



Centre for Rural Health Research
rigorous evidence for sustainable rural health services

Building Blocks to Sustainable Rural Maternity Care

The North Island Project



FINAL REPORT
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Compiled by the Centre for Rural Health Research

Preface

But in a perfect world, if we had births here, we'd have family around. There may be a doula there. There may be some of the, the family, the very support people need... Who are there, and who are visiting in the hospital before, during labour, afterwards. And the hospital staff will know who some of the support people are.

- North Island Mom

In the time between the initiation of the *Building Blocks to Sustainable Rural Maternity Care* project (Spring 2017) and its completion (Spring 2019), British Columbia's maternity care landscape has changed significantly. While there is continued erosion of some of the small surgical sites supported by General Practitioner with Enhanced Surgical Skills (Fort Nelson, 100 Mile House), there is also an influx of funding, support and consequent energy to other like services through the Rural Surgical Obstetrical Networks (RSON) funding¹. The province, however, has also been confronted with a new challenge: the destabilization of larger regional maternity services such as Kamloops and Williams Lake. Although the strain on these centres may have been unanticipated, the capacity to predict these challenges was not (Williams Lake temporarily closed services February 28th, 2019 due to nursing staffing challenges and Kamloops' services have been threatened by a confluence of both specialist Obstetrician and Family Physician attrition). Over the past two decades, we have seen the closure of over 20 rural maternity services, mostly '1A' (no local access to Cesarean section) and '1B' sites (Cesarean section provided by General Practitioners with Enhanced Surgical Skills) sites. This has resulted in increased inflow into regional referral centres at a time of attrition of Family Physicians from maternity care in BC, due in part to the demanding lifestyle, practitioners' fears about litigation, and inadequate remuneration. Although midwives have made significant contributions in many rural sites, on a practical level, supply has not kept up with demand in some larger urban centers and there are still many parts of the province that do not have local or regional access to midwifery services. At a systems level, the model of remuneration and challenges to interprofessional practice has slowed progress. The essential message that the challenges in the larger centres convey, is that stresses in one system strata have a ripple effect throughout the system. That is, the challenges in the larger centres are at least in part a product of the destabilization of the small sites. Unabated, stresses in larger sites may conceivably lead to consequences – both anticipated and unanticipated – in tertiary settings. In short, the challenges in 1A maternity sites lead to whole system challenges. The best way to understand 'system challenges', however, is to move between the specific and the general, local communities and the composite maternity care system.

¹ The RSON program aims to stabilize robust, sustainable local surgery programs in select areas of BC with small surgical programs served by general practitioners with enhanced surgical skills or by a solo general surgeon. It is anticipated that these rural surgical and obstetrical programs will increase the health services capacity of rural communities by supporting enhanced critical care, emergency and trauma care, and maternity programs, including obstetrical delivery and cesarean section.

^{*} Gryzybowski S, Kornelsen J. Providing a birth support program for women in the North Island region, Vancouver Island: An Aboriginal midwifery demonstration project. 2009, 1-70. <https://med-fom-crhr.sites.olt.ubc.ca/files/2013/08/aboriginal-midwifery-community-consultation-final-report-aug-10-2009.pdf>

The opportunity to work with the communities on the North Island arose through funding from JSC and a collaboration between the First Nations Health Authority, Island Health and the Centre for Rural Health Research focused on understanding comprehensive risk (clinical, social, cultural and economic) that influence women's decision regarding choice in place of birth (local community/regional referral centre). Early on in the consultations, it was clear that due to the tenuousness of local services there was little opportunity for true patient decision-making: the default mode was to leave the community to give birth. This was despite community interest and care provider willingness. The focal question transitioned from one of decision-making to one of sustainability: 'what will it take to sustain local maternity services?' Although Island Health remained a valued partner in the revised Building Blocks project, the evidenced-based service delivery recommendations herewith will take more time to review and to this end, Island Health has not yet endorsed these recommendations.

