supports culture of normal birth. ▪ Decreases the length of hospital stay for those clients who choose to birth outside of the community in a hospital setting. ▪ Supports the importance of family and community support during birth for those low risk clients who choose to birth with the midwife. ▪ Supports the building of family and community relationships and intergenerational support and learning.[173] ▪ For those low risk clients who choose to birth with the midwife, eliminates the need to be evacuated. Evacuation is associated with both social and medical risks: loss of autonomy, poor diet, substance abuse, family stress, lack of information, lack of family support and care and higher rates of intervention.[174] ▪ Provision of community-based services are shown to help Aboriginal people heal the trauma associated with the residential school experience.[175]	▪ Highly dependent on the recruitment and retention of qualified and dedicated staff. ▪ High risk clients still have to be evacuated to appropriate facility for birthing. ▪ Potential for increased number of medevac flights due to the fact that women who would have been in hospital when an emergent care was needed, are still in the community. ▪ Continued lack of awareness and understanding of midwifery practice in communities not offering midwifery services (i.e., perceptions regarding the safety of birthing outside of the hospital setting). ▪ Possibility of limited integration of midwives with primary care professionals located outside of the community. ▪ Transitioning to a new model of primary care (with new roles and responsibilities) that includes midwives as autonomous health care providers can be difficult. ▪ Change in demographic over time may lead to reduced number of birth and thus impact the viability and cost effectiveness of the program. ▪ Success is inextricably linked to community desire for a midwifery program – so even if a community meets the birth rate threshold, residents may not want the service, which reduces its value. ▪ Consultations conducted for this review suggest strong resistance from existing family physicians to a Yellowknife midwifery program - specifically one aimed at the general

[172] van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].
[173] van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].
[174] van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].
[175] Smith, D., Varcoe, C., Edwards, N. (2005). Turning Around the Intergenerational Impact of Residential Schools on Aboriginal People: Implications for Health Policy and Practice. Vol. 37(4): 38–60

Pros	Cons
▪ Provision of community birthing is found to play a role in enhancing women's self-esteem, feeling of control of her life and her decisions regarding health care. ▪ Existing data from Nunavik shows that safe outcomes can be achieved with transfer times of 4-6 hours to a referral centre. The transfer capacities available in NWT are considered adequate to support the development of safe maternity services in many communities.[176] ▪ Potential site for practicum training for midwifery students. ▪ Decentralized model of care aligns with the priorities identified by the Caucus for the 17th Legislative Assembly.	population.

7.1.12 Model Costing Data

CONSIDERATIONS

- Due to the absence of a fee-for-service model in the NWT, costing perinatal care service by provider is challenging.
- There is no clear evidence that adoption of perinatal care services by midwives within communities would significantly impact the necessity/frequency of routine physician visits. Furthermore it is unclear what impact the expansion of midwifery services within communities, that already offer perinatal care services, will be (i.e. decreases in the number of physicians required to provide perinatal care). There is variance in the cost of service by provider (e.g., midwife, physician, or nurse) that makes assuming overall cost savings or generation by service provider difficult.
- The cost of implementation and upkeep of expanded perinatal care services is highly dependent on location. Existing infrastructure, community buy-in, access to support services (e.g., an operating room) and personnel on hand all impact the overall operational costs.
- The cost of medical travel has been difficult to ascertain on a case-by-case basis, therefore costing data is based on averages.
- The workload of midwives is based on anecdotal evidence and overview documentation from Fort Smith. This presents a challenge when attempting to determine the caseload threshold of midwives across the territory.
- A maximum of 25 births/midwife/year has been suggested by the Steering Committee. According to the Canadian Midwifery Regulators Consortium:

"The caseload of each midwife [in the NWT] may be lower than 30 to 40 per year (refer to Table 14) as in most Canadian jurisdictions, however the practice not necessarily less busy.

[176] Crosbie, C., Kaufman, K., McNiven, P., Rogers, J., Soderstrom, B., Tulugak, M and van Wagner, V. (2003). Assessment of the Midwifery Practice Framework for the GNWT. Midwifery Education Programme, McMaster University, Hamilton, Ontario.

Midwives may be involved in other aspects of care such as well woman care, therapeutic abortion counselling and follow-up care, and family planning. In addition, midwives provide leadership and expertise in maternity education and training of other health care providers"[177]

Table 14: Maximum Midwifery Caseloads by Jurisdiction in Canadian Provinces/Territories where the Practice is Regulated

Jurisdiction	Primary Midwife	Secondary Midwife	Total
British Columbia	40-60	15-20	55-80
Alberta	40	40	80
Saskatchewan	Not available	--	--
Manitoba	30-40	10-20	40-60
Ontario	40	30-40	70-80
Quebec	40	40	80
Nova Scotia*	Not available	--	--

* Recruitment and retention issues have made establishing maximum client loads not possible at this time

DETAILED DESCRIPTION OF COSTS BY COMMUNITY

Table 15 represents the costs associated with supplies and human resource capacity required to operationalize the community model within the four identified communities. Wages and expenses were averaged based on operational costing trends for the Fort Smith midwifery program, the UNW Collective Agreement and Senior Management Handbook as well as interview data.

Table 15: Community Model Description of Costs by Item

Item	Cost
Compensation and Benefits	$175,000/midwife
Locum Coverage*	$10,365/month
Other Expenses**	$22,000/per 2 midwives
Administrative Support Staff***	$37/hour ($5,966.25/month)
Travel	As per location
Recruitment and Retention	$12,500/position
Relocation	$10,000/position

*At an assumed rate of $69.10/hr. and monthly workload of 150 hours. Fee was calculated using midwife hourly compensation (minus benefits [23%]) as per conversations with exiting locum midwives. It should be noted that compensation is based on experience.

**As per provided operational costs for Fort Smith expenses include the following categories/ supplies: Supplies (printing, stationary, office supplies, gasoline, food, medical and surgical supplies, drugs, medical gasses, education); Sundry (postage, courier and telephone (long distance, local and fax); Staff Training and Development; Subscription and Membership Fees; Equipment Maintenance; Rental/Lease of Equipment; Minor Equipment.

***Calculation based on the current UNW Collective Agreement and Senior Management Handbook for a pay range 8 ($55,984.50 to $66,826.50 per year), plus 23% for benefits. The hourly range was estimated using an average between the minimum ($35.31/hour) and maximum ($38.37/hour).

Table 16 details the number of midwives required by community. Based on the expanded scope of practice and the increased time demands associated with incomplete courses of care, consensus among

[177] Canadian Midwifery Regulators Consortium. Working Conditions available online at http://cmrc-ccosf.ca/node/60

Steering Committee members was reached that midwives practicing in the NWT should limit their practice to 50 pregnant women a year (acting in the capacity of primary midwife for 25 births and secondary midwife for the remaining 25). As well, a review of the literature in conjunction with interview data suggests a minimum of two midwives are required in any one location to ensure appropriate coverage and program stability. Assuming an uptake similar to what has been achieved in Fort Smith (46% of women birthing in the community), minimum midwifery personnel and caseload maximums two midwives would be required to run programs in Hay River, Inuvik and Behchoko and six midwives would be needed to support the program in Yellowknife. Costing data has been based on these numbers, however, program surveillance would be required to ensure cost effectiveness or to identify gaps in coverage.

Table 16: Average Number of Births for Communities under Consideration within the Community Model of Care

Community	Average Birth by Residence (1995-2010)	Number of Required Midwives
Hay River	56.5	2
Inuvik	67.6	2
Yellowknife	297.6	6
Behchoko	46.8	2

Table 17 provides the annual cost associated with human resources and supplies by community. It is important to note that **operational and infrastructure costs are not included in this analysis** and would significantly increase the cost of program delivery. Hay River is associated with the highest cost savings due to reductions in the amount of travel required for birth and reductions in hospital stays and lodging associated with the practice of flying women out at 36 weeks. Yellowknife represents the most cost intensive program driven by a lack of cost savings and large staffing requirements.

Table 17: Annual HR and Supplies Costs By Community for NWT Communities with births in excess of 25/year

Community	Annual Cost*	Onetime Costs*	Savings (Flight and accommodation)	Savings (hospital stay)	Annual Net**
Hay River†	$427,779.00	$45,000.00	$94,658.20***	$65,000.00	$268,120.80
Inuvik †	$427,779.00	$45,000.00	N/A	$77,740.00****	$350,039.00
Yellowknife‡	$1,187,595.00*****	$135,000.00	N/A	$342,240.00****	$845,355.00
Behchoko†	$427,779.00	$45,000.00	$32,251.94******	$53,820.00	$341,707.06

†Annual costs are calculated based on 2 midwives with 4 months locum coverage and 0.2 FTE administrative support as well as additional expenses.

‡Annual cost is calculated based on employment of 6 midwives and 1 FTE administrative support staff as well as additional expenses.

*Does not incorporate costs associated with infrastructure or consultation.

**Does not capture one-time costs associated with recruitment and retention and relocation.

***Savings are calculated based on 46% of women choosing to birth within the community and an average 4 week (28 day) stay in Yellowknife($107/day), average flight cost of $644.70/return.

****Savings calculated based on 46% of women choosing to birth within the community and elimination of one day in hospital. There is no cost savings associated with travel or accommodation

*****Assumption that no locum coverage would be required, if locum coverage were deemed appropriate an additional $124,380 would have to be included in the annual budget. Savings calculated based on 46% of women choosing to birth outside of the hospital. There are no savings associated with travel or accommodation.

****** Savings calculated on 46% of women choosing to birth within the community and elimination of one day in hospital. There is no travel cost savings associated with this model. Savings associated with accommodations are based on a 14 day stay in Yellowknife.

7.2 Regional Midwifery Option

The following option builds upon the regional model presented in the 2008 ISDM Midwifery Planning Document and takes into consideration the Collective Agreement between the Union of Northern Workers and the Minister Responsible for the Public Service. The model also makes reference to the Nunavik Midwifery Program, recognizing the success of this regional model of care.

7.2.1 Model Description

The regional model is intended to keep birth as close to home as possible. While women will still be expected to travel to regional centres to birth, the care they receive and the people who provide that care are "…closer to their experience and expectations".[178] Additionally, by keeping birthing closer to home, there is an increased likelihood that family members may be able to accompany the pregnant woman to the regional centre to take part in the birthing process.

The regional model is designed to offer communities within a specified region, that lack the critical minimum number of births to develop a sustainable community-based midwifery program, to access midwifery services offered at a centrally located regional birthing centre thereby providing choice of care provider, improving continuity of care and decreasing the length of stay outside of the home community. Women who choose to birth with a midwife will be flown to the centre at between 37 – 38 weeks gestation. Perinatal care will be carried out by nurses in communities in consultation with midwives. Additionally midwives will fly out to communities within their region one to two times annually to provide support to women, families and community health nurses.

7.2.2 Regions for Consideration

- Beaufort Delta Region (Inuvik would operate as the regional centre since it has the Inuvik Regional Hospital, a Level D facility)
    - Some medical travel cost savings since clients would leave their communities at a later date to travel to Inuvik (e.g., leave at 38 weeks instead of 36-38 weeks which is the case for most communities)
    - Midwife travel costs to regional communities to provide outreach services to maternity clients and to advise and support community health nurses
    - Midwifery would result in duplication of maternity services since locum physicians are currently responsible for birthing (however, given the increasing variability of locums in Inuvik, IRH could find itself without locums experienced in obstetric care
    - Increased staffing costs

[178] The Society of Obstetricians and Gynaecologists of Canada. (2007). A Report on Best Practice for Returning Birth to Rural and Remote Aboriginal Communities. *J Obstet Gynaecol Can*, 29(3): 250-254.

- Sahtu Region (Norman Wells would operate as the regional centre since it has a Level B/C facility)
    - Some medical travel cost savings since clients would travel to Norman Wells instead of Inuvik and because low risk clients in Norman Wells clients would not need to travel
    - Midwife travel costs to regional communities to provide outreach services to maternity clients and to advise and support community health nurses
    - No duplication of maternity services
    - Capital or leasehold improvement costs (e.g., boarding home, program space)
    - Increased staffing cost
- Dehcho Region (Fort Simpson would serve as the regional centre since it has a Level B/C facility)
    - Medical travel cost savings since clients would travel to Fort Simpson instead of Yellowknife/Inuvik/Fort Nelson, they would leave their communities at a later date (e.g., leave at 38 weeks instead of 36 weeks which is the norm for some communities) and there would be no travel for low risk Fort Simpson clients
    - Midwife travel costs to regional communities to provide outreach services to maternity clients and to advise and support community health nurses
    - No duplication of maternity services
    - Capital or leasehold improvement costs (e.g., boarding home, program space)
    - Increased staffing cost
- Tlicho Region (Behchoko would serve as the regional centre since it has a Level B/C facility)
    - Some medical travel cost savings since clients would leave their communities at a later date (e.g., leave at 38 weeks instead of 36-37 weeks which is the case for the communities) and because clients in Behchoko would not need to travel to Yellowknife (i.e., savings of mileage and accommodation for Behchoko residents)
    - Limited midwife travel costs to regional communities to provide outreach services to maternity clients and to advise and support community health nurses
    - Proximity to Yellowknife facilities and health care providers may be considered duplication of services
    - Capital or leasehold improvement costs (e.g., boarding home, program space)
    - Increased staffing cost

While all four locations are suitable for the establishment of a regional centre, due to existing practices surrounding evacuation for birth and the presence of a level D facility that boards maternity clients, Beaufort Delta Region represents the most viable option at this point in time.

Hay River is not considered for inclusion as a regional centre since the vast majority of births occur in the community of Hay River. Residents in Hay River Reserve and Enterprise are considered part of the Hay River community model.

Regional centres do not need to meet the critical birthing threshold (n=25) since they will be providing services to clients from regionally situated communities as well.

Consideration may be given to piloting a community-based model that morphs into a regional-based model upon proven success of the program and interest and commitment in midwifery services from surrounding communities.

7.2.3 Staffing Requirements

The territorial midwifery model requires the following staffing investment which is based on an employment model:

- A minimum of three (3) full-time employed (FTE) midwives. Additional midwives will be required in regions where consistently more than 50 women choose to utilize midwifery services. Due to their increased scope of practice midwives are only able to provide primary care to up to 25 women.
- 0.5 FTE administrative support staff
- At a minimum, locum midwife/ midwives to cover 30.6 weeks of unavailable work weeks per year (3 midwives x 10.2 weeks when provision of midwifery services is not available)

7.2.4 Midwifery Client Load

- Same as identified in the community model.

7.2.5 Calculation of Annual Midwifery Coverage

- Same as annual midwifery coverage identified in the community model.

7.2.6 Estimated Workload and Activities

The following Table 18 identifies work activities associated with the regional model (with the exception Beaufort Delta Region, which would be operated by four midwives, all regions would operate with three midwives). It should be noted that midwives hired to help run the regional program are expected to work as a collaborative group and complete tasks that optimize their skill sets and interests. As such, each midwife is not expected to perform each activity identified, with the exception of client care and outreach services.

Table 18: Work Activities and Estimated Time Allocation (weekly and annually)

Work Activities	Weekly Allocation	Staffing Requirement	Total Staff Allocation/Week	Annual Allocation
Pre-conception counselling and health assessment	1 hour	3	3	125.4
Prenatal care	9 hours	3	27	1128.6
Intrapartum care	5.3 hours	3	15.9	664.62
Postpartum care	7.2 hours	3	21.6	902.88
Develop and Maintain a the Regional Women's Health Program	3 hours	2	6	250.8

Work Activities	Weekly Allocation	Staffing Requirement	Total Staff Allocation/Week	Annual Allocation
Coordination of Maternity Care Committee and participation in other committees of the HSSA	2 hours	3	6	250.8
Bi-weekly telehealth rounds with Community Health Nurses within region	2 hours	1	2	83.6
Resource and Support for Community Health Nurses within region	1 hour	2	2	83.6
Program and policy development and evaluation	1 hours	1	1	41.8
Client triage and telephone response (daytime and after hours) on average per midwife per week	2 hours	3	6	250.8
Mentorship and Teaching	2 hours	1	2	83.6
Establish and Maintain a regional Maternity Care Committee	3 hours	1	3	125.4
Staff training and orientation	1 hour	1	1	41.8
Provide perinatal support if Regional facilities available	2 hours	2	6	250.8
Travel	5 hours	2	10	418
Total			**112.50 hours/week**	**4702.5 hours/year**

7.2.7 Midwifery Practice

- Same as identified in the community model.

7.2.8 Other Associated Roles and Responsibilities

Associated with Client Load

- Midwives in a regional centre are expected to provide outreach services to maternity clients (high and low risk) throughout the region. This will entail travel on a regular basis to all communities within the region to advise and support prenatal and postnatal care.
- Midwives in regional centres may be required to travel to a community, providing availability of flights and weather conditions, on an urgent basis to assist with emergency unplanned births.
- Community clients will be expected to travel to the regional centre to birth since it is not feasible to have midwives travel to each community for planned births.
- All clients followed by a midwife regardless of risk status.

Regional Roles and Responsibilities

- Develop and implement a Regional Women's Health Program. The program, much like the Northern Women's Health Program, would be designed to improve coordination of care for women flown into the regional centre by acting as a "single point of reference" for all women receiving perinatal care within the region. It would also represent a best practice centre for

community health nurses and help to foster a collaborative interdisciplinary site for perinatal care for a particular region.

- Regular participation in the Maternity Care Committee of midwives, family physicians, nurses and midwife locums is required.
- Regular participation in a Midwifery Practice Committee composed of midwives from across the NWT that meets bi-weekly for the purposes of providing support.
- Establish bi-weekly telehealth rounds with Community Health Nurses for the provision of advice and support. Support and advice will also be provided in-person.
- Support perinatal services provided through the Inuvik Regional Hospital.
- Act as 'consultants' to community health nurses through the through in-person, telehealth and telephone calls.
- While Inuvik keeps blood (for surgery and caesarean sections) and can do some blood typing and grouping (in emergencies), all prenatal lab work is sent out (exception at present: CBCs). Rankin Inlet has kept two units of blood and used them once in 10 years of operation. Accordingly, it is not expected that regional centres without laboratory facilities will operate and differently that those with laboratory capabilities.
- Specialist consultations by phone or medevac.

7.2.9 Program Space

- A location for the midwifery program will need to be identified and leased. The space must allow for birthing /postpartum room(s), prenatal clinic rooms, office(s) for midwives and an area for family members accompanying a woman in labour. Given the potential client load, it is unlikely that an existing health centre could accommodate the space required. It is advised that the primary space be located outside of a hospital setting (if one should exist). It is suggested that the regional program be located in a standalone location and be referred to as a birthing centre.
- If available, a small dedicated space in a designated area of a hospital or community health centre would facilitate integration of perinatal primary care team members and help to break down professional silos.
- While in the communities, midwives will have to share space with community health nurses and other health care professionals. Creative scheduling and timing of clinics/classes/home visits may be required to maximize space availability and to accommodate client preferences.
- Women awaiting delivery at Inuvik Regional Hospital are currently boarded at the hospital. It is assumed that this site of accommodation would not change in the short-term if Inuvik became a regional centre. Regional centres other than Inuvik would need to identify an appropriate space for boarding.
- Allocation of a birthing space does not preclude a woman's choice to birth at home with the assistance of a midwife.
- Allocation of a midwifery program office does not preclude home visits for prenatal and postnatal care.

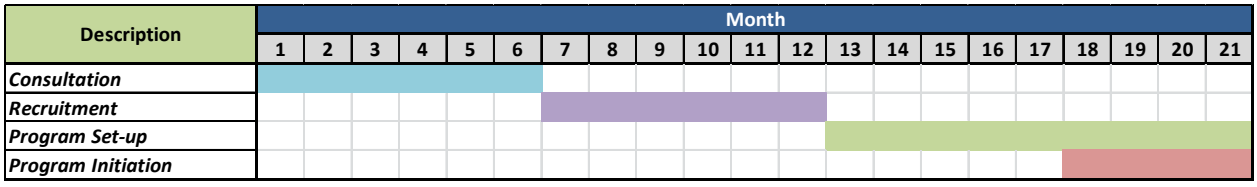
7.2.10 Implementation Timeline

As noted above, it is expected that prior to the development and implementation of any model presented, extensive community consultation will occur to determine the level of interest in, and commitment to, the expansion of midwifery. In the case of the regional model it is advised that community consultations be carried out with community members, health professionals (surgeon, family physicians, locum physicians, community health nurses, public health nurses, etc.), senior management representing regional HSSA, Aboriginal leadership and organizations as well as others as identified.