This report comes a decade after a previous consultation undertaken by the Centre for Rural Health Research commissioned by First Nations Inuit Health to look at a model of maternity care on the North Island that would meet the population need.* Recommendations included a two-midwife model underscored by a local General Practitioner Cesarean section service. In reviewing the report a decade later, one cannot fail to notice the lack of progress towards a solution - whether building on the recommendations in the report or other solutions. Complexity of maternity care planning and practice, with multiple players, and competing interests as well as a lack of central lead responsibility have contributed to this lack of progress.

Although the question we address in this report is directed towards health care providers and administrators, it is essential to appreciate that it responds to the needs of local community members (alongside a growing and robust evidence base on safety within a supportive policy context). Activities already underway on the North Island when the *Building Blocks* project started included the Joint Project Board funded *Kwakwaka'wakw Maternal, Child, Family Health* program, outreach clinical care from the Campbell River Maternity Clinic and a range of local, successful 'wrap-around' programs for women in the childbearing year. The gap that existed in services was in intrapartum care and the evidence needed to sustain it.

The *Building Blocks to Sustainable Rural Maternity Care* project has endeavored to understand and document these system interventions, consider transferability of what we have learned to other 1A sites and take tentative first steps and determining feasibility of implementing interventions. The productive tension between the inherently local and situational work we documented and the potential to use findings to stabilize the other remaining 1A sites is implicit in this work and the recommendations. Less implicit is the importance of recognizing that any approach to stabilizing 1A maternity services must be understood and actioned as part of a larger system strategy. To overlook this interdependence has the potential to do more harm than good.

The question of sustainable rural - and urban - maternity care is one that needs to be addressed in a timely way with accountability to communities, including health care providers, and to our provincial commitment to respond to the Calls to Action of the Truth and Reconciliation commission. We have enough evidence to move forward within an evaluation and Quality Improvement framework. It is time to address the community skepticism that improvement in access to care is possible.



Jude Kornelsen
March 10, 2019



Building Blocks to Sustainable Rural Maternity Care

The North Island Project

AIM

- 1) To understand challenges faced by North Island women and families in accessing maternity care;
- 2) To understand barriers local care providers and administrators face in providing sustainable maternity services to the North Island; and
- 3) To determine system supports needed to allow for the provision of sustainable maternity services to North Island women and families.

Although research and policy provide a framework for 'birth close to home', there is a lack of system supports to enable such care. Rural women often have to leave home weeks before their babies are due and can be away from home for a substantial period of time waiting to deliver.

WHAT WE FOUND

We heard from birthing mothers and community members of a **STRONG DESIRE FOR LOCAL MATERNITY CARE.**

We heard from local care providers of the system supports they need to enable such care, including:

Timely & reliable patient transport

Appropriate inclusion criteria for low-risk deliveries

Increased provider confidence

Strengthened networks of care between regional referral centres and rural sites

Strengthened interprofessional care teams



WHAT WE DID

- 1 **COMMUNITY CONSULTATIONS**
Focus groups and interviews with mothers, community members, care providers and key-stakeholders.



- 2 **PROVINCIAL CONSENSUS**
 - Consensus on priorities to sustain low-resource maternity sites in BC by care providers and administrators in the five 1A sites.
 - Policy and decision maker symposium to share priorities and facilitate opportunities for collaboration.

- 3 **FEASIBILITY ANALYSIS**
What will it take to action each of the five system interventions?

RECOMMENDATIONS

- (1) Maternity services be organized regionally between the two North Island hospital sites;
- (2) Local midwifery services be supported on the North Island;
- (3) Local access to Cesarean section be provided by Family Physicians with Enhanced Surgical Skills supported by General Practitioner Anesthetists and nurses with OR training;
- (4) Maternity care be culturally safe;
- (5) A rural maternity care demonstration project be funded and supported.

Although research and policy provide a framework for 'birth close to home', there is a lack of system supports to enable such care. Rural women often have to leave home weeks before their babies are due and can be away from home for a substantial period of time waiting to deliver. In North Vancouver Island, the majority of women travel a minimum of two hours to access maternity services.

The aim of this project is three-fold: to understand challenges faced by North Island women and families in accessing maternity care; to understand barriers local care providers and administrators face in providing sustainable maternity services to the North Island; and to determine system supports needed to allow for the provision of sustainable maternity services to North Island women and families.

The project consulted with the community throughout the study with focus groups and interviews with mothers, community members, care providers and key-stakeholders. We heard from North Island birthing mothers and community members of a strong desire for local maternity care. From local care providers, we heard of the system supports they need to provide such care. These system interventions or 'building blocks' include: strong interprofessional maternity care teams, increased care provider confidence, access to timely and reliable patient transport, appropriate inclusion criteria for low risk deliveries and strengthened networks of care between regional referral centres and rural sites. A feasibility analysis was conducted to understand what it will take to action each of the five system interventions.

Consensus was achieved on key priorities to sustain the five low-resource maternity sites in BC (North Vancouver Island, Hazelton, Haida Gwaii, Salt Spring and Invermere) during a provincial symposium with low-resource maternity site care providers and administrators.

Recommendations to sustain maternity services in North Vancouver Island include:

- (1) Maternity services be organized regionally between the two North Island hospital sites: Port Hardy and Port McNeill;
- (2) Local full scope midwifery services be supported on the North Island;
- (3) Local access to Cesarean section be provided by Family Physicians with Enhanced Surgical Skills supported by General Practitioner Anesthetists and nurses with OR training;
- (4) Maternity care be culturally safe; and
- (5) A rural maternity care demonstration project⁺ be funded and supported.

Appreciating the integrated nature of health care provision and the essential relationships between rural sites and sites with higher capabilities, it is essential to interpret these recommendations within the context of overarching system-embedded recommendations. These provincial recommendations to support 1A sites are as follows:

- (1) The development of a provincial maternity care strategy
- (2) Grow and share interprofessional models of care (inclusive of clinical policies, compensation agreements, training).^{*}
- (3) Establish funding models to meet current needs
- (4) Ongoing evaluation and established mechanisms for timely system response
- (5) Development of clear mechanisms of health service accountability

⁺Under the auspices of a demonstration project, local and regional key stakeholders could implement best-practice solutions for sustainable, local care within a comprehensive evaluation framework (health outcomes, costs, patient satisfaction including level of cultural safety). This would help to determine evidence-based solutions for meeting the maternity care needs of the population in a responsive framework.

^{*} It is anticipated that strengthening interprofessional models of care will be built on the work underway with the [Shared Care Initiative](#).

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Acronyms

BC	British Columbia
BCEHS	British Columbia Emergency Health Services
BCIT	British Columbia Institute of Technology
BMI	Body Mass Index
CFPC	College of Family Physicians of Canada
CME	Continuing Medical Education
CNE	Continuing Nursing Education
FMU	Fetal Medicine Unit
FNHA	First Nations Health Authority
GP	General Practitioner
MCFD	Ministry of Child and Family Development
NICU	Neonatal Intensive Care Unit
NNPBC	Nurses and Nurse Practitioners of British Columbia
OBGYN	Obstetrician-Gynecologist
PSBC	Perinatal Services British Columbia
RBI	Rural Birth Index
RM	Registered Midwife
RN	Registered Nurse
SOGC	Society of Obstetricians and Gynecologists of Canada
SRPC	Society of Rural Physicians of Canada
UBC	University of British Columbia
UBCO	University of British Columbia Okanagan
VBAC	Vaginal Birth After Caesarean



WHY IT MATTERS

The maternity care needs of rural women, their families and communities have been well documented in BC and elsewhere and include access to safe care as close to home as possible. There is also consolidated evidence on the health, psycho-social and cultural consequences of not providing this care. Our policy context, starting with the Canada Health Act and including BC-specific issuances such as the Royal Commission on Health Care and Costs (1991) and successive Ministry of Health service plans (2005, 2013, 2014, 2015) emphasize the need for such care. Moreover, our national obstetrical organization (SOGC) endorses this through two Policy Statements (*Returning Birth to Rural, Remote and Aboriginal Communities* and the *Joint Position Paper on Rural Maternity Care*). More recently, both the national Truth and Reconciliation Commission and the provincial Health Partnership Accord have paved the way for actioning local birth as a cultural mandate and a part of the reconciliation process. Within this supportive policy context and clear articulation of community desire, however, there remains a gap: understanding the system supports needed to sustain local care providers.