The suggested timeline (refer to Figure 7) and activities for a regional-based model:

- Consultation (Months 1-6): Community engagement sessions to be carried out, in all communities within the region, by representatives from HSS or by a midwife consultant hired on a contract basis by HSS
- Recruitment (Months 7-12): Assuming community readiness, recruitment of three midwives.
- Program Set-up (Months 13-18/21):
    - Identification, leasing and modification of program space
    - Purchase of medical equipment and supplies
    - Capital purchases (e.g., desks, computers)
    - Equipment rentals (photocopier)
    - Phone system set-up
    - Office supply purchase
    - Organizing program space
    - Computer programming and software installation
    - Form retrieval
    - Advertising/outreach
- Program Initiation
    - 18 to 21 months from start of community consultation
        - Heavily dependent on timeliness of consultations and recruitment.
        - There may be some overlap of the phases thereby reducing the initiation date.

Figure 7: Regional Model Timeline



7.2.11 Model Pros and Cons

Table 19 identifies potential pros and cons associated with a regional-based midwifery model. These pros and cons are based on evidence collected from the various lines of inquiry.

Table 19: Potential Model Pros and Cons

Pros	Cons
▪ Provide support to increase knowledge, skill and confidence level of community health nurses with regard to perinatal care (which may translate into decreased number of unnecessary medevacs). ▪ Provide increased coordination of maternity care for women through the development of a Regional Women's Health Program. ▪ Keeping birth as close to home as possible provides women with care that is "…closer to their experience and expectations".[179] ▪ Keeping birth closer to home increases the likelihood that family members may be able to accompany the pregnant woman to the regional centre to take part in the birthing process. ▪ Increases potential for improved health outcomes as a result of increased access to consistent care and increased continuity of care (i.e., more opportunities to monitor client health, to conduct screening and to carry out health promotion/disease prevention training). ▪ Supports the importance of culturally appropriate health care which requires respect for choice of community based birth.[180] ▪ Supports culture of normal birth. ▪ Decreases the length of hospital stay for those clients who choose to birth outside of the community in a hospital setting. ▪ Existing data from Nunavik shows that safe outcomes can be achieved with transfer times of 4-6 hours to a referral centre. The transfer capacities available in NWT are considered adequate to support the development of safe maternity services in many communities.[181] ▪ Potential site for practicum training for midwifery students. ▪ Decentralized model of care aligns with the priorities identified by the Caucus for the 17th Legislative Assembly. ▪ More amenable to demographic fluctuation as births are 'pooled' from multiple locations.	▪ Compared to the community model, this is a less cost effective model since it does not substantially impact medical travel costs given that travel is still required. ▪ Travel costs (including accommodation) to the regional communities for midwives to advise and support prenatal and postnatal care. ▪ In some regions may represent a duplication of perinatal services. ▪ Significant costs associated with hiring three new midwives and leasing/modifying program space. ▪ Highly dependent on the recruitment and retention of qualified and dedicated staff. ▪ High risk clients still have to be evacuated to appropriate facility for birthing. ▪ Potential for increased number of medevac flights due to the fact that women who would have been in hospital when an emergent care was needed, are still in the community. ▪ Continued lack of awareness and understanding of midwifery practice in communities outside of the region(s) not offering midwifery services (i.e., perceptions regarding the safety of birthing outside of the hospital setting). ▪ Transitioning to a new model of primary care (with new roles and responsibilities) that includes midwives as autonomous health care providers can be difficult.

[179] The Society of Obstetricians and Gynaecologists of Canada. (2007). A Report on Best Practice for Returning Birth to Rural and Remote Aboriginal Communities. *J Obstet Gynaecol Can*, 29(3): 250-254.
[180] van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].
[181] Crosbie, C., Kaufman, K., McNiven, P., Rogers, J., Soderstrom, B., Tulugak, M and van Wagner, V. (2003). Assessment of the Midwifery Practice Framework for the GNWT. Midwifery Education Programme, McMaster University, Hamilton, Ontario.

7.2.12 Model Costing Data

CONSIDERATIONS

- Same as identified in the community model.
- To date no information has been received regarding the cost of delivering perinatal care services in Inuvik. This makes costing this option a challenge.
- Costs and availability of accommodation vary by community. This is especially important when considering a location for the regional model as facilities to house individuals flying in from other communities to await labour and delivery must be considered
- Due to fluctuating cost of travel (impacted by season, market demands, and timing) estimating costs associated with transportation is challenging.

DETAILED DESCRIPTION OF COSTS BY REGION

Table 20 represents the costs associated with supplies and human resource capacity required to operationalize the regional model. Wages and expenses were averaged based on operational costing trends for the Fort Smith midwifery program, the UNW Collective Agreement and Senior Management Handbook as well as interview data.

Table 20: Regional Model Description of Costs by Item

Item	Cost
Compensation and Benefits	$175,000/midwife
Locum Coverage*	$10,365/month
Other Expenses**	$22,000/per 2 midwives
Administrative Support Staff***	$37/hour ($5,966.25/month)
Travel	As per location****
Recruitment and Retention	$12,500/position
Relocation	$10,000/position

*At an assumed rate of $69.10/hr. and monthly workload of 150 hours. Fee was calculated using midwife hourly compensation (minus benefits [23%]) as per conversations with exiting locum midwives. It should be noted that compensation is based on experience.

**As per provided operational costs for Fort Smith expenses include the following categories/ supplies: Supplies (printing, stationary, office supplies, gasoline, food, medical and surgical supplies, drugs, medical gasses, education); Sundry (postage, courier and telephone (long distance, local and fax); Staff Training and Development; Subscription and Membership Fees; Equipment Maintenance; Rental/Lease of Equipment; Minor Equipment.

***Calculation based on the current UNW Collective Agreement and Senior Management Handbook for a pay range 8 ($55,984.50 to $66,826.50 per year), plus 23% for benefits. The hourly range was estimated using an average between the minimum ($35.31/hr) and maximum ($38.37/hr).

****Based on an estimated cost per trip of $2000 for flight and accommodation.

The number of midwives required by region (refer to Table 21) are calculated following the same logic as the numbers derived for the community model (uptake of 46% with a maximum of 50 women (25 primary, 25 secondary) and a minimum of 2 midwives). An additional midwife is also required within each region to support travel to communities without disrupting services within regional hub.

Table 21: Average Number of Births by Region and Associated Midwifery Requirements

Region	Average Birth by Residence (1995-2010)	Number of Required Midwives*
Beaufort Delta Region	130.8	4
Sahtu Region	45.2	3
Dehcho Region	47.6	3
Tlicho Region	65.9	3

* Number of required midwives based on the assumption of a maximum of 25 women/year per midwife and the necessity of additional midwifery resources to permit for travel.

Table 22 details the human resource and supply costs associated with delivering a regional model of midwifery care. It should be noted that the regional model carries with it substantial infrastructure costs, which have not been included in these estimates, as space is required not only to run the program but also for facilities to lodge women awaiting delivery. Furthermore costs associated with travel currently only capture two trips to each community within a given region. Once the program is operationalized it may be necessary to re-evaluate this expenditure to ensure appropriate services are offered to women within communities as well as those residing within regional hubs (in other words, additional regional travel may be required). Since there is no cost savings associated with any of the regions delivery of the program, when corrected for population sizes of birthing women, are comparable across the board.

Table 22: Cost of Midwifery Care Services by Region, not Inclusive of Infrastructure

Region	Annual Cost*	Onetime Costs*	Est. Annual Travel***	Annual Net**
Beaufort Delta Region‡	$862,717.50	$90,000.00	$28,000.00	$890,717.50
Sahtu Region†	$655,987.50	$67,500.00	$16,000.00	$671,987.50
Dehcho Region†	$655,987.50	$67,500.00	$32,000.00	$687,987.50
Tlicho Region†	$655,987.50	$67,500.00	$12,000.00	$667,987.50

†Annual costs are calculated based on 3 midwives with 6 months locum coverage and 0.5 FTE administrative support as well as additional expenses.
‡Annual cost is calculated based on employment of 4 midwives with 8 months of locum coverage and 0.5 FTE administrative support staff as well as additional expenses.
*Does not incorporate costs associated with infrastructure or consultation.
**Does not capture one-time costs associated with recruitment and retention and relocation.
***Represents 2 trips to each community within the region.

7.3 Territorial Midwifery Option

The following option builds upon the territorial model presented in the 2008 ISDM Midwifery Planning Document and takes into consideration the Collective Agreement between the Union of Northern Workers and the Minister Responsible for the Public Service.

7.3.1 Model Description

The territorial model is intended to address the long-term sustainability of perinatal care services throughout the NWT, enhance the perinatal knowledge and skill capacity of community nurses through continued interaction and support, in concert with the NWHP enhance continuity of care for women from outlying communities, foster interdisciplinary perinatal care teams, ensure standardization of

programming and health outcome data, increase knowledge and awareness of midwifery across the territory and support the education and training of local residents interested in pursuing a career in midwifery practice. This program is also designed to offer perinatal services to all women within Yellowknife who wish to birth with a midwife as well as increase continuity of care for women who have chosen to utilize community-based midwifery services but were required to fly to Yellowknife for care or birth.

7.3.2 Communities for Consideration

Given that Stanton Territorial Hospital is located in Yellowknife and that the majority of health care professionals are located in the Yellowknife, it is suggested that the territorial model of midwifery be operated from this locale.

- No savings in medical travel costs
- Midwife travel costs to communities to provide education and support to community health nurses
- Increased staffing costs
- Capital or leasehold improvement costs (e.g., program space)

7.3.3 Staffing Requirements

The territorial midwifery model requires the following staffing investment which is based on an employment model:

- Eight (8) FTE midwives with complementary skill sets (e.g., academic networks, education/training background, service delivery-focused) would be required to run the Territorial Program. Six midwives would be required to run the service delivery aspect while two would be needed to facilitate the long-term sustainability and administrative component of the program. It should be noted that midwives will be required to work collaboratively, and most, if not all, will be required to divide their time between administrative functions and service delivery. For ease of clarity the estimated workload and activities are divided by client care and administration.
- One (1) FTE support staff member
- While no locum services would be required for Yellowknife it is important to note that for 81.6 weeks of the year only six to seven midwives will be available to provide services (8 midwives x 10.2 weeks).
- Potential for FTE midwifery staff to act as relief (e.g., fill-in during annual leave) for community/regional-based programs.

7.3.4 Estimated Workload and Activities

Table 23 identifies work activities associated with the administrative component of the territorial model. It is expected that midwives hired to run the territorial program will work together and complete tasks

that optimize their skill sets and interests. As such, each midwife is not expected to perform each activity identified.

Table 23: Work Activities and Estimated Time Allocation Administrative Component (Weekly and Annually)

Work Activities	Weekly Allocation	Staffing Requirement	Total Staff Allocation/Week	Annual Allocation
Coordination and collaboration with the Northern Women's Health Program	6 hours	2	12	501.6
Coordination of Maternity Care Committee and participation in other committees of the HSSA	5 hours	2	10	418.0
Creation and distribution of educational material	4 hours	1	4	167.2
Bi-weekly telehealth rounds with Community Health Nurses	2 hours	2	4	167.2
Resource and Support for Community Health Nurses	5 hour	2	10	418.0
Bi-weekly Midwifery Practice Committee	2 hours	2	4	167.2
Program and policy development and evaluation	4 hours	1	4	167.2
Mentorship and Teaching	2 hours	2	4	167.2
Establish and Maintain educational opportunities with accredited colleges and universities	5 hours	1	5	209.0
Staff training and orientation	2 hour	2	4	167.2
Participation in the territorial perinatal surveillance system	2 hours	2	4	167.2
Perinatal support for Stanton Territorial Hospital	5 hours	2	10	418.0
Total			**75 hours/week**	**3135 hours/year**

Table 24 reveals the estimated workload (direct and indirect client care activities) of a midwife providing client services to residents of Yellowknife.

Table 24: Work Activities and Estimated Time Allocation Client Care Component (Weekly and Annually)

Work Activities	Weekly Allocation	Annual Allocation
Pre-conception counselling and health assessment	1 hour	41.8 hours
Prenatal care	9 hours	376.2 hours
Intrapartum care	5.3 hours	221.5 hours
Postpartum care	7.2 hours	300.9 hours
Group teaching and health promotion	1 hour	41.8 hours
Coordination of services for maternity care clients	2 hours	83.6 hours
Coordination of Maternity Care Committee and participation in other committees of the HSSA	3 hours	125.4 hours

Program and policy development and evaluation	4 hours	167.2 hours
Client triage and telephone response (daytime and after hours) on average per midwife per week	4 hours	167.2 hours
Staff training and orientation	1 hour	41.8 hours
Total	**37.5 hours/week**	**1567.20 hours/year**

7.3.5 Midwifery Practice

- Same as identified in the community model.

7.3.6 Other Associated Roles and Responsibilities

- Stanton Territorial Hospital (STH) is the territorial referral centre for secondary maternity care. Pregnant women in need of advanced or specialized care will receive care from a maternity team including obstetricians, ultrasound technicians, OBS nurses and midwives.
- Some lab work able to be done at STH. Blood kept at STH.
- Provide support and/or birthing services to women who are utilizing community-based midwifery services elsewhere in the territory (e.g., Fort Smith) but who wish to birth in Yellowknife.
- Provide support to high risk women who are utilizing community-based midwifery services elsewhere in the territory (e.g., Fort Smith) but need to birth in Yellowknife.

TERRITORIAL ROLES AND RESPONSIBILITIES

- Enhance long-term sustainability of perinatal care services throughout the NWT by fostering collaboration and integration of primary care team members involved in maternity care through increased interaction as a result of participation in various committees, involvement in shared educational opportunities, caregiver consultations, located in shared spaces.
- Regular participation in the Maternity Care Committee of midwives, family physicians, nurses and midwife locums is required to discuss all clients.
- Collaborate with the Northern Women's Health Program with the long term goal of helping to improve communication and teamwork, fostering educational opportunities and coordinate access to perinatal care services. Future intent may be for Territorial midwives to take over the majority of responsibilities associated with the NWHP (exception: fetal assessment unit).
- Establish bi-weekly telehealth rounds with Community Health Nurses for the purposes of perinatal education and support. Likely involve some travel to communities to meet with community health nurses for support and educational reasons.
- Establish a Midwifery Practice Committee composed of midwives from across the NWT that meets bi-weekly for the purposes of providing support.
- Build on existing relationships (i.e., those created by midwives in Fort Smith and Yellowknife) with maternity care providers to assist with the integration of midwifery with primary care teams.
- Present lectures to Aurora College's nursing students to help increase knowledge on normal birth practices.
- Act as mentors for midwifery, nursing and nurse practitioner students.

- Develop relationships with existing Canadian midwifery education programs to facilitate access to education programs for local residents. Most programs would require a year and a half of out-of-territory training followed by two and a half years of within territory placements. Assist with the identification of northern placements.
- Lead the NWT Midwifery Advisory Committee.
- In collaboration with other midwives and other primary care professionals offering perinatal care services, the territorial midwives are tasked with developing a territorial perinatal surveillance system that will allow information on an identified list of perinatal indicators to be collected, analysed and monitored. Data collection will be standardized across care providers.
- Create educational material to be distributed to community residents that focuses on normal birth and the roles and responsibilities of midwives.
- Provide leadership in future community-based midwifery program start-up (e.g., consultations, recruitment, etc.).
- Support perinatal services provided through Stanton Territorial Hospital.
- Provide outreach services to priority populations, including but not limited to:
    - Single or teenage parents to be
    - Aboriginal families
    - Immigrants or English as a Second Language (ESL) families
    - Families experiencing additional stressors (e.g., financial, housing, lifestyle issues, isolation, and/or mental health and addictions issues)
    - Referral from another health care professionals
- It is recommended that **20%** of the program's available vacancies be reserved for individuals who represent this cohort.
- Development of partnerships with programs/organizations/departments currently engaged with this population. Work with these stakeholders to ensure that profile of the priority population is inclusive.
- Provide support and/or birthing services to women who are utilizing community-based midwifery services elsewhere in the territory (e.g., Fort Smith) but who wish to birth in Yellowknife.
- Provide support to high risk women who are utilizing community-based midwifery services elsewhere in the territory (e.g., Fort Smith) but need to birth in Yellowknife.
- Provide birthing services to women from across the territory who identify the desire to be attended by a midwife during their labour and delivery (when appropriate (i.e., low risk clients)).

7.3.7 Program Space

- The former Yellowknife Health and Social Services Authority Midwifery Program operated out of the Jan Stirling Building. This space, which did not include a birthing room, will not be large enough to accommodate six territorial midwives and their clients.
- A new location for the midwifery program will need to be identified and leased. The space must allow for birthing /postpartum room(s), prenatal clinic rooms, office(s) for midwives and an area for family members accompanying a woman in labour. It is advised that the primary space be located outside of the hospital setting and be referred to as a birthing centre.

- If available, dedicated space in a designated area of the obstetrics unit of Stanton Territorial Hospital would facilitate integration of perinatal primary care team members and help to break down professional silos.
- It is expected that as a component of outreach, midwives will offer services in locations convenient to the priority population.
- Allocation of a birthing space does not preclude a woman's choice to birth at home with the assistance of a midwife.
- Allocation of a midwifery program office does not preclude home visits for prenatal and postnatal care.

7.3.8 Implementation Timeline

As noted above, it is expected that prior to the development and implementation of any model presented, extensive community consultation will occur to determine the level of interest in, and commitment to, the expansion of midwifery. In the case of the territorial model it is advised that community consultations be carried out with community members, family physicians providing maternity care as well as obstetricians and OBS nurses, senior management from all HSSAs, community health nurses, organizations/departments/programs providing services to the identified priority populations, public health, Aboriginal organizations and others as identified. It should be noted that some consultation (e.g., physician feedback, Yellowknife community focus groups) has already occurred as part of this review; that information should be referred to during future consultations.

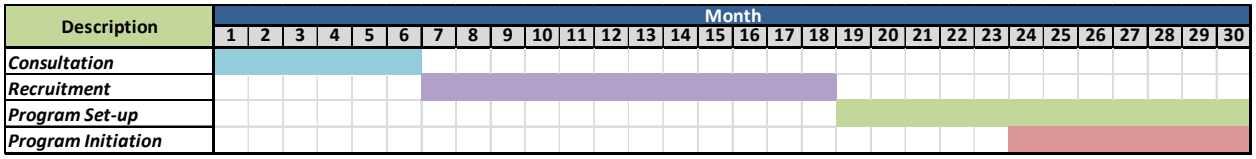
The suggested timeline (refer to Figure 8) and activities for a territorial-based model:

- Consultation (Months 1-6): Community engagement sessions to be carried out by representatives from HSS or by a midwife consultant hired on a contract basis by HSS.
- Recruitment (Months 7-18): Assuming community readiness, recruitment of four midwives.
- Program Set-up (Months 19-24/30):
    - Determination, leasing and modification of program space
    - Purchase of medical equipment and supplies
    - Capital purchases (e.g., desks, computers)
    - Equipment rentals (photocopier)
    - Phone system set-up
    - Office supply purchase
    - Organizing program space
    - Computer programming and software installation
    - Form retrieval
    - Develop partnerships with representatives from organizations/programs/departments serving priority populations
    - Programs outreach to priority populations
    - Networking with Aurora College and academic institutions offering midwifery programming
    - Development of educational materials for distribution

- Program Advertising
- Draft Midwifery Practice Committee Terms of Reference

- Program Initiation
  - 24 to 30 months from start of community consultation
    - Heavily dependent on timeliness of consultations and recruitment.
    - There may be some overlap of the phases thereby reducing the initiation date.

Figure 8: Territorial Model Timeline



7.3.9 Model Pros and Cons

Table 25 identifies potential pros and cons associated with a territorial model. These pros and cons are based on evidence collected from the various lines of inquiry.