With funding from the Joint Standing Committee on Rural Issues, this two-year project aimed to understand, document and analyze the system supports needed to sustain rural maternity care in communities without local access to Cesarean section from the perspective of care providers.

The objectives of the project were three-fold:

- 1) To understand challenges faced by North Island women and families in accessing maternity care;
- 2) To understand barriers local care providers and administrators face in providing sustainable maternity services to the North Island; and
- 3) To determine system supports needed to allow for the provision of sustainable maternity services to North Island women and families.

WHAT WE DID

This research was built on a clear understanding of the needs and desires of women and families in the communities on the North Island, and provider articulation of priority supports. The feasibility analysis was conducted in four phases:

- 1) Engagement with community members (including Indigenous Health Centres);
- 2) Iterative development of provider-driven 'building blocks' to sustainable care;
- 3) Outreach to other 1A sites to validate findings; and
- 4) A comprehensive data-derived and costed plan of system supports needed.

Provider identified priorities were validated through outreach interviews and meetings with the providers in the other four 1A sites in BC (Haida Gwaii, Hazelton, Invermere and Salt Spring Island).

WHAT WE HEARD

There is a high degree of social vulnerability in North Vancouver Island as indicated by socioeconomic and demographic information on North Vancouver Island. The majority of women leave the North Island to deliver their babies, the majority travelling to either Comox or Campbell River. Geographic isolation poses a significant challenge in terms of access to health care for North Island residents.

The research was grounded in the narratives of women, families and community members about their experiences of and aspirations for maternity care. The most consistent message from the interviews and focus groups was participants' observation of the lack of support for local birth and the precipitating lack of confidence that this gave rise to. The stress and anxiety expressed by participants revealed not just the pragmatic difficulty of leaving the community, but also the implications for the cohesion of social relationships and the support structure around women giving birth. Participants in this study were very clear about what they envisioned for their maternity care. It included culturally safe care, local access to midwifery, a space for local traditions and birth in their home community.

Following a year of community-based research to understand community priorities, the project worked with local care providers and administrators to understand the systems supports needed to provide sustainable maternity care to North Island families. Five 'building blocks' emerged from this. These 'building blocks' or system interventions to sustain rural maternity care include:

- ⇒ Establish strong inter-professional maternity care teams,
- ⇒ Increase care provider confidence,
- ⇒ Access to timely and reliable patient transport,
- ⇒ Appropriate inclusion criteria for local deliveries, and
- ⇒ Strengthen networks of care between rural sites and regional referral centers.

⇒ *INTERPROFESSIONAL MATERNITY CARE TEAMS*

The necessity of team collaboration in the face of emergent situations (e.g. while waiting for delayed transport) and the importance of positive interdisciplinary relationships is heightened in small

communities, making siloed practice unfeasible. Interprofessional collaboration between midwives and physicians has been defined as “the exercising of effort by midwives and doctors towards each other for the purposes of shared functions, namely the provision of safe, rewarding and effective care to women and their families” and has been recognized as an effective way to meet the health needs of a community in low resource settings. Introducing a new provider group into the North Island must be done with care so as not to destabilize existing providers. This will require attention to the health human resource conditions in the North Island, the needs of the providers, and a localized vision for how midwifery care may work. This may include innovative team composition models such as the teamlet, which, in addition to primary care providers, may include health coaches, community navigators and doulas. In this feasibility analysis, we considered what it would look like for midwives to practice alongside physicians and nurse practitioners in the North Island. We conducted focus groups and interviews, connected with maternity care providers from other rural settings and held local maternity team discussions. Next steps must include having these discussions with all key stakeholders represented, within a context of mutual trust and respect.