Table 25: Potential Model Pros and Cons

Pros	Cons
▪ Provide support to increase knowledge, skill and confidence level of community health nurses with regard to perinatal care (which may translate into decreased number of unnecessary medevacs). ▪ Midwifery program helps ensure the sustainability of maternity services in the NWT should the territory experience a shortage of family physicians interested in providing maternity care in the future. ▪ Location in Yellowknife will help to foster increased collaboration and system-wide integration of perinatal health care providers to improve effectiveness of multidisciplinary care teams. ▪ Improve awareness and understanding of midwifery practice and safety of normal birth across the Territory. ▪ Provide additional supports to the Northern Women's Health Program thereby enhancing the coordination of care for women from outlying communities. ▪ Provide educational information and academic and training opportunities to local residents interested in pursuing a career in midwifery. ▪ Central location to develop a territorial perinatal surveillance system that will allow information on an identified list of perinatal indicators to be collected, analysed and monitored.	▪ Possible travel costs (including accommodation) for midwives to meet with community health nurses across the territory. ▪ Highly dependent on the recruitment and retention of qualified and dedicated staff. ▪ Supports a centralized model of care as opposed to the decentralized model supported by the priorities identified by the Caucus for the 17th Legislative Assembly. ▪ . Program will require rental/construction of a facility to support perinatal care and birth.

7.3.10 Model Costing Data

It is important to note that costs are not inclusive of infrastructure and operational costs.

Table 26: Cost of Territorial Midwifery Care

Territorial Centre	Annual Cost	Onetime Costs	Travel (Flight and accommodation)	Savings (one night hospital stay)	Annual Net
Yellowknife	$1,559,595.00	$180,000.00	$62,000.00	$342,240.00	$1,279,355.00

8. RECOMMENDED MODEL

Based on the three models presented in this report (community, regional and territorial) and the assessment criteria identified (cost and health/social outcomes), we recommend the community-based model of midwifery care for consideration by the GNWT's Department of Health and Social Services.

A community-based model of midwifery care should be considered for implementation in the NWT assuming extensive stakeholder/community consultation determining interest and commitment to the expansion of midwifery services in the Territory.

- The community-based model (a decentralized model of care) was determined to:
  - be the most cost effective due primarily to a decrease in scheduled travel costs (airfare and accommodation); have the most evidence available that supports the existence of, and the potential for, enhanced health/social outcomes including increased breastfeeding initiation, decreased preterm delivery, decreased stress, increased opportunities for familial and community support as a result of increased access to local care and increased continuity of care (e.g., more opportunities to monitor client health, to conduct screening and to carry out health promotion/disease prevention training);
  - eliminate the need for low risk client evacuation (evaluation is associated with increased medical and social risks);
  - strongly support the importance of culturally appropriate health care, which requires respect for choice of community-based birth;
  - support the building of family and community relationships and intergenerational supports an learning;
  - enhance women's self-esteem, feelings of control and decision-making powers; and
  - provide an approach to perinatal care that can achieve safe outcomes (i.e., adequate transfer times possible).

It is our recommendation that a successful community-based midwifery program be considered for transformation into a regional-based program in the future (given financial resource availability) since the likelihood of regional success is optimized when strong evidence for the practicality, safety and effectiveness of the community program can be demonstrated.

While the findings support that regional and/or territorial midwifery program have the potential to help ensure the sustainability of maternity services in the NWT should the territory experience a shortage of family physicians interested in providing maternity care in the future, given the current fiscal climate of the NWT, these models (particularly the regional model) are deemed cost prohibitive. Moreover, both models require additional short-term and long-term health outcome data (which could in the future be derived from the perinatal surveillance system should funds be allocated for its development and implementation) in order to provide sufficient evidence to support their value.

We suggest that both models be considered for implementation at a later date assuming funding is available and improved health outcome data exists to support their efficiency and effectiveness.

APPENDIX A: BIBLIOGRAPHY

Alperin, M., Krohn, M.A. and Parviainen, K. (2008). Episiotomy and increase in the risk of obstetric laceration in a subsequent vaginal delivery. *Obstetrics and Gynecology* 111(6): 1274-1278.

Archibald, L. and Grey, R. (2000). Health Transition Fund Final Report: Evaluation of models of health care delivery in Inuit regions. September 12, 2000.

Anim-Somuah, M., Smyth, R., and Howell, C. (2005). Epidural versus non-epidural or no analgesia in labour. The Cochrane Database of Systematic Reviews, Issue 4 Art. No.: CD000331.

Arenz, S., R. Rockerl, B. Koletzko, and R. Von Kries (2004). Breast-feeding and childhood obesity – a systematic review *International Journal of Obesity and Related Metabolic Disorders* 28: 1247-1256.

Association of Ontario Midwives. (2011). Sustaining Midwifery. http://www.aom.on.ca/Communications/Government_Relations/Sustaining_Midwifery.aspx

Association of Ontario Midwives. (2011). Benefits of Midwifery to the Health Care System. http://www.aom.on.ca/Communications/Government_Relations/Benefits_of_Midwifery.aspx

Association of Ontario Midwives. (2011). Benefits to Women Needing Obstetrical Care: A Case for Sustaining Midwifery. http://www.aom.on.ca/Communications/Government_Relations/Benefits_to_Women_Needing_Obstetrical_Care.aspx

Association of Ontario Midwives. (n.d.). Solving Ontario's Maternity Care Crisis. Submission to the Standing Committee on Finance and Economic Affairs. http://www.aom.on.ca/files/Communications/Government_Relations/Submission_to_the_Finance_Commitee2.pdf

Association of Ontario Midwives. (2007). Benefits of Midwifery to the Health Care System.

Ayers S, and Pickering A.(2001) Do women get posttraumatic stress disorder as a result of childbirth? A prospective study of incidence. *Birth* 2:111–118;

Baj, J, Gayaneshwar, R., & Bauman, A. (2008). Models of antenatal care and obstetric outcomes in Sydney South West. Australian and New Zealand Journal of Obstetrics and Gynaecology 48(5): 454-461

Barclay, L., Cooke, M., Davis, G., & Homer, C. (2002). Women's experiences of continuity of midwifery care in a randomised controlled trial in Australia. Midwifery 18(2):102-12.

Baskett TF. 1979. A university department's involvement with medical care in the Canadian north. *CMA* 120:298-300.

Baskett TF. 1978. Obstetric care in the central Canadian Arctic. *BMJ* 2:1001-4.

Becker, G. (2006). Women's Experiences of Culturally Safe Birthing with a Midwife in a Remote Northern Community. MA Thesis. Faculty of Health and Human Sciences, Thames Valley University.

Becker, G. and Kotaska, A. (n.d.). Provision of Birthing Services in Northern Regions with Level One Centres. STHA. PPT

Begley, C., Devane, D. and Clarke, M. (2009). An evaluation of midwifery-led care in the Health Service Executive North Eastern Area: The report of the MidU study. Dublin: Health Services Executive.

Benjamin, Yvonne, D. Walsh and N. Taub (2001). A comparison of partnership caseload midwifery care with conventional team midwifery care: labour and birth outcomes. *Midwifery* 17: 234-240.

Best Start (2002). Preterm Birth: Making a Difference. Clinical Practice Guidelines. Available on line at http://www.beststart.org/resources/rep_health/pdf/Preterm_Clinical_Prct.pdf

Black DP, Fyfe IM. (1984). The safety of obstetric services in small communities in northern Ontario. *Can Med Assoc J.* Mar 1;130(5):571-6.

Black DP, Gick S. (1979). Management of obstetric complications at a small rural hospital. *Can Med Assoc J.* Jan 6;120(1):31-7.

Blais, R., Joubert, P. and L'equipe d'evaluation des projets-pilotes sages-femmes. (2000). Evaluation of the Midwifery Pilot Projects in Quebec: An Overview. *CJPH 91(1):* I-1-I-14.

Biro MA, Waldenstrom U, Brown S, Pannifex JH. (2003). Satisfaction with team midwifery care for low- and high-risk women: a randomized controlled trial. *Birth* 30:1-10.

Biro MA, Waldenstrom U, Pannifex JH. (2000). Team midwifery care in a tertiary level obstetric service: a randomized controlled trial. *Birth* 27:168-173.

Bodner-Adler, Barbara, K. Bodner, O. Kimberger, P. Lozanov, P. Husslein, and K. Mayerhofer (2004). Influence of the birth attendant on maternal and neonatal outcomes during normal vaginal delivery: A comparison between midwife and physician management. *Wien Klin Wochenschr* 116(11-12): 379-384.

Bourgeault IL, Luce J, MacDonald M. (2006). The caring dilemma in midwifery: balancing the needs of midwives and clients in a continuity of care model of practice. *Community, Work and Family* 9:389-406.

British Columbia Centre of Excellence for Women's Health. (n.d.). Solving the Maternity Care Crisis: Making Way for Midwifery's Contribution. http://www.bccewh.bc.ca/publications-resources/documents/solvingmaternitycarecrisis.pdf

Buske L. (1997). GP/FPs and the delivery of babies. *Canadian Medical Association Journal* 156:144-5.

Caird, J., Rees, R., Kananagh, J., Sutcliffe, K., Oliver, K. et al. (2010). The socio-economic value of nursing and midwifery: A rapid systematic review of reviews. EPPI- Centre: Institute of Education, University of London.

CAM. Definition of the Midwife. Adopted by the International Confederation of Midwives Council meeting, 19th July, 2005,Brisbane, Australia Supersedes the ICM "Definition of the Midwife"

1972 and its amendments of 1990
http://www.internationalmidwives.org/Portals/5/Documentation/ICM%20Definition%20of%20the%20Midwife%202005.pdf

CAM. Midwifery Models and Outcomes in Canada. Fact Sheet. http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_FACT_SHEET_Models_Outcomes_ENG_July_2010.pdf

CAM. (2010). Midwifery Care and Normal Birth. Position Statement on Normal Birth, January 2010. http://www.canadianmidwives.org/DATA/DOCUMENT/CAM_ENG_Midwifery_Care_Normal_Birth_FINAL_Nov_2010.pdf

CAM. (2012). Midwifery Practice – Standards and Guidelines. http://www.canadianmidwives.org/standards-guidelines.html

Cameron C, Eileen H. (2001). The maternity care crisis in Canada: what role can midwives play? *AOM Journal 7*(1):17-20.

Canadian Health Services Research Foundation. (2006). Allow midwives to participate as full members of the healthcare team. *Evidence Boost.*

Canadian Institute for Health Information. (2004). Giving Birth in Canada: providers of Maternity and Infant Care. Canadian Institute for Health Information: Ottawa, ON.

Canadian Institute for Health Information. (2004). Giving Birth in Canada: A Regional Profile. Canadian Institute for Health Information: Ottawa, ON.

Canadian Institute for Health Information. (2006). Giving Birth in Canada: The Costs. Canadian Institute for Health Information: Ottawa, ON.

Canadian Institute for Health Information. (2009). Highlights of 2008–2009 Selected Indicators Describing the Birthing Process in Canada. Available [online]: secure.cihi.ca/cihiweb/products/childbirth_highlights_2010_05_18_e.pdf

Canadian Institute for Health Information. (2011, May 12). Highlights of 2009–2010 Selected Indicators Describing the Birthing Process in Canada. Available [online]: http://secure.cihi.ca/cihiweb/products/quickstats_childbirth_2009_10_highlight_en.pdf

Canadian Midwifery Regulators Consortium (2006). Midwifery Education in Canada – November 2006 available at http://cmrc-ccosf.ca/node/20 accessed September 2011.

Canadian Midwifery Regulators Consortium (May 29, 2007). Multi-jurisdictional Midwifery Bridging Program Implementation Phase: Proposal for submission to Western and Northern Health Human Resources Planning Forum.

Cargill, Y. and Martel, M-J (2007). Postpartum Maternal and Newborn Discharge *JOGC* 29(4):357–359.

Carroli, G. and Mignini, L. (2009). Episiotomy for vaginal birth. *Cochrane Database of Systematic Reviews* 1: CD000081.

Casson RI, Sennett ES. (1984). Prenatal risk assessment and obstetric care in a small rural hospital: comparison with guidelines. *Can Med Assoc J.* May 15;130(10):1311-5.

Centre for Rural Health Research. (2009). Providing a Birth Support Program for Women of the North Island region, Vancouver Island: An Aboriginal Midwifery Demonstration Project. August 2007.

Chang, S-R., K-H. Chen, H-H Lin, Y-M Chao and Y-H Lai (2011). Comparison of the effects of episiotomy and no episiotomy on pain, urinary incontinence, and sexual function 3 months postpartum: a prospective follow-up study. *International Journal of Nursing Studies,* 48: 409-418.

Chalmers, B, J. Kaczorowski, E. Darling, M. Heaman, D.B. Fell, B. O'Brien, and L. Lee (2010). Cesarean and vaginal birth in Canadian women: a comparison of experiences. *Birth* 37(1): 44-49.

Chamberlain M, Barclay K. (2000). Psychosocial costs of transferring women from their community for birth. *Midwifery* 16:116-22.

Chamberlain, M. (1997). Challenges of clinical learning for student midwives. *Midwifery* 13(2): 85-91.

Chatwood-Affleck S, Lippman A, Joseph L, Pekeles G. (1998). Indications for transfer for childbirth in Inuit women at the Innuulisivik Maternity. *Int J Circumpolar Health 57*(Suppl 1):121-6.

Christilaw, Jan. (2002) Perspectives on the national midwifery care crisis: the search for solutions. Talk presented at a Midwifery: Building our Contribution of Maternity Care: A Working Symposium May 1-3 Vancouver, BC.

CIHI. (2006). Giving Birth in Canada: The Costs. Ottawa, ON: CIHI. P.16-17.

Cochrane Collaboration. About us available at http://www.cochrane.org/about-us

Collin, J., Blais, R., White, D., Demers, A., Desbiens, and L'equipe d'evaluation des projets-pilotes sages-femmes. (2000). Integration of Midwifery into the Quebec Health Care system. *CJPH*, 91(1): I16-I20.

Corse, S.J., McHugh, M.K. and Gordon, S.M. (1995). Enhancing Provider Effectiveness in Treating Pregnant Women with Addictions. *Journal of Substance Abuse Treatment*, 12(1): 3-12.

Couchie C, Sanderson S. (2007). A report on best practices for returning birth to rural and remote Aboriginal communities. *J of Obstet Gynaecol of Canada,* 188:250-4.

Davey MA, Brown S, Bruinsma F. 2005. What is it about antenatal continuity of caregiver that matters to women? *Birth* 32:262-271.

Devane, D., Brennan, M., Begley, C., Clarke, M., Walsh, D. et al. (2010). Socioeconomic Value of the Midwife: A systematic review, meta-analysis, meta-synthesis and economic analysis of midwifery-led models of care. The Royal College of Midwives: London.

Devane, D., Begley, C.M., Horey, D. and O'Boyle, C. (2007). Evaluating Maternity Care: A Core Set of Outcome Measures. *Birth*, 34(2):164-172.

Douglas, V. K. (2011). The Rankin Inlet Birthing Centre: community midwifery in the Inuit context. IJCH, 70(2): 178-185.

Douglas, V.K. (2007). Converging Epistemologies: Critical Issues in Canadian Inuit Childbirth and Pregnancy. *Alaska Medicine* 49(2 Suppl):209-14.

Douglas V.K. (2006). Childbirth among the Canadian Inuit: A review of the clinical and cultural literature. *Int J Circumpolar Health*, 65: 117-32.

Drossos, A. (2002). Hypothetical Program Evaluation Proposal for: The Ontario Midwifery Program. Available [online]: www.alexdrossos.ca/downloads/midwiferyevaluation.pdf

Duijts, L., M.K. Ramadhani and H.A. Moll (2009). Breastfeeding protects against infectious disease during infancy in industrialized countries. A systematic review. *Maternal and Child Nutrition 5*: 199-210

Dutta D and J. E. Norman (2010) The efficacy of fetal fibronectin testing in minimising hospital admissions, length of hospital stay and cost savings in women presenting with symptoms of pre-term labour. Journal of Obstetrics & Gynaecology30(8):768-773

Eberle, R.L., and Norris, M.C. (1996). Labour analgesia. A risk-benefit analysis. Drug Safety 14(4): 239-51.

Ehrenthal, D.B., Jiang, X., and Strobino, D.M. (2010). Labour induction and the risk of a caesarean delivery among nulliparous women at term. *Obstetrics and Gynecology* 116(1): 35-42

Epoo, B. and Van Wagner, V. (2005). Bringing Birth Back to the Community: Midwifery in the Inuit Villages of Nunavik. ICM 27th Congress, Brisbane, AU, July 2005.

Feig, D.S., L.L. Lipscombe, G. Tomlinson, and I. Blumer (2011). Breastfeeding predicts the risk of childhood obesity in multi-ethnic cohort of women with diabetes. *The Journal of Maternal-Fetal and Neonatal Medicine* 24(3): 511-515

Flint C, Poulengeris P, Grant AM. (1989). The 'Know your midwife' scheme - a randomised trial of continuity of care by a team of midwives. *Midwifery* 1989;5:11–6.

Ford, E., Ayers, S. and Wright, D.B. (2009). Measurement of maternal perceptions of support and control in birth (SCIB). *Journal of Women's Health* 18(2): 245-252.

FSHSSA. (2011). FSHSSA Midwifery Program Annual Report to March 31, 2011, With Outcomes from April 1, 2005 to March 31, 2011.

FSHSSA. (2009). A Place of Birth Handbook for Midwifery Clients.

FSHSSA. (2006). Fort Smith Registered Midwife – Job Description. Revised June 5, 2006.

FSHSSA. (2005). FSHSSA Informed Choice of Birthplace.

Fraser, W., Hatem-Asmar, M., Krauss, I., Maillard, F., Breart, G., Blais, R., and and L'equipe d'evaluation des projets-pilotes sages-femmes. (2000). Comparison of Midwifery Care to Medical Care in Hospitals in the Quebec Pilot Projects Study: Clinical Indicators. *CJPH,* 91(1): I-5-I-11.

George, Jane (2011). Cambridge Bay's birthing centre waits for its babies. Nunatsiaq Online News: Nunavut October 16, 2011. Available at http://www.nunatsiaqonline.ca/stories/article/65674cambridge_bays_birthing_centre_waits_for_its_babies/

George, Jane (2010). Cambridge Bay celebrates birth, closer to home. Choice is important to women. Nunatsiaq Online News: Nunavut April 22, 2010. Available at http://www.nunatsiaqonline.ca/stories/article/22041_Cambridge_Bay_celebrates_birth_closer_to_home/

GNWT HSS. (2011). NWT Clinical Practice Information Notice. Congenital Anomalies Registry. Effective Date, January 1, 2011.

GNWT HSS. (2008). Midwifery within the NWT Integrated Service Delivery Model (ISDM): Planning Document. January 2008.

GNWT HSS. (2008). NWT Clinical Practice Information Notice. NWT Prenatal Record 2008. Effective Date: June 20, 2008.

GNWT HSS. (2007). NWT Clinical Practice Information Notice. NWT Clinical Practice Guidelines for Primary Community Care Nursing Chapter 12 – Obstetrics. Effective Date: August 27, 2007.

GNWT HSS. (2007). HSS Annual Report, 2006-2007. http://pubs.aina.ucalgary.ca/health/66655.pdf

GNWT HSS. (2006). Draft NWT Midwifery Practice Accountability Framework. May 23, 2006.

GNWT HSS. (2005). Prenatal Audit Tool Instruction Sheet. Revised September 2005.

GNWT HSS. (2005). Standards of Practice for Registered Midwives in the NWT. February 2005.

Godwin, M., Hodgetts, G., Seguin, R. and MacDonald, S. (2002). The Ontario Family Medicine Residents Cohort Study: factors affecting residents' decisions to practice obstetrics. *CMAJ*, 166(2):179-84.

Government of Nunavut (2007). General Practice Physicians in Nunavut Kivalliq Region available at http://www.nunavut-physicians.gov.nu.ca/kivalliq.shtml

Government of Nunavut, Health and Social Services. (2009).Nunavut Maternal and Newborn Health Care Strategy 2009-2014. Iqaluit, NU.

Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196.

Hatem M, Sandall J, Devane D, Soltani H, Gates S. (2009). Midwife-led versus other models of care for childbearing women (Review). Cochrane Database of Systematic Reviews Issue 3.

Hatem M, Sandall J, Devane D, Soltani H, Gates S. (2008). Midwife-led versus other models of care for childbearing women. Cochrane Database of Systematic Reviews 2008, Issue 4.

Health Canada. (2008). Canadian perinatal health report. Canadian Perinatal Surveillance System. Ottawa: Minister of Public Works and Government Services Canada.

Hicks C, Spurgeon P, Barwell F. (2003). Changing childbirth: a pilot project. *Journal of Advanced Nursing,* 42:617-628.

Hodnett, E.D., Gates, S., Hofmeyr, G.J., Sakala, C. (2007). Continuous support for women during childbirth. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD003766

Homer C, Brodie P, Leap N. (2001) Establishing Models of Continuity of Midwifery Care in Australia: A resource Guide for Midwives and Managers. University Technology Sydney. Cited in Queensland Government, Queensland Health. (2008). Midwifery models of care. Implementation guide. P.8 http://www.health.qld.gov.au/qhpolicy/docs/gdl/qh-gdl-906.pdfv

Homer, C.S., Matha, D.V., Jordan, L.G., Wills, J. and Davis, G.K. (2001). Community-based continuity of midwifery care versus standard hospital care: a cost analysis. *Australian Health Review*, (24)1: 85-93.

Houd S, Qinuajuak J, Epoo B. (2004). The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998-2002. *Int J Circumpolar Health, 63*(Suppl 2):239-41.

Hundley, V.A., Donaldson, C., Lang, G.D., Cruickshank, F.M., Glazener, C.M.A. et al. (1995). Costs of intrapartum care in a midwifery-managed delivery unit and a consultant-led labour ward. *Midwifery*, 11:103-109.

Hutton, E.K., Reitsma, A.H., & Kaufman, K. (2009). Outcomes Associated with Planned Home and Planned Hospital Births in Low-Risk Women Attended by Midwives in Ontario, Canada, 2003–2006: A Retrospective Cohort Study. *BIRTH 36*(3), 180-189.

Janssen, P.A., Lee, S.K., Ryan, E.M., Etches, D.J., Farquharson, D.F., Peacock, D., and Klein, M.C. (2002). Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia. *Canadian Medical Association Journal* 166(3): 315-323;

Janssen, P.A., Saxell, L., Page, L.A., Klein, M.C., Liston R.M., Lee, S.K. (2009). Outcomes of planned home birth with registered midwife versus planned hospital birth with midwife or physician. *CMAJ* 181 (6-7), 377-383.

Johnson, Maree, H. Stewart, R. Langdon, P. Kelly, and L. Young (2005). A comparison of the outcomes of partnership caseload midwifery and standard hospital care in low risk mothers. *Australian Journal of Advanced Nursing* 22(3): 21-27.

Johnson M, Stewart H, Langdon R, Kelly P, Yong L. (2003). A Comparison of the Outcomes of Partnership Caseload Midwifery and Standard Hospital Care in Low Risk Mothers. *Australian Journal of Advanced Nursing,* (22)3: 21-27.

Kaufman K., Robinson, K., Buhler, K. and Hazlit, G. (2011). Midwifery in Nova Scotia. Report of the external assessment team. July 12, 2011.

Kennare, R., Tucker, G., Heard, A., and Chan, A. (2007). Risk of adverse outcomes in the next birth after a first caesarean delivery. *Obstetrics and Gynecology* 109(2 part 1): 270-276.

Kenny P, Brodie P, Eckerman S, Hall J. (1994). Final Report. Westmead Hospital Team Midwifery Project Evaluation. Sydney: University of Sydney.

Kildea, S. and Van Wagner, V. (2012). 'Birthing on Country': Maternity Service Delivery Models, A Review of the Literature.

Kines Consulting Inc. (2010). Community Assessment and Operational Plan Level A Health Centre Prototype Example Using Sample Community Jean Marie River. Version 2.2. Prepared for GNWT HSS. December 2010.

Klein, Michael C. (2000). The Quebec Midwifery Experiment: Lessons for Canada. *Canadian Journal of Public Health* 91(1): 5-6.

Klein, Michael, Andres Spence, Janusz Kaczorowski, Ann Kelly and Stephan Grzybowski (2002). Does delivery volume of family physicians predict maternal and newborn outcome? *Canadian Medical Association Journal* 166(10): 1257-1263.

Klein M.C., MD, Kaczorowski,J, Hall, W.A., Fraser,W., Liston, R. M., Eftekhary, S. Brant, R., Mâsse, L. C., Rosinski, J., Mehrabadi, A., Baradaran, N., Tomkinson, J., Dore, S., McNiven, P. C., Saxell, L., Lindstrom, K., Grant, J., and Chamberlaine, A. (2009). The attitudes of Canadian maternity care practitioners towards labour and birth: many differences but important similarities. Journal of Obstetrics and Gynecology Canada September 827-840.

Kornelsen, Jude, Stoll, Kathrine and Grzybowski, Stephan (2011). Stress and anxiety associated with lack of access to maternity services for rural parturient women. *Australian Journal of Rural Health* 19:9-14.

Kornelsen, J. (2003). Solving the maternity care crisis: making way for midwifery's contribution. *British Columbia Centre of Excellence for Women's Health: Policy Series*. Available at www.bccewh.bc.ca.

Kornelson, J. (2002).Midwifery: Building our contribution to maternity care. Proceedings from the Working Symposium, May 1-2, 2002, Vancouver, BC.

Kornelson, J. (2001). Midwifery in Canada: Directions for Research. Proceedings from the National Invitational Workshop on Midwifery Research, May 9-11, 2001, Vancouver, BC.

Kramer, M.S., F. Aboud, E. Mironova, I. Vanilovich, R.W. Platt, L. Matush, S. Igummov, E. Fombonne, N. Bogdanocivh, T. Ducruet, J-P. Collet, B. Chalmers, E. Hodnett, S. Davidocsky, O.Skugarevsky, O. Trofimovich, L. Kozlova, and S. Shapiro (2008). Breastfeeding and child cognitive development: New evidence from a large randomized trial. Archives of General Psychiatry 65(5): 578-584.

Kramer MS (1987). Determinants of low birth weight: methodological assessment and meta-analysis. *Bull World Health Organ*: 65:663-737.

Leeman L. & Leeman, R (2002). Do all hospitals need cesarean delivery capability?: An outcomes study of the maternity care in a rural hospital without on-site cesarean capability. *The Journal of Family Practice 51*: 129-134.

Lessard P, Kinloch D. (1987). Northern obstetrics: a 5-year review of delivery among Inuit women. *CMAJ 137*(11):1017-21.

Liang, C.C., Wong, S.Y., Tsay P.T., Chang S.D., Tseung, L.H., Wang, M.F. (2002). The effect of epidural analgesia on postpartum urinary retention in women who deliver vaginally. International Journal of Obstetric Anesthesia 11:164-9.

Liberman, E. and O'Donoghue C. (2002). Unintended effects of epidural analgesia during labour. A*merican Journal of Obstetrics and Gynecology* 186(5): S31-S64.

Liu, S., Heaman, M., Sauve, R., Liston, R., Reyes, F., Bartholomew, S., Young, D., and Kramer, M.S. (2007). An analysis of antenatal hospitalization in Canada, 1991-2003. *Maternal and Child Health Journal* 11(2): 181-187.

Lindgren HE, Hildingsson IM, Christensson K, Radestad IJ. (2008). Transfers in planned home births related to midwife availability and continuity: a nationwide population-based study. *Birth* 35:9-15.

Markovic, M., Manderson, L., Schaper, H., and Brennecke, S. (2006). Maternal identity change as a consequence of antenatal hospitalization. *Health Care for Women International* 27: 762-776.

McCourt C, Stevens T. (2006). Continuity of care: what does it mean and does it matter to midwives and birthing women? *Canadian Journal of Midwifery Research and Practice 2005-2006*, 4:10-20.

Meija, A., Shirazi, R., Beech, R. and Balmer, D. (1998). Planning Midwifery Services to Deliver Continuity of Care. *Journal of the Operational Research Society.*

Midwifery Profession Act. S.N.W.T. 2003, c.21, In force January 29, 2005; SI-001-2005. Amended by .N.W.T. 2006, c.24, In force April 2, 2007; SI-001-2007. S.N.W.T. 2010, c.16,

Midwives Association of the Northwest Territories and Nunavut. (2005). Continuing Competency Program for Registered Midwives in the NWT. January 31, 2005.

Midwives Association of the Northwest Territories and Nunavut. (2005). Code of Conduct for Registered Midwives in the NWT. January 25, 2005.

Mignone, J., Herrera, J., Icú, H., Couchie, C., Munro, G., Jiménez, M., & Chex, R. (2009). Strengthening Indigenous and Intercultural Midwifery: Evaluation of a Collaboration between Guatemalan and Canadian Aboriginal Organizations. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health 7*(1), 133-155.

Miles. M., Francis, K. and Chapman, Y. (n.d.). Challenges for Midwives: pregnant women and illicit drug use. *Australian Journal of Advanced Nursing*, 28(1): 83-90.

Morgan M, Fenwick N, McKenzie C, Wolfe CDA. (1998). Quality of midwifery led care: assessing the effects of different models of continuity for women's satisfaction. *Quality in Health Care,* 7:77-82

Morewood-Northrop, M. (2000). Community birthing project: Northwest Territories. IN The New Midwifery Page L., & Percival P. (eds). Edinburgh: Churchill Livingstone.

Muggah E, Way D, Muirhead M, Baskerville B. (2004). Preterm delivery among Inuit women in the Baffin region of the Canadian Arctic. *Int J Circumpolar Health.* 63 Suppl 2:242-7. Erratum in: *Int J Circumpolar Health*. (2005). Apr;64(2):198.

Munday, R. (2004). Midwifery. EpiNorth: The Northwest Territories Epidemiology Newsletter 16(1), 11-16.

National Aboriginal Health Organization. (2004). Midwifery and Aboriginal midwifery in Canada. Ottawa. Available [online]: www.naho.ca/english/pdf/aboriginal_midwifery.pdf

National Aboriginal Health Organization (2004). Midwifery and Aboriginal Midwifery in Canada. National Aboriginal Health Organization: Ottawa. Available at http://www.naho.ca/documents/naho/english/publications/DP_aboriginal_midwifery.pdf

National Institute for Health and Clinical Excellence. (2008). Antenatal Care: routine care for the healthy pregnancy. Available [online]: http://www.nice.org.uk/nicemedia/live/11947/40115/40115.pdf

National Physicians Survey (2010). 2010 National Physicians Survey: National Demographics available at http://www.nationalphysiciansurvey.ca/nps/2010_Survey/Results/pdf/en/national/other/national-demographics-en.pdf

Newfoundland and Labrador Provincial Perinatal Program. (2010). Newfoundland and Labrador Provincial Perinatal Surveillance Program – Variable Listing (Jan 2010). Available [online]: http://www.nlppp.ca/NL_PPSP_variablelistingJan2010.pdf

Northern Research and Evaluation. (2006). Final Evaluation of the Northern Women's Health Program: Summary Report. Prepared for the Coordinator, NWT Primary Health Care Transition Fund Initiative, Department of Health and Social Services, GNWT. September 30, 2006.

No Author. (2007). A National Birthing Strategy for Canada: An inclusive, integrated and comprehensive pan-Canadian framework for sustainable family-centred maternity and newborn care. June 21, 2007.

No Author. (n.d.) A document titled, Appendix III: Recommended Variables for Perinatal Surveillance Published by Various Surveillance Organizations, and Their Presence/Absence on Existing Prenatal, Labour and Delivery, and Newborn Records Across the Three Territories was developed by Karolina Machalek, a MHSc's student at the University of Toronto in 2008.

O'Brien B, Harvey S, Somerfeldt S, Beischel S, Newburn-Cook C, Schopflocher D. (2010). Comparison of Costs and Associated Outcomes Between Women Choosing Newly Integrated Autonomous Midwifery Care and Matched Controls: a Pilot Study. *Journal of Obstetrics and Gynaecology Canada* 32:7 (July 2010) p.653.

Ontario Ministry of Health and Long-Term Care. (2002). The Ontario Midwifery Program: Program Evaluation Proposal [PowerPoint].

Ontario Women's Health Council. (2006). Executive Report of the Ontario Maternity Care Expert Panel Emerging Crisis, Emerging Solutions.

Ontario Women's Health Council. (2006). Maternity Care in Ontario 2006: Emerging Crisis, Emerging Solutions. Ontario Maternity Care Expert Panel.

Page L, McCourt C, Beake S, Vail A, Hewison J. (1999). Clinical interventions and outcomes of one-to-one midwifery practice. *Journal of Public Health Medicine*, 21:243-248.

Paulette, L. (2007). Fort Smith Health and Social Services Authority Midwifery Program, *EpiNorth: The Northwest Territories Epidemiology Newsletter 19*(1), 7-9.

Paulette, L. and Machalek, K. (2008). Suggested Supplementary Fields to NWT Prenatal Record. July 24, 2008

Persson G, Kern P. (2004). Reorganization of perinatal care in Greenland. *Int J Circumpolar Health 63*(Suppl 2), 397-8.

Pitchforth, E., V. Watson, J. Tucker, M. Ryan, E van Teijlingem, J. Farmer, J. Ireland, E. Thompson, A. Kiger, and H. Bryers. (2007). Models of intrapartum care and women's trade-offs in remote and rural Scotland: a mixed-methods study. *BJOG An International Journal of Obstetrics and Gynecology* 115(5): 560 – 569).

Plested, B.A., Edwards, R.W. and Jumper-Thurman, P. (April, 2006). *Community Readiness: A Handbook for Successful Change*. Fort Collins, CO: Tri-Ethnic Center for Prevention Research.

Popovic, J,R. (2001). 1999 National hospital discharge survey: Annual summary with detailed diagnosis and procedure data. Vital and Health Statistics 13(151): 1-214 available at http://www.cdc.gov/nchs/data/series/sr_13/sr13_151.pdf

Population statistics from Statistics Canada (2010) reports that 111,504 Canadians reside in the Territories (representing 0.3% of the Nations total population (n=34,108,752)).

Prentice, S. (2009) Pregnancy a time for early intervention. PPT.

Provincial Council for Maternal and Child Health. (2011). Standardized Maternal and Newborn Levels of Care Definitions.

Public Health Agency of Canada (2008). *Canadian Perinatal Health Report, 2008 edition*. Public Health Agency of Canada: Ottawa.

PHAC. (2008). Canadian Perinatal Health Report. Ottawa, ON. P.5

PHAC. (2008). Canadian Perinatal Health Report. Ottawa, ON. P.6-7

Queensland Health. 2008. Midwifery models of care: implementation guide. (2008). Available [online]: http://www.health.qld.gov.au/ocno/content/middy_models.pdf

Queensland Government, Queensland Health. (2008). Midwifery models of care. Implementation guide. http://www.health.qld.gov.au/qhpolicy/docs/gdl/qh-gdl-906.pdf

Reinharz, D., Blais, R., Fraser, W.D., Conandriopoulos, A-P., et al. (2000). Cost-effectiveness of Midwifery Services vs. Medical Services in Quebec. *CJPH*, 915.

Righetti-Veltema M, Conne-Perreard E, Bousquet A, and Manzano, J. (1998) Risk factors and predictive signs of postpartum depression.*J Affect Disord* 49:167–180.

RNANT/NU. (2008). RNANT/NU Newsletter. The Northern Women's Health Program began in 2003. http://www.rnantnu.ca/Portals/0/Nwslt_Spring09.pdf

Roberts CL, Tracy S, and Peat B. (2000). Rates for obstetric intervention among private and public patients in Australia: population based descriptive study. *British Medical Journal* 321(7254):137–141.

Rowley MJ, Hensley MJ, Brinsmead MW, Wlodarczyk JH. (1995). Continuity of care by a midwife team vs routine care during pregnancy and birth: a randomised trial. *Medical Journal of Australia,* 163:289–93.

Salvador, A., Davies, B., Fung, K.F.K., Clinch, J., Coyle, D., and Sweetman, A. (2003). Program evaluation of hospital-based antenatal home care for high risk women. *Hospital Quarterly Spring* 67:73.

Sandall, J. (1995). Choice, continuity and control: changing midwifery, towards a sociological perspective. *Midwifery*. 11(4): 201-209

Sandall, J., Devane, D., Soltani, H., Hatem, M., and Gates, S. (2010). Improving quality and safety in maternity care: the contribution of midwife-led care. Journal of Midwifery and Women's Health 55: 255-261; Green, J.M., Renfrew, M.J., and Curtis, P.A. (2000). Continuity of carer: what matters to women? A review of the evidence. *Midwifery* 16: 186-196.

Sandall J, Hatem M, Devane D, Soltani H, Gates S. (2009). Discussions of findings from a Cochrane review of midwife-led versus other models of care for childbearing women: continuity, normality and safety. *Midwifery* 25:8-13.

Sandall, Hatem M., D. Deane, H. Soltani, and S. Gates (2009). Midwife-led versus other models of care for childbearing women (Review). The Cochrane Library 3.

Schuurmans, N., and Lalonde, A. (2000). Healthy Beginnings: Your Handbook for Pregnancy and Birth, Vicars and Associates (eds). Edmonton: The Society of Obstetricians and Gynecologists of Canada.

Scoggin, J. (1996). How nurse-midwives define themselves in relation to nursing, medicine and midwifery. *Journal of Nurse-Midwifery* 41(1): 36-40.

Shearer, Elizabeth L. (1993). Cesarean section: Medical benefits and costs. *Social Science and Medicine* 37(10): 1223-1231.

Simonet F, Wilkins R, Labranche E, Smylie J, Heaman M, Martens P, Fraser WD, Minich K, Wu Y, Carry C, Luo ZC: (2009). Primary birthing attendants and birth outcomes in remote Inuit communities--a natural "experiment" in Nunavik, Canada. *J Epidemiol Community Health*; Jul;63(7):546-51

Smith, L.K., Budd, J.L.S., Field, D.J. and Draper, E.S. (2011). Socioeconomic inequalities in outcome of pregnancy and neonatal mortality associated with congenital anomalies: population based study. *British Medical Journal* 343:1-9v

Smylie J, Lessard P, Bailey K, Couchie C, Driedger M, Eason EL, et al. (2000). A Guide for Health Professionals Working with Aboriginal Peoples. The Sociocultural Context of Aboriginal Peoples in Canada. *J Soc Obstet Gynaecol Can,* 100: 1-12 (December).

Smylie J, Lessard P, Bailey K, Couchie C, Driedger M, Eason EL, et al. (2000). A Guide for Health Professionals Working with Aboriginal Peoples. Executive Summary. *J Soc Obstet Gynaecol Can,* 100: 1-6 (December).

Smylie J, Lessard P, Bailey K, Couchie C, Driedger M, Eason EL, et al. (2001). A Guide for Health Professionals Working with Aboriginal Peoples. Health Issues Affecting Aboriginal Peoples. *J Soc Obstet Gynaecol Can,* 100: 1-15 (January).

Smylie J, Lessard P, Bailey K, Couchie C, Driedger M, Eason EL, et al. (2001). A Guide for Health Professionals Working with Aboriginal Peoples. Cross Cultural Understanding. *J Soc Obstet Gynaecol Can,* 100: 1-11 (February).

Smylie J, Lessard P, Bailey K, Couchie C, Driedger M, Eason EL, et al. (2001). A Guide for Health Professionals Working with Aboriginal Peoples. Aboriginal Health resources. *J Soc Obstet Gynaecol Can,* 100: 1-7 (March).

Statistics Canada. (2006). Maternity Experiences Survey, 2006 Questionnaire. Available [online]: http://www.statcan.gc.ca/imdb-bmdi/instrument/5019_Q1_V1-eng.pdf

The Society of Obstetricians and Gynaecologists of Canada. (2011). Sexual and Reproductive Health, Rights, and Realities and Access to Services for First Nations, Inuit, and Métis in Canada. *J Obstet Gynaecol Can,* 33(6):633-637.

The Society of Obstetricians and Gynaecologists of Canada. (2010). Returning Birth to Aboriginal, Rural, and Remote Communities. *J Obstet Gynaecol Can*, 32(12):1186–1188.