⇒ INCREASED CARE PROVIDER CONFIDENCE AND COMPETENCE

In small communities with only a few local deliveries a year, it is difficult for nurses to feel confident attending births. This is due primarily to low incidences of birth (such as on the North Island) and the concomitant lack of maternity experience afforded to nurses. Frontline nursing confidence is influenced by many factors including initial training to become a nurse, nursing management, professional development opportunities, Health Authority infrastructure and supports, teamwork and support from physician colleagues. The following were identified priorities to stabilize rural maternity nursing:

- Exchange programs for nurses to train in higher volume communities that provide relevant experience (e.g. mentoring with a midwife)*;
- Relevant ongoing education and practical experience for nurses and the development of a corresponding curriculum that can be delivered locally; and
- Increased education and funding for training and maintaining nurse competencies in maternity care –ideally on site.

These recommendations can be actualized through the creation of a working group with members from the Ministry of Health, Regional Health Authorities, First Nations Health Authority, Post-Secondary nursing programs and Nursing Associations. This group will serve to advise and guide future activities around increased rural maternity nursing competence.

⇒ ACCESS TO TIMELY AND RELIABLE PATIENT TRANSPORT

Through community consultation with mothers, paramedics, community workers, and primary and allied health care providers, we learned that a significant concern regarding local deliveries was in regards to delayed transport and the risk of not being able to transfer high acuity laboring women efficiently. All physicians expressed concerns regarding the inefficient transport of maternity patients within the context of wider concerns about patient transport. Funding is recommended to explore local solutions to improve access to maternal transport for the 1A communities. Further research using the BCEHS database is warranted to analyze length of time for maternal transports by transport segment (call to dispatch, dispatch to leaving the community, leaving to arriving in referral centre).

*This has been identified as a provincial priority and there are currently working groups under way to determine how this could best be achieved.

⇒ *APPROPRIATE INCLUSION CRITERIA FOR LOW-RISK DELIVERIES*

The low volume of deliveries on the North Island (<10 deliveries locally of a birthing population of ~120 pregnancies annually) may be due, in part, to stringent inclusion criteria for local birth. In the absence of clinical practice guidelines, there is ambiguity regarding appropriate inclusion criteria for local delivery in low-resource settings. This feasibility analysis included an in-depth literature and policy review on guidelines for appropriate inclusion criteria for low-risk deliveries. Given the contextual nature of such decisions and the significant role of psycho-social and cultural influences, instead of codifying inclusion criteria, a more helpful way forward is to develop an approach to shared decision-making, including the values propositions that underscore the process. The process must be responsive to local circumstances and conditions, but also recognize and mitigate the potential implications to providers (e.g. being the Most Responsible Provider at a high-risk delivery with no local backup).

⇒ *STRENGTHENING NETWORKS OF CARE*

When local providers feel supported by their specialist colleagues in the services they provide and know that they are available should emergency consultation be necessary, the level of anxiety decreases and confidences increases. Attention and resources need to focus on building and strengthening networks of care between rural 1A sites and their referral sites as well as between all 1A sites. Lateral networks, or the development of a Community of Practice between 1A maternity care providers and administrators in BC would support knowledge exchange and serve as supportive environments to share successes and challenges. Funding is needed to allow time for rural maternity care providers and referral care providers to connect, build trusting relationships, and reciprocally exchange knowledge.

WHAT IT MEANS

The community-based, regional and provincial consultations within the context of the *Building Blocks* project revealed that the maternity service challenges and solutions on the North Island are enduring ones, as findings and recommendations are very similar to the previous First Nations Inuit Health commissioned report on the same topic (Centre for Rural Health Research 2009). Recommendations are rooted in the values of health service planning must respond to the needs of the communities; all key stakeholders must be involved regarding local services; that services be planned through a rural lens; that we understand community experience through a trauma-informed lens and honor the policy commitments of returning birth to indigenous communities; and via a systems approach.