The Society of Obstetricians and Gynaecologists of Canada (2008). Health Human Resources Project on Interpartum Emergency Obstetrical Care available at http://www.sogc.org/projects/pdf/hhr-survey-report_e.pdf

The Society of Obstetricians and Gynaecologist of Canada (2008). A National Birthing Initiative for Canada: An inclusive, integrated and comprehensive pan-Canadian framework for sustainable family-centred maternity and newborn care available at http://www.sogc.org/projects/pdf/BirthingStrategyVersioncJan2008.pdf.

The Society of Obstetricians and Gynaecologists of Canada. (2007). A Report on Best Practice for Returning Birth to Rural and Remote Aboriginal Communities. *J Obstet Gynaecol Can*, 29(3): 250-254.

Skye, Amber D. (2010). Aboriginal midwifery: A model for change. *Journal of Aboriginal Health* 6(1): 28-37.

Spurgeon P, Hicks C, Barwell F. (2001). Antenatal, delivery and postnatal comparisons of maternal satisfaction with two pilot Changing Childbirth schemes compared with a traditional model of care. *Midwifery*, 17:123-132.

Statistics Canada. The Inuit population of Canada. (2004). Available [online] http://www.aboriginalroundtable.ca/sect/stscan/Inuit_e.pdf.

Stout, R. and Harp, R. (2009). Aboriginal Maternal and Infant Health in Canada: Review of On-Reserve Programming. Prairie Women's Health Centre of Excellence and BC Women's Centre of Excellence for Women's Health.

Tedford Gold S, O'Neil J, Van Wagner V. (2005). Examining midwifery-based options to improve continuity of maternity care services in remote Nunavut communities. Final report to Canadian Health Services Research Foundation. Ottawa.

Thompson, J.F., Roberts, C.L., Currie, M., and Ellwood, D.A. (2002). Prevalence and persistence of health problems after childbirth: Associations with parity and method of birth. *Birth* 29(2): 83-94.

Tracy,S.K. and Tracy,M.B (2003). Costing the cascade: estimating the cost of increased obstetric intervention in childbirth using population data. *BJOG: An International Journal of Obstetrics &* Gynaecology 110 (8): 717–724.

Turnbull D, Baghurst P, Collins C, Cornwell C, Nixon A, Donnelan-Fernandez R, Antoniou G. (2009). An evaluation of Midwifery Group Practice. Part I: clinical effectiveness. *Women and Birth* 22:3-9.

Twells, L. Adn L.A. Newhook (2010). Can exclusive breastfeeding reduce the likelihood of childhood obesity in some regions of Canada. *Canadian Journal of Public Health* 101(1): 36-39.

Tyson, Holiday (2002). Developing a plan for growth and sustainability in midwifery practice. Talk presented at a Midwifery: Building our Contribution of Maternity Care: A Working Symposium May 1-3 Vancouver, BC.

van Wagner, V, Epoo, B, Nastapoka, J, & Harney, E. (2007. Reclaiming Birth, Health, and Community: Midwifery in the Inuit Villages of Nunavik, Canada. *Journal of Midwifery & Women's Health, 52*(4), 384-391.

van Wagner V. (1989). The Inuulitsivik maternity: A community based perinatal service on the Hudson's Bay Coast: Povugnituk, Quebec: Inuulitsivik Health Centre.

van Wagner V. (2001). The growth of midwifery: what does it mean for the model and scope of practice. *AOMJ 7*(3):121-123.

van Wagner, V., Tulugak, H., & Tulutak, M. (n.d.) Birth outcomes for the Inuulitsivik midwifery service in Nunavik, Quebec 2000-2007 [PowerPoint].

van Wagner, V, Harney, E, Osepchook, C, Crosbie, C, Dennis, R., Tulugak, M. (n.d.) Remote Midwifery in Nunavik: Outcomes of Perinatal Care 2000-2007 for the Inuulitsivik Health Centre. In press.

van Wager, Vicki. (2012). Personal Communication.

Villar, J, G. Carroli, N. Zavaleta, A. Donner, D. Wojdyla, A. Faundes, A. Velazco, V. Bataglia, A. Langer, A. Narváez, E. Valladares, A. Shah, L. Campodónico, M. Romero, S. Reynoso, K.S. de Pádua, D. Giordano, M. Kublickas, and A. Acosta (2007). Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ 335(7628): 1025-19036 available at http://www.bmj.com/content/335/7628/1025.full.pdf.

Waldenstrom U. (1998). Continuity of carer and satisfaction. *Midwifery*, 14:207-213.

Waldenstrom U, Turnbull D. (1998). A systematic review comparing continuity of midwifery care with standard maternity services. *BJOG* 105:1160-1170.

Walsh D. (1999). An ethnographic study of women's experience of partnership caseload midwifery practice: the professional as a friend. *Midwifery* 15:165-176.

World Health Organization (1985). Appropriate technology for birth. *Lancet* 331: 436-437

Young D, Lees A, Twaddle S. (1997). The costs to the NHS of maternity care: midwife-managed vs shared. *British Journal of Midwifery*, 5(8):465–72.

Young D, Shields N, Holmes A, Turnbull D, Twaddle S. (1997). Aspects of antenatal care. A new style of midwife-managed antenatal care: costs and satisfaction. *British Journal of Midwifery*;5:540–5.

Zhong-Cheng, L., Senecal, S., Simonet, F., Guimond, E., Penney, C. and Wilkins, R. (2010). Birth outcomes in the Inuit-inhabited areas of Canada. *CMAJ*. 182(3): 235-242.

APPENDIX B: STANDARDS OF PRACTICE FOR REGISTERED MIDWIVES IN THE NWT

STANDARDS OF PRACTICE

FOR

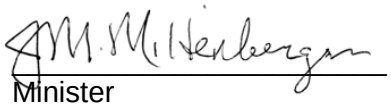
REGISTERED MIDWIVES

IN THE NWT

FEBRUARY 2005

Northwest Territories Health and Social Services

The Midwives Association of the NWT and Nunavut developed these "Standards of Practice for Registered Midwives in the NWT", in consultation with the Department of Health and Social Services and Regional Health and Social Services Authorities. The Minister, Health and Social Services has approved these standards.



Minister
Health and Social Services

February 6, 2005

Table of Contents

1. General Competencies of Registered Midwives 1
1.1 Registered midwives have the knowledge and skills necessary to:..... 1
2. Standards for Collaborative Care, Guidelines for Medical Consultation and Transfer of Care to a Physician 3
2.1 Purpose of the Standard..... 3
2.2 General Criteria for Collaborative Care..... 3
2.3 Primary Care in a Multidisciplinary Environment..... 3
2.4 Primary Care Provided in Association with Other Practitioners..... 4
2.5 Consultation and Collaboration with Physicians..... 5
2.6 Indications for Medical Consultation 7
3. Standards for Birth in a Hospital.....10
3.1 Definition 10
3.2 Purpose.....10
3.3 General Criteria.....10
3.4 Considerations in Choosing a Birth in a Hospital 10
3.5 Roles in the Provision of Care 11
4. Standards for Birth Outside of a Hospital with Specialist Care.....12
4.1 Definition 12
4.2 Considerations in Choosing Birth outside a Hospital with Specialist Care.....12
4.3 Equipment and Supplies Needed for Birth Outside a Hospital or Healthcare Facility .13
4.4 Established Links and Prior Arrangements.....14
4.5 Conditions requiring Transport to a Hospital with Specialist Care.....15
5. Standards for Records 16
5.1 Purpose.....16
5.2 Completion of Records 16
5.3 Confidentiality.....16
5.4 Storage.....17
5.5 Accessibility.....17
6. Standard on Informed Choice.....17
6.1 Purpose.....17
6.2 Principles.....17
6.3 Facilitation of the Informed Choice Process.....17
7. Standard for Responding to Client Requests for Care Against Midwifery 19
7.1 Purpose.....19
7.2 Protocol for Responding to Request for Care Against Midwifery Advice 19

STANDARDS OF PRACTICE FOR REGISTERED MIDWIVES IN THE NWT

In conjunction with the *Midwifery Profession Act* and its regulations, the Standards of Practice provides standards for the practice of Registered Midwives in the NWT. It should be noted that if there is a conflict between the Act and the Standards, then the Act prevails to the extent of the conflict. The Standards of Practice are not intended to extend the scope of practice contained in the NWT *Midwifery Profession Act*.

1. General Competencies of Registered Midwives

1.1 Registered midwives have the knowledge and skills necessary to:

1. Provide the necessary care and advice to women before and during pregnancy, labour, birth and the postpartum period
2. Provide health assessment, screening and care to woman and families within their scope of practice
3. Provide continuity of care over the childbearing cycle
4. Provide care that validates the woman's experience and respects the rights of women to control their pregnancies and birthing experiences
5. Provide culturally safe care
6. Promote physiological birth and use technology appropriately
7. Assess the need for external cephalic version and either perform or refer the client
8. Conduct deliveries and care for the newborn on their own responsibility
9. Apply the principles of clean and aseptic technique and universal precautions
10. Provide care in a variety of settings including home, clinic, health unit, health centre, birth centre or healthcare facility with specialist care
11. Work in a collegial manner in a variety of settings
12. Provide care consistent with the NWT Midwifery Practice Framework
13. Facilitate informed choice
14. Communicate the practice parameters of a Registered Midwife to clients, including limitations of practice
15. Develop, implement and evaluate an individualized plan for midwifery care
16. Provide education, health promotion and counselling related to childbearing, to the woman, her family and the community

17. Provide counselling regarding family relationships and consult as necessary, as it relates to the midwife's scope of practice

18. Evaluate risk factors before and during pregnancy, during labour and birth and the postpartum period and take appropriate action

19. Administer substances and devices as specified under appropriate NWT Acts and Regulations

20. Use appropriate complementary therapies

21. Order, perform and interpret results of prescribed screening and diagnostic tests in accordance with regulation and guidelines

22. Recognize abnormal conditions and recommend appropriate treatment and/or initiate consultations and referrals

23. Interpret research findings and apply to midwifery practice

24. Establish and maintain comprehensive and relevant records

25. Respect the confidentiality of information given

26. Use all of the emergency measures available to her/him in the absence of medical help

27. Perform the following invasive procedures, according to the scope of midwifery practice:

- Amniotomy
- Episiotomy
- Repair of episiotomy and lacerations, not involving the anus, anal sphincter, rectum and uretha
- Bladder catheterization
- Injections
- Venipuncture
- Intravenous cannulation
- Heel puncture of the newborn
- Finger puncture of the mother
- Lingual frenotomy
- Neonatal resuscitation procedures consistent with NRP guidelines including:
    - oral intubation of the newborn
    - endotracheal suctioning of the newborn
    - placement of an umbilical venous catheter in the newborn
- Taking cervical cytological smears
- Taking intracervical, vaginal, and rectal swabs
- Fitting cervical caps and diaphragms for contraceptive purposes
- Application of a fetal scalp electrode

1.1.1. After documented in-service training and having been granted by a Board of Management, the privileges to:

- Perform vacuum assisted birth
- Perform manual evacuation of the uterus
- Assisting with a caesarean section, including performing the role of first assistant and receiving the infant

2. Standards for Collaborative Care, Guidelines for Medical Consultation and Transfer of Care to a Physician

2.1 Purpose of the Standard

The purpose of the Standard is to provide registered midwives with guidelines for collaboration with general practitioners, specialists, nurses, and other caregivers. The goal of collaboration is to balance continuity of care with the provision of appropriate levels of service to meet the specific needs of each client in such a way that individualised client care is optimised.

The Standard applies to all settings and is not intended to be exhaustive. Circumstances other than those identified in 2.6 Indications For Medical Consultation, may arise where registered midwives feel that consultation or transfer of care is warranted.

2.2 General Criteria for Collaborative Care

Registered midwives collaborate with other health care providers with informed client consent and in the best interests of the client.

The client is the primary decision-maker about her own care.

One health care professional has primary responsibility for client care at any one time, and the client's care is coordinated by that practitioner. The identity of the primary caregiver is known to the client and to all those involved in the provision of care, and is documented in the records of the primary caregiver and other health professionals involved.

Registered midwives, along with other caregivers, are responsible to communicate clearly and effectively, show courtesy and respect, ensure effective documentation, ensure continuity of care, contribute to the interdisciplinary plan of care, discuss and confirm who will be the practitioner most responsible for current care, and participate in the quality assurance process.

2.3 Primary Care in a Multidisciplinary Environment

Registered midwives work within a multidisciplinary framework. Obstetricians, pediatricians, neonatologists, family physicians, nurses, nurse practitioners, public health nurses, social workers, nutritionists, and mental health workers are among the caregivers who may be involved in aspects of the care of the childbearing woman and her newborn from time to time.

The roles and responsibilities of the various caregivers, and the relationships amongst caregivers, are clarified through the development of local policies and structures that ensure that:

- The midwife is the primary care provider for the mother and newborn as per the scope of midwifery practice unless primary responsibility is transferred to another caregiver and such transfer is clearly documented.
- The midwife maintains a current record of midwifery care of mother and newborn and ensures that this information is available to other practitioners in the multidisciplinary team, provided that consent to the exchange and release of information has first been obtained from the client in accordance with NWT legal requirements.
- The client may consult or be referred to a general medical practitioner or nurse practitioner for health conditions unrelated to pregnancy or the puerperium. In the event that an acute or chronic medical condition is diagnosed that could affect the pregnancy or the mother-infant unit, the midwife works with the client and the other practitioner(s) involved to develop an interdisciplinary care plan.

2.4 Primary Care Provided in Association with Other Practitioners

Registered midwives ordinarily work in partnership or group practice with other registered midwives to provide primary care and 24-hour coverage to women and their newborns. In some communities, particularly where there are insufficient numbers of registered midwives to provide 24-hour coverage on a year-round basis, registered midwives may provide primary care in association with practitioners other than registered midwives, i.e. physicians or nurses.

The roles of other practitioners and the extent of their involvement in the provision of primary care to midwifery clients will be determined by their professional scope of practice and the circumstances under which shared care is warranted. In some situations, registered midwives will be the main primary care provider, with other practitioners serving as second birth attendant or providing occasional primary care as required. In other situations, registered midwives may work in partnership/group practice with other primary care practitioners to share in the provision of coverage on an ongoing basis.

Roles and responsibilities must be clear to all members of the care team. In all instances, the identity of the primary caregiver responsible for coordinating client care will be known to the client and to all practitioners involved in the provision of care.

Where registered midwives work in partnership/group practice, ordinarily both the primary caregiver and any other practitioner should have seen the client for at least two prenatal visits, at least one of which should have been in the third trimester of pregnancy, in order to be on call for her birth.

Where registered midwives are part of a multidisciplinary team providing maternity care, a shared philosophy of care and shared practice protocols, consistent with the midwifery philosophy and model of practice, should be in place to help ensure that consistent care is provided by the team of caregivers.

2.5 Consultation and Collaboration with Physicians

Registered midwives providing primary care to women and their babies consult with a physician in the presence of conditions identified in the 2.6 Indications for Medical Consultation section below.

2.5.1. Obtaining a Consultation

As primary caregivers, registered midwives use their professional judgement in seeking the opinion of a physician competent to give advice in the relevant field. The physician may be a general practitioner, family physician, obstetrician, neonatalogist, pediatrician, anesthesiologist, internist, psychiatrist, or other. Registered midwives' choice of consultant will be influenced by the nature of the condition warranting consultation, the level of care required, the availability of appropriate medical resources in the community, and the urgency of the situation.

Where appropriate and feasible, consultations and transfers of care will be managed at the community level. However, when registered midwives judge that the opinion of a specialist is required, and no specialist is available in the community, they may consult directly with specialists located in referral centres outside of the community. In the event of emergent situations, registered midwives will notify the nearest available medical practitioner, even while they are in the process of initiating a specialist consultation or arranging for a transfer of care outside of the community to a hospital with specialist care.

2.5.2. Procedure and Documentation of Consultation

The urgency of the condition will determine the timing of the consultation. Certain conditions require immediate consultation, while others may be assessed and managed in a timely but non-urgent manner.

Pre- and post-natally in non-urgent situations, registered midwives obtain written consent to the release and exchange of information from the client prior to initiating the consultation. Intrapartum consultation is often initiated with verbal consent from the client, which is subsequently documented by the midwife.

Where feasible, registered midwives initiate a consultation in writing, providing a summary of the condition requiring consultation accompanied by relevant documentation. Where urgency, distance, or climatic conditions make in-person consultation and assessment of the client difficult or infeasible, registered midwives seek advice from physicians by phone or other similar means such as e-mail, facsimile communication, or teleconferencing.

Registered midwives may expect that the consultation will involve an assessment of the condition that led to referral, including an in-person assessment of the client where indicated and feasible, and the prompt communication of any findings or recommendations to the client and/or the referring midwife.

Depending on the circumstances of the consultation, the physician may provide information, advice, and/or therapy directly to the woman/newborn, or may provide information, advice, and/or prescribe therapy for the woman/newborn via the midwife.

Registered midwives document all requests for consultation and the outcome of consultations, and discuss with clients the advice received.

2.5.3. Outcome of the Consultation

Following the consultation, the midwife, the client and the physician will collaborate to determine that either:

- Advice regarding appropriate management of the condition is all that is required and the midwife remains the primary caregiver, or
- Specific aspects of care will be managed by the physician while the midwife remains the primary caregiver, or
- The condition requires medical management to the extent that the physician should assume the role of primary caregiver.

In some instances the outcome of the consultation will also bear on the determination of the most appropriate choice of birth setting.

2.5.4. Transfer of Care

The decision to transfer primary responsibility or responsibility for aspects of care involves the professional judgement of the midwife and the physician and the informed consent of the client, and becomes part of the mutually agreed care plan for the client.

The care plan is clearly documented, detailing the involvement of the various caregivers and their respective areas of responsibility. If a care plan other than the one mutually agreed upon is carried out, the consultative partner is informed of this including the reasons and all relevant information.

Where transfer of responsibility for primary care takes place, the midwife may continue to provide supportive care within the midwifery scope of practice to the extent agreed to by the client, physician, and midwife.

Primary care may be transferred on a permanent or temporary basis, i.e. care may be transferred back from the physician to the midwife if the reason for transfer no longer exists.

In an emergency situation, where the physician and the midwife deem transfer of care appropriate, transfer of care will take place without delay.

In an urgent or emergent situation that clearly warrants medical care, the midwife seeking to transfer care to a physician may expect a physician to accept the transfer.

Protocols should be in place at the level of the Health Authority and the regional referral centre, clearly laying out the steps a midwife should take if she encounters difficulty in obtaining consultation or accomplishing a transfer of care in a timely and safe manner.

It is ultimately the client who decides from whom she will receive care. However, registered midwives have the right and the obligation to inform the client of their professional limitations when asked to provide care outside their scope of practice or experience.

Registered midwives will make every reasonable effort to work with the client to develop an acceptable care plan and to transfer care to an appropriate care provider, and will document these efforts.

2.6 Indications for Medical Consultation

The following indications for medical consultation identify conditions which may signal that a pregnancy, labour, birth or post-partum situation is no longer considered normal or entirely within the scope of midwifery practice. Registered midwives are responsible to identify these conditions and initiate medical consultation. These indications serve as a guide for risk assessment, which in all cases will be undertaken on an individual basis.

2.6.1. Initial History and Physical Exam

- Any current medical condition that may be aggravated by the pregnancy or that may have an adverse effect on the pregnancy. Examples of such conditions are cardiovascular disease, neurologic disorders, endocrine disorders, diabetes mellitus, or hypertensive disorders
- Congenital defects of the reproductive organs
- Family history of genetic disorders, hereditary disease and/or congenital anomalies
- History of repeated consecutive spontaneous abortions (e.g. 3 or more)
- History of severe postpartum hemorrhage
- History of severe psychological problems (including postpartum psychosis)
- History of two or more premature labours or history of low birth weight infant(s)
- History of severe pregnancy induced hypertension
- Marked skeletal abnormalities
- Marked obesity
- Previous operations or injuries to the uterus or vagina (e.g. operations for prolapse, cervical conization, myomectomy, vesicovaginal and recto-vaginal fistulae, caesarean section, etc.)
- Previous reconstructive bladder surgery
- Previous stillbirth or neonatal loss that may effect the current pregnancy
- Rhesus isoimmunization or the presence of other blood group antibodies that may adversely affect the fetus
- Significant use of drugs, alcohol, or other toxic substances
- Suspected or diagnosed congenital anomaly that may require immediate medical management after delivery
- Repeated vaginal bleeding this pregnancy

2.6.2. Prenatal Care

- Medical conditions arising or exacerbated during the prenatal period, e.g. cardiac disease, diabetes, endocrine disorders, hypertension, renal disease, acute pyelonephritis, thromboembolic disease, or significant infection
- Severe varicosities of the vulva or lower extremities
- Abnormal pap smear
- Active sexually transmitted disease or known HIV positive
- Primary or recurrent genital herpes infection
- Persistent anemia (e.g. < 90g/l)
- Abnormal glucose tolerance test
- Documented post term pregnancy (consider consult > 41 weeks)
- Exposure to known teratogens (e.g. chemicals, infections)

- Fetal anomaly
- Hyperemesis
- Molar pregnancy
- Abnormal fetal/fundal growth pattern
- Multiple pregnancy
- Persistent abnormal presentation (after 36 weeks)
- Persistent abuse of drugs or alcohol
- Polyhydramnios or oligohydramnios
- Pregnancy induced hypertension, persistent proteinuria, or other signs of pre-eclampsia
- Threatened premature labour
- Rupture of membranes before term
- Rhesus isoimmunization or presence of other blood group antibodies which may adversely affect the fetus
- Serious psychological problems
- Continued or unexplained vaginal bleeding
- Confirmed abnormal placental location / placental abnormalities
- Unexplained sudden and severe abdominal pain
- Extra-uterine pregnancy
- Evidence of change in fetal status (e.g. reduction in fetal movements, non-reactive non-stress test)
- Antepartum fetal death

2.6.3. During Labour and Birth

- Abnormal fetal heart patterns unresponsive to therapy
- Abnormal presentation
- Active genital herpes at onset of labour
- Ketonuria unresponsive to treatment
- Multiple pregnancy
- Excessive vaginal bleeding
- Unexplained sudden and severe abdominal pain
- Premature labour
- Abnormal labour pattern unresponsive to therapy (e.g. dystocia, non-dilatation, non-descent of presenting part)
- Prolonged rupture of membranes
- Persistent fever greater than 38° C
- Prolonged second stage
- Pregnancy induced hypertension or other signs of preeclampsia
- Prolapsed cord
- Retained placenta
- Thick meconium
- Uterine rupture
- Maternal request for epidural anesthesia or narcotic analgesia

2.6.4. Post Partum (Maternal)

- Lacerations involving the anus, anal sphincter, rectum or urethra area
- Vulvar hematoma
- Hemorrhage unresponsive to therapy

- Secondary post-partum hemorrhage
- Inversion of the uterus
- Persistent hypertension
- Post partum eclampsia
- Unexplained persistent chest pain or dyspnea
- Serious psychological problems
- Signs of puerperal infection
- Suspected retained placental fragments or membranes
- Thrombophlebitis or thromboembolism
- Breast infection unresponsive to therapy
- Persistent bladder dysfunction

2.6.5. Post Partum (Infant)

- APGAR lower than 7 at 5 minutes
- Abnormal findings on physical exam, e.g.
  - Abnormal abdominal distension
  - Abnormal cry
  - Abnormal movement of any extremity
  - Abnormal neurological signs, including hypotonia
  - Less than 3 vessels in umbilical cord
  - Congenital anomalies
  - Ambiguous genitalia
  - Abnormal pigmentation
  - Excessive bruising other than a cephalhematoma, and/or generalized petechiae
  - Abnormal heart rate or pattern (less than 100 with activity or greater than 160 at rest, or any abnormal sounds noted)
- Respiratory distress
- Persistent tachypnea beyond the first 4 hours of life
- Failure to pass urine within 24 hours or meconium within 48 hours of birth
- Difficulty in feeding
- Feeding intolerance with vomiting or diarrhea
- Persistent cyanosis or pallor
- Suspected pathological jaundice
- Infection of umbilical site
- Seizure-like activity
- Significant weight loss (e.g. > 10% of birth weight)
- Failure to regain birth weight within 14 days
- Temperature above or below normal that is unresponsive to therapy
- Infant born to mother:
  - with active genital herpes
  - who is hepatitis positive
  - who is HIV positive
  - with a history of significant drug or alcohol use
- Conditions that cause concern in either the parents or the midwife

3. Standards for Birth in a Hospital

3.1 Definition

For the purpose of this standard, a birth in a hospital is defined as a birth that takes place in a hospital that offers inpatient and outpatient care and where specialized care (obstetrical, paediatric, surgical, and/or anaesthetic services) may or may not be provided on site.

3.2 Purpose

The purpose of the standard is to provide registered midwives with guidelines for the provision of intrapartum care within hospitals.

3.3 General Criteria

Registered midwives are primary health care providers as per the scope of midwifery practice. The midwife is responsible for monitoring and supporting the woman and her healthy newborn.

Registered midwives providing intrapartum care in hospitals, must apply for privileges or similar standing arrangements with hospitals in the communities in which they practise which grant them the right to access specified hospital resources in their capacity as primary care providers.

Access to hospital resources may include, but is not limited to,

- Admitting to inpatient beds
- Referring to outpatient clinics or services
- Ordering tests from clinical laboratories
- Ordering tests from diagnostic imaging
- Prescribing and ordering drugs
- Ordering treatments
- Discharging patients
- Consulting with staff or other practitioners with privileges
- Accessing health records

Registered midwives become part of the accountability structures and process within the hospital. These structures may have their basis in legislation, accreditation guidelines, bylaws and policies and procedures. Registered midwives should be included in the development and periodic review of these structures.

3.4 Considerations in Choosing a Birth in a Hospital

3.4.1. Documented Informed Choice Discussion

Registered midwives work in partnership with women to explore their preferences for birth setting and to evaluate the appropriateness of birth in a hospital in relation to the individual client.

Registered midwives facilitate and document an informed choice discussion in accordance with the *Standard for Informed Choice.* This discussion will include accurate, up-to-date information that relates to the benefits and risks of each birth setting that the woman is considering.

It will also include a review of the factors that may arise during the course of labour and birth, the effect that distance and time away from her home and family may have on her birth outcome, and a consideration of the woman's unique circumstances.

3.4.2. Client Considerations

Registered midwives use the 2.6 Indications for Medical Consultation to identify conditions that require a medical consultation. In some instances, the outcome of a medical consultation will bear on the determination of the most appropriate choice of birth setting.

There are a number of situations in which birth should be planned to take place in a hospital with specialist services. Multiple birth, breech or other non-vertex presentation, pre-term labour prior to 37 weeks of pregnancy, and documented post-term pregnancy of more than 42 weeks are examples of such situations. Other situations in which birth in a hospital with specialist care should be planned, will be assessed by registered midwives and their clients on an ongoing basis during pregnancy and the intrapartum period, with appropriate medical consultation as indicated.

Clients may express a preference for birth in a hospital, even a hospital with specialist services, in the absence of particular risk factors. Registered midwives will support their clients' choice of birth setting and endeavour to work with clients to develop an acceptable care plan that includes the preferred birth setting and provisions for continuity of care.

3.4.3. Environmental Considerations

Registered midwives will work with clients to develop a care plan that includes a birth setting where an appropriate level of care can be provided to meet the anticipated needs of the woman and her baby. In evaluating the appropriateness of birth in a hospital, registered midwives will take into account the level of service, including technology and human resources, at the hospital under consideration.

Where hospitals are located in communities distant from the regional referral centre and do not provide specialist services, registered midwives comply with the Standard for Birth Outside of a Hospital with Specialist Care.

3.5 Roles in the Provision of Care

Registered midwives normally attend their clients in the healthcare facility throughout active labour, birth, and the immediate postpartum. The presence of the midwife may result in an altered role for other health care providers in the care of midwifery clients.

4. Standards for Birth Outside of a Hospital with Specialist Care

4.1 Definition

The purpose of the standard is to provide guidelines for registered midwives in the planning and provision of intrapartum care in settings outside a hospital with specialist care. Examples of these facilities could include homes, health care facilities, birth centres and some hospitals.

4.2 Considerations in Choosing Birth outside a Hospital with Specialist Care

4.2.1. Documented Informed Choice Discussion

Registered midwives work in partnership with women to explore their preferences for birth setting and to evaluate the appropriateness of a birth outside a hospital with specialist care in relation to the individual client. Registered midwives facilitate and document an informed choice discussion in accordance with the *Standard for Informed Choice.* This discussion will include accurate, up-to-date information that relates to the benefits and risks of each birth setting that the woman is considering. It will also include a review of the factors that may arise during the course of labour and birth, the effect that distance and time from the nearest hospital with specialist services may have on her birth outcome, and a consideration of the woman's unique circumstances.

4.2.2. Client Considerations

Registered midwives use 2.6 Indications for Medical Consultation to identify conditions that require a medical consultation. Cases may also be reviewed at a multidisciplinary forum. In some instances, the outcome of a medical consultation or multidisciplinary forum review will bear on the determination of the most appropriate choice of birth setting. There are a number of situations in which birth in a hospital with specialist care should be planned. Multiple birth, breech or other non-vertex presentation, pre-term labour prior to 37 weeks of pregnancy, and documented post-term pregnancy of more than 42 weeks are examples of such situations. Other situations in which birth should be planned to take place in a hospital with specialist care will be assessed by registered midwives and their clients on an ongoing basis during pregnancy and the intra-partum period, with appropriate medical consultation as indicated.

Registered midwives will make every reasonable effort to work with clients to develop an acceptable care plan that includes a birth setting where an appropriate level of care can be provided to meet the anticipated needs of the woman and her baby. Where clients continue to request birth outside a hospital with specialist care, contrary to registered midwives' standards, practice guidelines, or professional judgement regarding safe care, registered midwives will follow 7. *Standard for Responding to Client Requests for Care Against Midwifery Advice.*

4.2.3. Environmental Considerations

In working with clients to evaluate the appropriateness of a birth outside a hospital with specialist care, registered midwives will take into account the availability of backup support systems within the community and the recommendations of a multidisciplinary review. These include communication and transportation infrastructure, technology and supplies available at the local hospital or health care facility, and human resources including the presence of a skilled second birth attendant. Registered midwives will also consider factors such as family and social supports, distance to the nearest referral centre, and prevailing weather conditions.

4.3 Equipment and Supplies Needed for Birth Outside a Hospital or Healthcare Facility

Registered midwives who attend births outside a hospital or health care facility are responsible for carrying well-maintained equipment, supplies, and drugs that may be required during labour, birth and the post-partum period. This list constitutes the minimum equipment and supplies required.

4.3.1. Equipment and Supplies

- Absorbent pads and sponges
- Amnihook
- Antiseptic solution
- Blood pressure cuff
- Blood collection tubes
- Bulb syringe
- Cord clamps
- Doppler / fetoscope (waterproof)
- Equipment for I.V. infusions and I.M. injections
- Equipment /supplies for performing an episiotomy
- Equipment / supplies for repairing an episiotomy / laceration
- Heating pad
- Infant weighing scales
- Light source
- Oxygen delivery system for mother and neonates
- Resuscitation equipment for adults
- Resuscitation equipment for neonates, including oral intubation equipment
- Sharps disposal container
- Stethoscopes for adult and infant
- Sterile and non-sterile examination gloves
- Sterile birth instruments including hemostats and scissors
- Sterile lubricant
- Sterile speculums
- Suction equipment (mechanical)
- Swabs for culture and sensitivity
- Tape measure
- Test strip/swab to screen for pH change
- Thermometer
- Urinary catheterization supplies
- Urinalysis supplies

4.3.2. Essential Medications

- Crystalloid intravenous fluids
- Local anesthetics
- Oxygen, sufficient to allow for transport of mother and baby to nearest healthcare facility
- Medications for treatment of anaphylactic shock
- Medications for treatment of post-partum hemorrhage
- Medications for routine neonatal prophylaxis
- Medications for management of neonatal resuscitation

4.4 Established Links and Prior Arrangements

4.4.1. Health Authority and Local Hospital or Healthcare Facility

Registered midwives providing intrapartum care outside hospitals with specialist care will maintain a relationship with the health authority and with the local hospital or healthcare facility in the community where birth takes place and with referral centres. This relationship should include admitting privileges that permit the midwife to act in the role of primary caregiver until such time as transfer of care to a physician is deemed appropriate or until the client is transferred to a regional referral centre.

4.4.2. Physician Backup

Registered midwives providing intrapartum care outside of hospitals with specialist care will maintain communication links with collaborating physicians available for consultation and emergency support at the nearest hospital or healthcare facility or regional referral centre. At a minimum, telephone and facsimile communication must be available at all times to permit consultation between registered midwives and physicians. Registered midwives attending births in communities distant from the regional referral centre will also maintain a working relationship with general practitioners, if located in the community, in the event that consultation and transfer of care at the community level is deemed appropriate.

4.4.3. Ambulance Service / Emergency Transportation

Registered midwives will work with local ground ambulance and regional air ambulance services to develop protocols for the efficient coordination and management of emergency medical transportation. The local health authority and physicians providing consultation and emergency support at the regional referral centre must also be involved in the development of these protocols.

Registered midwives and local ground ambulance services are encouraged to develop a system for the pre-registration of births that are planned to take place in a setting outside of the local hospitals or healthcare facility. This system would include written notification to the ambulance service of approaching births, as well as notification when the birth has been completed.

Wherever possible, registered midwives will accompany their clients during transportation, in collaboration with emergency personnel, unless responsibility for care has already been transferred to another primary care provider who is present with the client.

4.5 Conditions requiring Transport to a Hospital with Specialist Care

Registered midwives must advise each client of potential conditions and circumstances that may require transport to a hospital with specialist care and/or transfer of primary responsibility for care to a physician.

There are a number of situations in which birth should be planned to take place in a hospital with specialist services. Multiple birth, breech or other non-vertex presentation, pre-term labour prior to 37 weeks of pregnancy, and documented post-term pregnancy of more than 42 weeks are examples of such situations.

Other situations in which birth should be planned in a hospital with specialist care will be assessed by registered midwives and their clients on an ongoing basis during pregnancy and the intrapartum period, with appropriate medical consultation as indicated.

Despite prenatal screening, conditions may arise during labour, birth, or the postpartum period that necessitate transport to a hospital with specialist care. If any of the following conditions are present, a midwife must take steps to initiate transport of the client to a hospital capable of dealing with the condition:

4.5.1. Conditions Noted During Labour and Birth

- Gestational hypertension, with or without proteinuria or adverse conditions
- Active genital herpes at the outset of labour
- Abnormal labour pattern unresponsive to therapy
- Abnormal presentation
- Unexplained sudden or severe pain
- Prolapsed cord
- Non-reassuring fetal heart rate patterns unresponsive to therapy
- Excessive vaginal bleeding
- Retained placenta
- Unexplained fever or other signs of chorioamnionitis
- Any circumstance where the safety of the mother, child, and/or midwife cannot be assured

4.5.2. Conditions Noted During Postpartum (Maternal)

- Hemorrhage unresponsive to therapy
- Inversion of the uterus
- Postpartum hypertension, with or without protein or adverse conditions
- Lacerations involving the anal sphincter

4.5.3. Conditions Noted within the First 48 Hours (Newborn)

- Abnormal heart rate or pattern
- Respiratory distress
- Persistent cyanosis or pallor
- Suspected pathological jaundice
- Extensive bruising other than a cephalhematoma and/or generalized petechiae
- Significant congenital abnormalities
- Temperature above or below normal that is unresponsive to treatment
- Seizure-like activity
- Hypotonia

- Lethargy unresponsive to therapy
- Feeding intolerance with vomiting or diarrhea

This list is not exhaustive. There may be other circumstances where the midwife or client or consultant believes transport to a hospital with specialist care is advantageous.

5. Standards for Records

5.1 Purpose

The purpose of the standard is to provide midwives with guidelines for the maintenance and management of health records related to the care of women and their infants, within the context of the family.

Complete and accurate health records facilitate:

- Communication between health care providers, and the woman, to facilitate continuity of care
- The process of continuous quality improvement
- The demonstration of clinical judgement in the provision of care
- The management of medico-legal risk.

5.2 Completion of Records

The completion of health records shall be in accordance with midwifery professional standards and practice guidelines, facility and regional policies, and medico-legal recommendations.

Midwives will utilize the standardized forms approved for use by the Department of Health and Social Services for midwifery/obstetrical care. Additionally, midwives may use any other forms deemed appropriate for the recording of client care information. These forms shall also constitute part of the client care record. Miidwives will use the electronic health record when it becomes readily available.

Health records shall be completed in a legible, accurate, timely and complete manner during the provision of care, or as soon as possible after care has been completed when emergent situations occur. Any entry out of chronological order shall be deemed to be a “late entry” with the date and time of the actual recording indicated. Each entry in the health record will include the time, date, signature and professional designation of the care provider.

5.3 Confidentiality

The confidentiality of health, personal or third party information shall be protected in compliance with all federal and territorial legislation. Disclosure of information from the health record to a third party is governed by territorial legislation and health authority policy.

5.4 Storage
All records will be maintained in a confidential, secure manner at all times, for a period of twenty-one years. If the midwife is an employee of a health region, the health region's record management protocol will assume precedence. Where a midwife is an independent practitioner, the midwife will retain a copy of the client files and the original files may be transferred into the care of another practitioner, with the client's consent, or given to the client.

5.5 Accessibility
All registered midwives are obligated to provide a copy of the complete midwifery record to the woman upon request. The midwife must make an effort to ensure that records are in a format that is accessible to the woman.

6. Standard on Informed Choice

6.1 Purpose
The purpose of this standard is to provide registered midwives with guidelines for facilitating the informed choice process in partnership with their clients.

6.2 Principles
The woman is recognised as the primary decision-maker.

Informed choice is arrived at through an interactive process that emphasises shared responsibility. It involves the midwife and the client, at a minimum. Where appropriate, it may include members of the client's family, other community members, and / or other caregivers.

The informed decisions made by the woman are respected, even when they are contrary to the judgement or belief of the midwife.

Registered midwives will at all times strive to provide the highest standard of care possible within the limitations of the care options chosen by the woman.

6.3 Facilitation of the Informed Choice Process
Registered midwives are responsible for facilitating the ongoing exchange of knowledge and information in a non-urgent, non-authoritarian, co-operative manner.

Registered midwives take all reasonable steps to ensure that the client's choice is voluntary and is not made under duress.

Registered midwives are responsible for presenting information in such a way that the client can understand it. Educational, cultural, and linguistic considerations may bear on the methods and approaches that are employed. Methods of communication may include verbal discussion, written materials, and audio or video recordings. The use of an interpreter may be appropriate and shall be noted in the midwife's documentation.

Registered midwives are responsible to confirm that the client understands the information that has been presented. In some situations, this may require that registered midwives become familiar with specific cultural processes for signifying understanding and affirmation.

Registered midwives encourage and assist women to seek out further information and resources that may help them in their decision-making process.

Registered midwives ensure that the client is given ample time and opportunity to discuss information shared and any issues or concerns she may have around potential choices.

In an emergency situation, registered midwives will strive to give to the client as much information as is reasonably possible in the time available in order to facilitate decision-making by the woman.

Registered midwives are responsible to document all discussions with the client about care options, including the outcome of those discussions, in accordance with the Standard on Record Keeping.

6.3.1. Initial Disclosure

At the outset of a course of care, registered midwives are required to provide to the client the following information:

- Education and experience of the registered midwives providing care
- Midwifery model of practice and services provided
- Standards of practice and protocols
- Roles and responsibilities of the client and caregiver
- Right to obtain a second opinion or transfer of care, and how this would be accomplished
- Contact information, including arrangements for 24 hour availability
- Second attendant arrangements, if applicable
- Confidentiality and access to records
- Any student placements or supervised practice arrangements
- Any other information relevant to the practice environment

6.3.2. Ongoing Facilitation of Informed Choice

Throughout the course of care, registered midwives will provide care that is individualized and sensitive to changes in the woman's circumstances.