Recommendations for partners in the North Island are the following, inclusive of Island Health and FNHA administrators and key decision makers, local primary care providers and organizations (e.g. GPSC, MABC, divisions, primary care networks):

- (1) Maternity services be organized regionally between the two North Island hospital sites (Port Hardy and Port McNeill).
- (2) That in response to the clearly articulated needs of the community, *local midwifery services be supported on the North Island* through a two-midwife model.
- (3) That due to the volume of deliveries, the vulnerability of the population and the distance to the nearest Cesarean section services, *local access to cesarean section be provided by Family Physicians with Enhanced Surgical Skills (FPESS)* supported by General Practitioner Anesthetists (GPAs) and nurses with OR training;

- (4) A clear message from Indigenous community participants was the need for care that is culturally safe.
- (5) Due to existing administrative, interprofessional, scope of practice and funding issues that require on-the-ground resolution, a *rural maternity care demonstration project* be funded and supported as per the recommendations above.

Provincial Implications

Two provincial symposia with other 1A maternity care providers and a second with key policy and decision makers were held. This served to consolidate shared challenges and to seek opportunities towards sustaining these low-resource maternity sites. Participants committed to a consensus process: that is, findings and policy recommendations reflect the prioritization of *all* 1A communities in BC..

Appreciating the integrated nature of health care provision and the essential relationships between rural sites and sites with higher capabilities, it is essential to interpret these recommendations within the context of overarching system-embedded recommendations. These **provincial recommendations** to support 1A sites are as follows:

- (1) The development of a provincial maternity care strategy
- (2) A focus on interprofessional models of care
- (3) Stabilize funding models to meet current needs
- (4) Ongoing evaluation and established mechanisms for timely system response
- (5) Development of clear mechanisms of health service accountability

Overview

The maternity care needs of rural women, their families and communities have been well documented in BC and elsewhere and include access to safe care as close to home as possible.¹⁻⁵ There is also consolidated evidence on the health, psycho-social and cultural consequences of not providing this care. Our policy context, starting with the Canada Health Act¹ and including BC-specific issuances such as the Royal Commission on Health Care and Costs (1991)² and successive Ministry of Health service plans (2005, 2013, 2014, 2015)⁶ emphasize the need for such care. Moreover, our national obstetrical organization (SOGC) endorses this through two Policy Statements (*Returning Birth to Rural, Remote and Aboriginal Communities*⁵ and the *Joint Position Paper on Rural Maternity Care*⁷). More recently, both the national Truth and Reconciliation Commission⁸ and the provincial Health Partnership Accord⁹ have paved the way for actioning local birth as a cultural mandate and a part of the reconciliation process. Within this supportive policy context and clear articulation of community desire, however, there remains a gap: understanding the system supports needed to sustain local maternity care providers.

With funding from the Joint Standing Committee on Rural Issues, this two-year project aimed to understand, document and analyze the system supports needed to sustain rural maternity care in communities without local access to Cesarean section (Perinatal Services BC-designated 1A sites¹⁰) from the perspective of care providers. This feasibility analysis was built on a clear understanding of the needs and desires of women and families in the communities on the North Island, and provider articulation of supports validated through outreach interviews and meetings with the providers in the other four 1A maternity sites (Haida Gwaii, Hazelton, Invermere and Salt Spring Island).

The feasibility analysis was done in four phases: 1) engagement with community members (including First Nations community members and First Nations Health Centre staff); 2) iterative development of provider-driven 'building blocks' to sustainable care; 3) outreach to other 1A sites to validate findings; and 4) a comprehensive data-derived and costed plan of system supports needed.

This process was built on existing evidence regarding the need for local maternity care on the North Island;¹¹ BC- and Canada-derived primary evidence on the safety of rural maternity care without local access to Caesarean section;^{12,13} a metric for determining the appropriate level of maternity services in rural settings;¹⁴ and indications for health system planning.¹⁵⁻¹⁷ This work was also informed by two commissioned systematic realist reviews, one by the Ministry of Health and Perinatal Services BC on the safety of maternity services without local access to Caesarean section¹⁸ and one by the First Nations Health Authority on models of distributed maternity care for Indigenous communities.¹⁹ Primary data gathered and analyzed over the past 18 months, which informed the Building Blocks include:

- Community consultations on the North Island (124 participants interviewed);
- Telephone interviews with care providers and administrators from all other 1A sites in British