Registered midwives will continue to facilitate an informed choice process that takes into account all relevant information, including:

- the current status of the mother and her baby
- what is currently known and unknown about the potential risks, benefits, limitations, and consequences of all care options, including procedures, tests, and medications
- relevant research evidence
- the experience, feelings, beliefs, values, and preferences of the client, and, where appropriate, of family members
- community values, standards, and practices

7. Standard for Responding to Client Requests for Care Against Midwifery

7.1 Purpose

The purpose of this standard is to provide registered midwives with a protocol in circumstances where a client requests care outside the midwifery scope or standards of practice or is contrary to the midwife's judgement of safe care. The protocol is designed to ensure that reasonable steps are taken to protect client autonomy, the health and well being of mother and child, and the professional standing of the midwife.

7.2 Protocol for Responding to Request for Care Against Midwifery Advice

When a client initially requests care outside the midwifery scope or standards of practice, or care that in the judgement of the midwife poses a significant risk to mother or baby, the midwife will ensure that a full discussion with the client is facilitated and documented in accordance with the *Standard on Informed Choice.*

As part of this process, the midwife will

a. Discuss with the client the limitations of the midwifery scope of practice, the rationale for the standard, or the reasons for the midwife's judgement. This discussion should reflect the best available research evidence as well as the midwife's assessment of potential risks based on clinical evidence and practical experience. The discussion may also reflect the input or recommendations of any other caregivers that have been involved in the woman's care up to that point
b. Invite the client to discuss her preferences and her reasons for them, including feelings, beliefs and values, and personal circumstances
c. Discuss with the client other options for care that in the midwife's judgement would be within the bounds of safe practice, and make every reasonable effort to work with the client to develop an acceptable alternative care plan, including transfer of care to another care provider where appropriate

Should the client continue to request care outside the midwife's scope of practice or contrary to the midwife's judgement of safe care, the midwife will:

d. In communities where a multidisciplinary forum exists, invite the client (with family and/or community members where appropriate, and with the client's consent) to attend a meeting to discuss her care plan
e. In communities where such a forum does not exist, invite the client to take part in a discussion with the midwife and other health care provider(s) in the community (in person) or regional referral centre (by telephone)
f. Where the client declines to participate in a consultation, seek a second opinion from another midwife, physician, or peer review group and share this opinion with the client

If the midwife's assessment of the situation remains unchanged and the client continues to request care outside the midwife's scope of practice or contrary to the midwife's judgement of safe care, the midwife will:

g. Inform the client of the midwife's intention to make a referral to an appropriate caregiver, and the reasons why this is necessary

h. With client consent, make the referral to an appropriate health care provider and, where a transfer of care is appropriate, ensure that the identity of the primary caregiver is clearly known to the client and all caregivers

Where the client refuses consent to a referral or transfer of care, and in circumstances where it is possible for the client to obtain care from another more appropriate care provider in the same community, the midwife will:

i. Clearly communicate to the client that the midwife is no longer able to provide primary care, but may continue providing supportive care to the extent deemed appropriate by the midwife and client. This information will be conveyed verbally, with witness and/or interpreter present, and in a letter, by means of assured delivery
j. Document this communication, including a copy of the letter, in the client health record
k. Continue to offer assistance to the client in finding another appropriate primary care provider
l. Cease providing primary care, except in emergency situations where immediate transfer of care is not possible or where the client refuses to accept or facilitate transfer of care or transport to a hospital or health care facility

Where the client refuses consent to a referral or transfer of care, and in circumstances where it is not possible for the client to obtain care from another more appropriate care provider in the same community, the midwife will:

m. Continue to provide care to the client to best of the midwife's ability and within the full scope of midwifery care, including taking emergency measures where necessary in the absence of medical help
n. Inform appropriate clinical staff and health care managers in the community and the regional referral centre of the client's refusal to accept midwifery advice and the nature of the potential risks to mother and/or baby, and document this communication in the client's health record
o. Maintain communication with local and regional health care personnel in order that they may be as prepared as possible to ensure the client's health and safety, should the need for emergency care arise
p. Continue to offer the client a referral to a more appropriate caregiver outside of the community at any time

Nothing in this Standard requires a midwife to perform any procedure or do anything that the midwife is not qualified to do or that is contrary to the ethical practice of midwifery.

APPENDIX C: RECOMMENDATIONS FOR CONSIDERATION RELATED TO PERINATAL STANDARDS OF CARE

Recommendations for Consideration Related to Standards of Perinatal Care

FETAL FIBRONECTIN TEST

Preterm labour (before 37 weeks pregnancy) is an important health concern in Canada. It impacts, at a national level, 7 out of every 100 births. The fetal fibronectin test (fFN) looks for fHN (a protein that the body makes during pregnancy usually only during the first 22 weeks of pregnancy) in fluid from the vagina. If fFN is found between weeks 24 and 34, in combination with the symptoms of preterm labour, there is a higher chance of a preterm birth. If fFN is not found then an individual's chance of going into birth within the next two weeks is very low (less than 1%).

The test is done much like a Pap. Studies have demonstrated no negative impact on neonatal outcomes and although most of the studies suggest that fFN has a role in the diagnosis of pre-term labour and thus in decreasing hospital admissions, hospital stay and interventions, the overall impact on healthcare costs is still uncertain.[182] It should be noted, however, within a northern context (represented by limited access to physicians and high costs associated with evacuations) that cost savings and positive health outcomes associated with the practice could be significantly more profound.

Biochemical screening (fetal fibronectin and salivary estriol) is still under investigation and not routinely used outside of clinical trials. Fetal fibronectin has been identified as an important diagnostic tool and efforts are underway to establish "point-of-care" testing and results. Quality of Evidence: II-3 (Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940's) could also be regarded as this type of evidence. Strength of Recommendation: B (there is fair evidence to support use)[183]

EVACUATION TIMES

With access to appropriate care (i.e. midwives, more confident nurses) evacuation times could be standardized to 37-38 weeks (as opposed to 36 which is currently practiced in some communities).

STANDARD SUPPLIES/EQUIPMENT/MEDICATIONS

It would be beneficial to standardize the tools available within each community and within each birthing centre. The suggestion put forth is to consult with the midwives at Fort Smith to get a better understanding of which tools are necessary for birth in communities.

CLIENT LOAD

[182] Dutta D and J. E. Norman (2010) The efficacy of fetal fibronectin testing in minimising hospital admissions, length of hospital stay and cost savings in women presenting with symptoms of pre-term labour. Journal of Obstetrics & Gynaecology30(8):768-773

[183] Best Start (2002). Preterm Birth: Making a Difference. Clinical Practice Guidelines. Available on line at http://www.beststart.org/resources/rep_health/pdf/Preterm_Clinical_Prct.pdf

It has been suggested by the Steering Committee that a maximum of 25 births (for midwives functioning as primary attendant) be set. It should be noted, however, that if this is set as a standard it could restrict program growth (i.e. issues around recruitment and retention and high birth years).

LICENSING AND REGULATION

The number of births required per three-year period is currently acceptable. The problem lies in the requirements for liability insurance which is awarded on an annual basis. Midwives must be practicing to ensure continued coverage. This coverage should be more consistent with birthing requirements (i.e. three-year duration) or provisions should be made that would allow midwives to take a leave without losing their licence.

BLOOD AVAILABILITY

Based on information obtained from the Inuulitsivik midwifery service in Nunavik, Quebec, blood is only required in locations with surgical capability. A fly out time of four to five hours to reach a facility with surgical capabilities is recommended.

APPENDIX D: FORT SMITH HEALTH AND SOCIAL SERVICE AUTHORITY MIDWIFERY PROGRAM FINANCIALS

Secondary Code Description -	2008-2009	2009-2010	2010-2011
Compensation and Benefits	**304,663**	**339,814**	**410,770**
Other Expenses:			
Supplies			
Printing, Stationary and Office Supplies	535	323	1,380
Gasoline	588	588	745
Food	-	-	83
Medical and Surgical	5,693	7,089	5,520
Drugs	920	632	1,802
Medical Gases	50	810	2,117
Education	301	2,021	883
Sundry			
Postage and Courier	476	-	812
Telephone (long distance, fax, local)	-	1,397	2,779
Staff Training and Development	1,437	3,020	2,961
Staff Travel	71	-	181
Other Fees			
Subscription Fees	55	-	-
Membership Fees	385	300	300
Equipment Maintenance			
Vehicle Maintenance	-	508	2,239
Software Maintenance - Contract	-	2,000	-
Rental / Lease of Equipment	405	756	374
Minor Equipment	-	2,367	200
	10,916	**21,811**	**22,376**
Total	**315,579**	**361,625**	**433,146**

Table 27: Cost Comparison of Births Hay River versus Fort Smith

Category	Hay River	Fort Smith (Fly out: High Risk & Elective)
Prenatal Care†	$518.50*	N/A
Postnatal & Newborn Care†	$226.80	N/A
Intervention‡	Higher (33%)	Unknown
C-Section‡	Higher (20.5%)	Unknown
Travel	$644.70	$730.80
Accommodation	$3274.20**	$2525.20***
Hospital Stay	$6500.00****	$6500.00****
Medevac (annual)	$63,300.00	$43,300.00
Total Annual Cost (per 100 births)	$1,179,720.00	$526,824.00*****
2010-11 Fort Smith Midwifery Operating Budget	N/A	$410,770.00
Total by community	**$1,179,720.00**	**$937,594.00**

† It should be noted that care in the NWT is not fee-for-service and therefore a cost per appointment calculation may not be an appropriate approach to costing care within these two communities

* Based on an average of 9.27 visits.

‡Costs associated with interventions and caesarean sections are variable.

**Based on an average stay of 30.60 days

***Based on an average stay of 23.60 days

****Based on an average hospital stay of 2.60 days

*****Based on 54% of women choosing to birth in Yellowknife.

It is important to note that the more births that are supported by a midwifery program, the more cost effective the program has the potential to be (as a result of reduced travel, accommodation, and hospital stays costs). Currently the cost of delivering perinatal care services within Fort Smith (based on an average of 37 births per year) is $649,190.00[184]. The total cost of delivering the same number of infants within the traditional fly out model (utilizing the average number of perinatal care visits, accommodation, hospital stay, and medevac trips available from the Hay River chart review) would be $479,561.10. The NWT midwifery model represents an 'economy of scale' wherein the more individuals who utilize the system effectively drive down the per unit cost. The current midwifery model operating out of Fort Smith runs at a deficit of $169,628.90. If it were operating at maximum capacity (defined as 50 births per 2 midwives) the program would have the potential to save the territory $151,724.00 annually.

[184] This number is based on 54% of women flying to Yellowknife to deliver ($238,420.00) and the total operating budget of the Fort Smith Health and Social Services Midwifery Care program ($410,770.00)

APPENDIX E: ESTIMATED COST OF PHYSICIAN-PROVIDED PERINATAL CARE SERVICES TO YELLOWKNIFE RESIDENTS

Table 28: Estimated Cost of Physician-provided Perinatal Care Services to Yellowknife Residents

	Assumption	Cost
Prenatal	9 x 30 min (cost of standard prenatal appointment $75.22)*	$676.98
	4 hours admin (assumption done by Community Health Nurse (step 4 of 8) with a mean rate of pay of $48.73/hour)	$194.92
	1 physician visit (assumption 1 hour =$ 150.44 based on a daily FP5 step 2 rate of $150.44/hr.)	$150.44
Ultrasound	Ultrasound Appointment	Data not available
	2 after hours callback (assumption performed by community health nurse)	$97.46
Delivery	Hospital days (based on Hay River average of 2.6[1])	$6500.00
	Vaginal Delivery (based on provided calculation of standard cost)	$550.00
Postnatal	1 home visit 60 min (performed by CHN with mean rate of pay of $48.73/hr.)	$48.73
	1 postpartum visit - 60 min (family physician)	$150.44
	1 hour admin (performed by nurse)	$48.73

* Physician cost was calculated using the standard rate for a FP5 step 2 ($122.31/hr.) plus 23% to make the rate inclusive of compensation and benefits ($150.44/hr.)

[1] See the section above for a complete discussion of Hay River.

APPENDIX F: MATERNITY CARE WORKER CERTIFICATE PROGRAM

Maternity Care Worker Certificate Program, Nunavut Arctic College

Maternity care workers are trained to partner with registered midwives and other care providers to assist as part of the community wellness programs. They provide a range of prenatal and postnatal services to expecting mothers and fathers, perform home visits, and work with the entire extended family. Maternity care workers in Nunavut operate as members of the primary care team; their role enables them to participate in and facilitates effective, consistent and culturally appropriate delivery of maternal and newborn health services. According to the Nunavut HSS, the maternity care worker role has a primary health care focus which utilizes health promotion and illness prevention strategies. They assist in community wellness programs in various locations throughout the community. They are also trained to provide a range of prenatal and postnatal resources and support to expectant parents. Their duties also include home visits, which strive to achieve the end goal of more effective one-on-one communication and problem solving as well as interacting with the entire extended family thereby reflecting the multigenerational nature of many Inuit families. [185]

This program began as part of the Nunavut Government's Closer to Home strategy, wherein Nunavut recognized the need to train Maternity Care Workers and Midwives for birthing centres in Nunavut. One of the goals of the program is to improve the cultural appropriateness of birthing services within the Territory, and as such the program relies on Inuit knowledge of maternal care and birthing. Currently the one year program is run out of Nunavut Arctic College's Kivalliq Campus in collaboration with the birthing centre in Rankin Inlet. The program is not intended to operate in a silo and graduates are encouraged to transfer the credits earned in the program toward advanced credit towards the University College of the North's four-year Midwifery Degree program in Manitoba.[186]

[185] GN Department of Health and Social Services (2009). *Nunavut Maternal and Newborn Health Care Strategy 2009-2014*. Department of Health and Social Services Government of Nunavut: Iqaluit, NU. Available online at http://www.hss.gov.nu.ca/PDF/Maternal%20strategy_ENG.pdf

[186] National Aboriginal Health Organization (2008). *Celebrating Birth – Aboriginal Midwifery in Canada*. National Aboriginal Health Organization: Ottawa. Available online at http://www.naho.ca/documents/naho/english/midwifery/celebratingBirth/Midwiferypaper_English.pdf

APPENDIX G: NWT MIDWIFERY EVALUATION FRAMEWORK

DRAFT NWT MIDWIFERY PROGRAM EVALUATION FRAMEWORK

March 2012

TABLE OF CONTENTS

1.0 PROFILE OF NWT MIDWIFERY PRACTICE IN THE NWT 3
1.1 Philosophy of Midwifery Care in the NWT 3
1.2 Definition and Scope of Practice as a Midwife 3
1.3 Guiding Principles 3
2.0 KEY STAKEHOLDERS 8
2.1 Those involved in *program operations*: 8
2.2 Those *served or affected* by the program: 8
2.3 Those who are intended *users* of the evaluation findings: 8
3.0 PROGRAM DESCRIPTION 9
3.1 Vision 9
3.2 Goal 9
3.3 Objectives 9
3.4 Expected Results 9
4.0 EVALUATION 12
4.1 Evaluation Process 12
4.2 Evaluation Matrix 12

Appendix 1: NWT Midwifery Program Logic Model

1.0 PROFILE OF NWT MIDWIFERY PRACTICE IN THE NWT

The program profile presents an outline of the philosophy, mandate and objectives, and a brief description of the NWT Midwifery Evaluation Framework.

1.1 Philosophy of Midwifery Care in the NWT

Midwifery care is based on a respect for pregnancy as a state of health and childbirth as a normal physiological process. Given that there is a great range of "normal" in pregnancy and childbirth, any decision to intervene in the natural process is made only after thoughtful and careful assessment. When pregnancy and birth deviate from normal or become complicated, supportive and appropriate care assists women to maintain a healthy perspective on the childbearing experience.

The practice of midwifery is founded on the understanding that pregnancy, labour and birth are profound experiences that carry significant meaning for a woman, her family and her community. Midwives acknowledge the social, emotional, cultural, spiritual, and psychological as well as physical aspects of these lifecycle events and strive to help women and their families to move through these transforming experiences safely and with power and dignity.

Midwifery care is woman-centred and family-centred and responds to the unique strengths and needs of each woman and her family. Midwives respect and support women as primary decision-makers who are capable of making thoughtful and appropriate choices for themselves and their babies based on current information available to them, in accordance with their own values and belief systems.

Midwives promote wellness in women, babies and families through the provision of a continuum of care from the preconception period right through to the period of infancy and early parenting. Midwives work with women and their family members to encourage awareness, self-care, and growth in a manner that is flexible, creative, empowering and supportive, in accordance with s.2.(1) of the *Midwifery Profession Act* (the *Act*).

Midwives honour traditional and cultural birth practices. Midwives embrace the diversity of cultural lifestyles and strive to understand the wisdom of elders' teachings and the contributions of traditional midwifery.

1.2 Definition and Scope of Practice as a Midwife

A midwife is a person who has acquired the requisite qualifications to be licensed to practice midwifery in the Northwest Territories. The midwife must be able to give the necessary care and advice to women prior to and during pregnancy, labour and the postpartum period, to conduct deliveries on her/his own responsibility, and to care for the infant and the mother.

1.3 Guiding Principles

MIDWIVES AS AUTONOMOUS HEALTHCARE PROVIDERS

Midwives are autonomous primary health care providers whom clients may choose as their first point of entry to the maternity care system.

As primary health care providers, midwives make autonomous decisions in collaboration with their clients and are fully responsible for the provision of primary health services within their scope of practice. They coordinate services to ensure continuity of care, identify conditions requiring management outside their scope of practice and refer such cases to other providers.

ACCESSIBILITY OF MIDWIFERY CARE

Midwives work with the families, communities and agencies that support their practice to ensure equitable access to midwifery care for all women regardless of their place of residence or circumstances.

Midwives offer their services to all women within their practice area and engage in outreach efforts to facilitate the access of all women to midwifery care.

Where the availability of midwifery services is limited, midwifery practices make every reasonable effort not only to serve women in their own community but also to accommodate women coming from outlying communities who may seek midwifery care, especially at the time of birth.
Midwives work with communities desiring midwifery services to develop appropriate and practical approaches to the provision of midwifery care. Wherever possible, midwifery services are provided as close to women's home communities as prudent.

COMMUNITY INPUT

Community input is fundamental to the development, implementation, and evaluation of effective midwifery practice across all settings.
The relationship between midwives and communities they serve is historically and culturally important as well as being vital to the future of the community. Midwives are best able to respond to the needs of the community when the community is provided with meaningful opportunities to identify those needs and to work in partnership to meet them.

Community input is crucial during the development, ongoing delivery, and evaluation of midwifery services and education. Every midwife has, along with other stakeholders, a responsibility to facilitate community input.

COMMUNITY-BASED PRACTICE AND PRACTICE SITES

Midwives provide community-based service with facility privileges enabling them to provide care in all settings.

Midwives are primary caregivers, visible in their community-based practice. They deliver their services within small group practices or as part of a multi-disciplinary team enabling them to ensure the provision of 24-hour availability to their clients.

Prenatal care is most appropriately provided in midwifery clinics, offices, or women's homes. Midwifery care for labour, birth and early postpartum is provided in an appropriate setting chosen by the woman. Midwifery care during the postpartum period, for most women and their newborns, is generally best provided in the home and later in the midwifery clinic or office. Midwives must be able to obtain admitting and discharge privileges at health-care facility maternity units and, where available, birth centres, thus enabling them to provide care in all settings.

CHOICE OF BIRTH SETTING

Midwives respect the right of women to make informed choices about birthplace and setting, and are competent and willing to provide care in a variety of settings, including homes, health-care facilities, and birth centres.

The ability to attend women in their chosen birth setting is an essential aspect of continuity of care and informed choice in midwifery practice. Midwives provide their clients with information and contribute to the discussion required in order for women to make an informed choice about the appropriate setting in which to give birth. Ultimately, women choose a birthplace and setting, in consultation with their family, their midwife, and other caregivers where appropriate.

Within the context of the communities in which they practise midwives offer women a variety of settings for their intrapartum care including health-care facilities, birth centres and homes. Midwives must be able to apply for and obtain health-care facility privileges and be able to function within their scope of practice in both health-care facility and out-of-health-care facility settings.

Choice of birth setting is a fundamental principle of the midwifery model of practice and as such serves to increase the likelihood that women will have equitable access to care in their chosen place of birth. This is particularly important in rural and remote communities where it is unlikely that women will have access to a choice of midwives.

TWO ATTENDANTS AT EACH BIRTH

Midwives work with a qualified second attendant to provide safe care at births.

The safest care can be provided when there are two qualified practitioners, both skilled in neonatal resuscitation and the management of maternal emergencies, who are physically present at each birth.

The second birth attendant must understand and support the midwifery model of care, and could be another midwife, or a health care practitioner with the knowledge and skill required to assist the midwife.

PARTNERSHIP WITH WOMEN

Midwives practice in partnership with women.

The provision of midwifery care is an interactive process that involves the promotion of shared responsibility between midwives and women and their families. Midwives contribute to the partnership their knowledge, skills, understanding and professional judgment, and do so in a manner that is flexible, creative, empowering and supportive of women. Midwives encourage an open discussion with clients about the nature of their partnership and the partners' mutual expectations.

INFORMED CHOICE

Midwives respect the right of women to make informed choices and actively encourage informed client decision-making.

Informed choice and responsiveness to consumer needs are guiding principles of the midwifery model that form the cornerstone of regulated midwifery practice. Informed choice is a decision-making process that relies on a full and ongoing exchange of information in a non-urgent, non-authoritarian, co-operative manner.

Midwives support the principle of informed choice by:

- Recognizing and supporting women as primary decision-makers and promoting shared responsibilities between women, their families, and their caregivers
- Assisting women to obtain information and to utilize resources relevant to their decision-making process
- Discussing the scope and limitations of midwifery care with their clients

CONTINUITY OF CARE

Midwives provide to their clients a continuum of pre-conceptual, prenatal, labour, birth, and postpartum care, including well-woman care. As well, they provide counseling, education, and support related to their clients' physical, psychological, and social needs.

Continuity of care is both a philosophy and a process that enables midwives to provide holistic care and to establish ongoing partnerships with their clients in order to build understanding, support and trust. Continuity of midwifery care is achieved when a relationship develops over time between a woman and her midwife or midwives.

Continuity of care is facilitated when:

- A woman is cared for by a group of no more than four midwives
- One of the midwives is identified as the primary care provider for the woman
- A consistent philosophy of care and a coordinated approach to clinical practice is maintained by midwives and other caregivers working together
- A woman who for any reason travels to another community to give birth receives perinatal care from caregivers who maintain established communication links with midwives in the woman's home community
- A woman has input into the manner in which continuity of care is provided

COLLABORATIVE CARE

Midwives identify, assess, and respond to conditions and situations that warrant the involvement of other care providers, and collaborate with other health and social service professionals to ensure that their clients receive the best possible care.

As autonomous primary health care providers, midwives make decisions in partnership with their clients and are fully responsible for the provision of primary health services within their scope of practice. They identify conditions requiring management outside their scope of practice or experience, and consult with and refer to other care providers. In situations where transfer of care to a physician is required,

the midwife is expected to continue providing supportive care after transfer when possible, and will resume primary care if and when appropriate.
Collaboration with other health care providers occurs with informed client choice, in the best interests of the client, and in such a way that individualized client care and continuity of care are optimized.

ACCOUNTABILITY AND EVALUATION OF PRACTICE

Midwives are accountable to their clients, their peers, and the wider community for safe, competent and ethical practice. Midwives continuously evaluate their practices to improve the quality of care they provide and to ensure their clients' needs are met.

Midwives' fundamental accountability is to the women in their care. Midwives are also accountable to the regulatory body, the health agencies they practice with and to the public.

Midwifery practice incorporates evaluation that includes ongoing community input and participation in current practices and standards to ensure evidence-based midwifery practice. Results of these evaluations are widely distributed to influence policy, education and midwifery practice.

RESEARCH

Midwives develop and share midwifery knowledge and initiate, promote and participate in research regarding midwifery care and/or related outcomes that meet ethical and legal guidelines.

EDUCATION

Midwives have a responsibility to share their knowledge and experience with colleagues, clients and students of midwifery**.**

There are currently no education programs for midwifery in the NWT. In keeping with the history and tradition of midwifery, midwives have a responsibility to participate in the education of midwifery students.

Since the critical mass for university-based midwifery education does not exist in the NWT, it is suggested that interested applicants pursue their education (1.5 years) outside of the territory and that the GNWT establish formal arrangements for residents to return to the territory to complete the 2.5 years of clinical placement and academic education through distance formats. Partnering with academic institutions currently offering a midwifery curriculum could facilitate this endeavour.[1]

[1] The following intuitions/locations currently offer midwifery education programs: University of British Columbia (BC), Mount Royal University (Alberta), McMaster University (Ontario), Ryerson University (Ontario), Laurentian universities (Ontario), Université du Québec à Trois Rivières (Quebec), Kanaci Otinowawosowin (Aboriginal midwifery) baccalaureate (KOB) program at the University College of the North in Manitoba, Aboriginal Midwifery programs in Arctic College Nunavut and Inuulitisivik Health Centre Nunavik at Six Nations Health Centre in Ontario. Bridging Programs in BC, Alberta, Manitoba, and Ontario, have been established for certification of midwives trained outside of Canada or in non-university settings within Canada.

COMMUNITY CAPACITY BUILDING

In an effort to build capacity in the NWT and to address anticipated recruitment and retention issues, and the overall sustainability of perinatal services across the NWT), midwives are responsible for assisting with the education and training of local residents (particularly Aboriginal individuals) who are interested in, and committed to, learning and implementing the practice of midwifery in the territory.

2.0 KEY STAKEHOLDERS

2.1 Those involved in *program operations*:

- Management:
  - GNWT Department of Health and Social Services
  - Regional Health and Social Service Authorities
  - Stanton Health and Social Service Authority
- Program Staff
  - Midwives
  - Midwife Locums
  - Administrative Assistants
- Partners
  - NWT Obstetricians, Family Physicians, Nurse Practitioners/Nurses and other Health Care Professionals
  - NWHP
  - Stanton Territorial Hospital
  - Inuvik Regional Hospital
  - Community Health Centres
  - Southern Service Providers
- Funding Agencies (territorial, federal, other)

2.2 Those *served or affected* by the program:

- Women and their babies and their families
- Community Members
- Elected Officials (e.g., MLAs)
- Advocacy Groups (e.g., NWT Citizens for Midwifery)
- NWT Obstetricians, Family Physicians, Nurse Practitioners/Nurses and other Health Care Professionals
- Healthcare systems
- Academic Institutions

2.3 Those who are intended *users* of the evaluation findings:

- Persons in a position to make decisions about the program:
  - GNWT Department of Health and Social Services – Minister /Deputy Minister / Assistant Deputy Minister

- Program Staff
- Partners
- Funding Agencies
- General Public or Taxpayers

3.0 PROGRAM DESCRIPTION

3.1 Vision

A collaborate primary midwifery care program that is dedicated to promoting and improving the health of all women and their newborns.

3.2 Goal

The goal of midwifery care in the NWT is:

Women in the community, along with their babies and families have healthy pregnancy, birthing and postpartum experiences.

3.3 Objectives

Within the context of the *NWT Midwifery Practice Framework and in compliance with the Midwifery Profession Act,* the objectives are:

- To provide safe and appropriate care to women and their babies including: preconception care, prenatal care, intrapartum care, and postnatal care in accordance with the *NWT Midwifery Practice Framework*, the *Midwifery Profession Act*, and the *NWT Standards of Practice for Midwives.*
- Create opportunities for women, their families, and health care providers to share responsibility for maternity care.
- To develop and share midwifery knowledge and best practices consistent with the *NWT Midwifery Practice Framework*.

3.4 Expected Results

LOGIC MODEL NWT MIDWIFERY PROGRAM

Implementation of the NWT Midwifery Program is guided by a logic model that identifies the linkages between the program goal, objectives, inputs, activities, outputs, outcomes and final outcomes (refer to Appendix 1).

(POTENTIAL) PERFORMANCE MEASUREMENT INDICATORS

The performance indicators listed below are intended to measure the intended outcomes, to provide evidence that outcomes have been achieved or to provide a signal that progress is being made towards the achievement of identified outcomes.

Objective 1: To provide safe and appropriate care to women and their babies including: preconception care, prenatal care, intrapartum care, and postnatal care in accordance with the *NWT Midwifery Practice Framework*, the *Midwifery Profession Act*, and the *NWT Standards of Practice for Midwives.*

- # of women receiving pre-conception care
- # of women receiving prenatal care
- # of prenatal visits per client
- # of after-hours responses to maternity concerns
- # of women receiving management and delivery care while in labour
- # of births attended (planned and unplanned)
- # of women who gave birth in their chosen birth setting (setting identified)
- # and type of interventions
- # of client transfers
    - # of transfer type (scheduled/medevac)
    - # of transfers based on timing (premature, prenatal, intrapartum, postpartum , neonatal)
- # of preterm births
- # of newborns
- # of medevacs
- # and appropriateness of referrals made
- # of women attending prenatal classes
- # of women receiving postnatal care
- # of postnatal visits per client
- # of neonatal visits per client
- # of women receiving other care services
- Client/family satisfaction with services and care providers
- Results of program audit

Objective 2: Create opportunities for women, their families, and health care providers to share responsibility for maternity care.

- # of women who report they were more actively involved in decision-making
- # of women who reported their families were more involved in the birthing experience
- # of prenatal classes held
- # of health promotion classes held
- # of women who report they have an improved awareness of healthy lifestyle choices
- # of community outreach efforts
- # of MCC meetings attended
- # and type of other perinatal-related care meetings attended
- # of trips to communities to provide support and training to community nurses
- # of health care provider offered support and training
- # of health promotion materials developed
- # of health promotion material distributed

Objective 3: To develop and share midwifery knowledge and best practices consistent with the NWT Midwifery Practice Framework.

- # and type of professional development opportunities
- # of students mentored
- # of community presentations completed (to increase awareness)
- # of health care provider presentation completed (to increase awareness)
- # and type of academic and organizational partnerships created
- # and type of community partnerships created

APPROACH TO PERFORMANCE MEASUREMENT

	QUANTITY	QUALITY
EFFORT	What did we do? (e.g. # of clients served, # activities performed How much service did we deliver?	How well did we do it? (e.g. continuity of care, collaborative care. How well did we deliver service?
EFFECT	Is anyone better off (#)? How much change for the better did we produce?	Is anyone better off (%)? What quality of change for the better did we produce? (Client Satisfaction Survey)

All performance measures fit into one of four categories derived from the intersection of quantity and quality versus effort and effect. The most important measures tell us whether clients are better off as a consequence of receiving the service (quality of effect: lower right quadrant). We call these measures "client or customer results." These are measures which gauge the effect of the service on people's lives.

Usually, in programs which directly deliver services to people, client results have to do with four dimensions of "better-offness." Skills/knowledge, attitude, behaviour, and circumstances. Did their skills or knowledge improve; did their attitude change for the better, did their behaviour change for the better, is their life circumstances improved in some demonstrable way?

The second most important measures are those that tell whether the service and its related functions are done well (quality of effort: upper right quadrant). These measures include such things as timeliness of service, accessibility, appropriateness. These measures can be used by managers to steer the administration of the program.

Effort questions include: Have sufficient staff been hired with the proper qualifications? Are staff-client ratios at desired levels? How many clients with what characteristics are being served by the program? Are necessary materials and equipment available?

(POTENTIAL) DATA SOURCES

Data source to inform the achievement of expected program outcomes may include:

- Program files

- Program outcome data
- Documents
- Literature (academic / grey)
- Client/family satisfaction surveys
- Audit reports
- HSSA files
- Chart audits

(POTENTIAL) METHODOLOGICAL APPROACHES

- Program Administrative Data Review
- Program Document Review
- Document Review
- Literature Review
- Key Informant Interviews
- Expert Interviews
- Clients Surveys
- Client Focus Groups
- Community Case Studies
- Media Review

4.0 EVALUATION

4.1 Evaluation Process

The evaluation may occur at one, two and/or three levels depending upon decisions regarding the implementation of the three options:

- Community
- Regional
- Territorial

The results of an evaluation can be used to inform any future decisions regarding expansion in the Territory.

4.2 Evaluation Matrix

The Evaluation Matrix highlights the evaluation issues and the questions to be addressed and indicates the data sources and line(s) of evidence to be employed in answering the questions.

Evaluation Theme	Evaluation Question	Data Sources	Methodology
Relevance	▪ Is there a demonstrable need for this program? ▪ To what extent do the Program's goal and objectives align with Territorial priorities and strategic outcomes?	Program files Program outcome data Documents Literature	Program Administrative Data Review Program Document Review Document Review Literature Review Key Informant Interviews Expert Interviews Community Case Studies Media Review
Design and Delivery	▪ To what extent has the program been implemented as intended? ▪ What factors (both positive and negative) had an impact on the implementation? ▪ Were the roles and responsibilities of the key stakeholders clearly articulated and understood? ▪ What proportion of the target group has utilized the program? ▪ Has uptake of the program varied by socioeconomic status, Aboriginal status, educational back ground, etc.? ▪ To what extent have program participants been satisfied with the delivery of the program services? ▪ To what extent has communication about the program been successful? (To what extent do NWT residents know about the program?)	Program files Program outcome data Documents Client/family satisfaction surveys Audit reports HSSA files Chart audits	Program Administrative Data Review Program Document Review Document Review Key Informant Interviews Expert Interviews Client Surveys Client Focus Groups Community Case Studies Media Review
Accountability	▪ What kinds of financial and non-financial data are being collected, and are they relevant and reliable? ▪ What kind of performance data is being collected, and is it relevant and reliable? ▪ To what extent is performance measurement data used in ongoing planning, decision making and reporting?	Program files Program outcome data Audit reports HSSA files Chart audits	Program Administrative Data Review Program Document Review Key Informant Interviews
Achievement of expected outcomes	▪ To what extent have the program impacts and outcomes been achieved? ▪ What impact has the program had on isolated populations? On disenfranchised populations? ▪ What unanticipated positive and/or negative impacts occurred because of the program? ▪ What factors have facilitated the	Program files Program outcome data Documents Client/family satisfaction surveys Audit reports HSSA files Chart audits	Program Administrative Data Review Program Document Review Document Review Key Informant Interviews Expert Interviews Clients Surveys Client Focus Groups Community Case Studies

	success of the program? What factors have challenged the success of the program? ▪ Have levels of partnership and collaboration increased? ▪ To what extent has the program led to an increase in community capacity in the area of perinatal care?		Media Review
Demonstration of efficiency and economy	▪ Are the most cost effective approaches being used to achieve program outcomes and impacts? ▪ Could the same results be achieved otherwise (compared to a reasonable alternative)?Is the mechanism and process used bringing efficiency and economy?	Program files Program outcome data Literature HSSA files	Program Administrative Data Review Program Document Review Document Review Literature Review Key Informant Interviews Expert Interviews Community Case Studies
Alternatives	▪ Are there alternative ways of achieving the desired outcomes that represent best or promising practice?	Literature	Literature Review Key Informant Interviews Expert Interviews

APPENDIX 1: Midwifery Program Logic Model

Goal: Women in the community, with their babies and families, have healthy and empowering pregnancy, birthing, and postpartum experiences.					
Objectives	**Inputs**	**Activities**	**Outputs**	**Outcomes**	**Final Outcomes**
1. Women and their babies benefit from the provision of safe and appropriate care throughout the preconception, pregnancy, birthing, and postpartum continuum, in accordance with the *NWT Midwifery Practice Framework*, the *Midwifery Profession Act*, and the *NWT Standards of Practice for Midwives*	▪ Two full-time midwives (Compensation and benefits as per Collective Agreement) ▪ Administrative support (half-time) ▪ Operation and Maintenance Budget ▪ Midwifery Program space (clinical, administrative, and storage areas)	Midwives offer full-scope maternity services: ▪ Preconception care ▪ Prenatal care ▪ Intrapartum care (Community birthing services and referrals for intrapartum care outside of the community) ▪ Newborn care , up to 6 weeks for babies ▪ Postpartum care up to 12 months for mothers, including family planning ▪ After-hours response to urgent and emergent clinical concerns ▪ Referrals to other care providers as indicated ▪ Prenatal / postpartum classes and individual teaching	▪ Clients make use of preconception services ▪ Clients participate in a complete course of prenatal care, including a multidisciplinary care review. ▪ Clients birth in the community or in an alternate and appropriate birthplace setting ▪ Clients receive newborn care and participate in postpartum care, including breastfeeding support ▪ The midwifery team responds 24/7 to client concerns, by telephone or in person, as indicated ▪ Clients are referred to other care providers as indicated ▪ Clients participate in prenatal and / or postpartum classes or one-on-one education	▪ Women and babies receive safe and appropriate care from the appropriate care provider at the right time and in the right setting. ▪ Women, their babies, and families, experience safe and appropriate care as defined by the clients themselves. ▪ Women and babies experience healthy perinatal outcomes. ▪ Women and babies experience risk reduction through changed behaviors and practices, and appropriate intervention in the perinatal period. ▪ Women and babies experience the protective benefits of breastfeeding. ▪ Clients have 24/7 access to safe and appropriate maternity care. ▪ Clients receive level of care appropriate to their needs, thereby reducing risks and improving outcomes. ▪ Clients more knowledgeable and confident in matters of maternal / newborn health.	▪ Health care resources are used appropriately to support the sustainable provision of maternity services to women as close to home as possible. ▪ Women and their babies are healthier. ▪ Women are more empowered participants in their own self-care and in the care of their children.
2. Women, their families, healthcare providers, and the community are empowered to share responsibility for maternal / child health.		Midwives: ▪ Establish ongoing partnerships with clients (includes client's family) ▪ Chair Maternity Care Committee and provide leadership to a multidisciplinary team ▪ Collaborate with other care providers ▪ Promote community awareness of maternal / child health and maternity care services ▪ Create opportunities for community reflection and dialogue about maternal / child health	▪ Known lead maternity care provider coordinates client's course of care; family members welcome to participate ▪ Regular meetings of the Maternity Care Committee address clinical care and risk management issues. ▪ Midwifery participation in multidisciplinary team events, e.g. rounds, training events, and committees ▪ Participation in community and public events (e.g. Aurora College student fair, World Breastfeeding Week, Career Opportunities Week, poster displays, newspaper articles, ▪ Grand Opening, International Day of the Midwife, and community forums on maternity care.	▪ Women are supported as primary decision-makers in partnership with a known lead care provider. ▪ Client safety and optimal client care are achieved through a collaborative maternity care process. ▪ Interdisciplinary relationships are strengthened and team function is enhanced. ▪ Community knowledge about maternal / child health is increased. ▪ Community support for community-based maternity care are increased.	
3. Midwifery knowledge and best practices are developed and shared with the maternity care community of practice.		Midwives contribute to the maternity care dialogue (NWT, Canada, international) ▪ NWT Midwifery Implementation Committee ▪ NWT Maternal Perinatal Committee ▪ Arctic Health Research Network ▪ Aboriginal Midwifery Advisory Circle ▪ Midwives Association of the NWT ▪ Canadian Association of Midwives ▪ International Confederation of Midwives ▪ Canadian Midwifery Regulators Consortium ▪ Society of Obstetricians and Gynecologists of Canada ▪ Alberta Perinatal Program Develop and adapt clinical practice guidelines appropriate to the practice setting Training and mentoring other team members and students (midwives, nurses, nurse practitioners, physicians, ambulance personnel) Perinatal data collection & research Disseminate information	Participation in regular and periodic meetings and forums (see list under Activities; some are monthly, quarterly, periodic or episodic) Review and adoption of practice guidelines by the Maternity Care Committee. Training events (NRP, 2nd Birth Attendant, STORC seminars) Mentoring of students and practitioners Participation in NWT perinatal database project Program data collection and performance monitoring. Presentations, papers, displays	Program benefits from and advances best practices in maternity care. Community practice is supported by evidence-based clinical guidelines and risk management strategies. Team competence in providing maternity care is increased. Sustainability of maternity care services is supported through a pool of competent care providers. Community-based maternity care is guided and supported by perinatal outcome data. The larger maternity care community of practice learns from NWT / FS practice experience	