Columbia (17 participants);

- 1A community symposium with maternity care providers and administrators from 1A sites in BC (June 2018; 32 participants);
- An invitational symposium with provincial decision-makers and professional associations (October 2018; 29 participants)

The primary findings from North Vancouver Island and other 1A maternity sites must be understood in the context of current political priorities from the Ministry of Health, namely the commitment to the Patient Medical Home and Primary Care Networks. Both of these directions are underscored by the efficacy of interprofessional teams working together to achieve seamless patient care. This commitment to interprofessional practice reflects growing international literature on the relationship between teamwork and optimal outcomes.²⁰⁻²² It is particularly crucial in low volume isolated communities that are supported by a generalist skill-set and require close professional collaboration to mitigate the tyranny of distance to specialized care and minimal resources. 'Interprofessional collaboration' must be understood on a continuum starting simply with collegial relationships between health care professionals co-existing in a defined geography and extending to fully integrated practice and a shared patient load.²³ Regardless of the nuance that will best meet the needs of discrete communities (which must be determined at a local level and involve the input of all key stakeholders), the principles of *professional autonomy* and *goal fulfilment* must be respected within the interprofessional relationship.

There has been a cultural shift in the past decades towards responding to citizen-patient and community needs for health care, reflected most locally in British Columbia's Patient Centered Care Framework.²⁴ This is a touch-stone not only for patient priorities in clinical care, but for involvement in "health care re-design."²⁴ Health care change is guided by a commitment to the Quadruple Aim: improving the health of populations, enhancing the experience of care for patients and providers, and reducing the per capita cost of health care.²⁵ This requires thoughtful attention to the comprehensive needs of the community and how these needs may be met within the larger context of service sustainability. Working this through depends on clear communication between the key players and transparency of relevant data so that the comprehensive implications of services decisions are understood. In the North Island, we heard a clear desire for local access to midwifery care - this needs to be front and centre in discussions of what a sustainable model of care will look like.

Finally, current rural maternity service delivery tells us that sustainable care is not a problem unique to 1A sites - challenges are felt across the continuum, most recently in the Level 2 regional referral centre of Williams Lake. However, interventions to sustain a *system* of maternity care must be understood and applied at all levels of care to mitigate the 'domino effect' that the closure of small sites has on the larger ones. This requires us to take a provincial, evidence-informed approach to planning services within a framework of iterative evaluation and feedback loops to 'course correct' should it be necessary. One-off solutions to quell the impact of local closures without appreciation of the interconnectedness of system parts will not offer a robust solution. Work on the North Island and through the additional 1A sites provides a starting point for this larger discussion.

Values Propositions Underlying the Approach

Three key values underlie our approach to this work:

- (1) Our social responsibility as health planners, administrators and care providers is to meet the health care needs of rural communities; in this instance, appropriate access to maternity care. This needs to be done while respecting the best evidence on safety, appropriateness and sustainability of services in the context of other health care priorities both in rural communities and through the health care system.
- (2) Although ensuring appropriate access to maternity care is a systems issue with decisions regarding levels of access in rural sites impacting regional referral and, at times, tertiary services, to address challenges to sustainability in the low resource sites we must engage in system planning through a *rural lens*. This demands respect for all local primary and allied key stakeholder experiences but also respect for those 'up stream' who support and provide back-up for rural sites.
- (3) Finally, due to the confluence of rural and Indigenous communities and with respect for the calls to action issued by the Truth and Reconciliation Commission and BC's 2006 Health Partnership Accord, we must understand community experience, including the impact of relocating for services when local services are not provided, through a trauma-informed lens and honor the policy commitments of returning birth to Indigenous communities.^{8,11,26}

1. Background



1.1 North Vancouver Island Demographics and Geography

The North Vancouver Island region covers 21,157 square kilometres of northern Vancouver Island and the adjacent mainland, and is comprised of numerous isolated communities, including the communities of Port Hardy, Port McNeill, Gwa'sala-Nakwaxda'xw, Fort Rupert, Alert Bay and Quatsino.

As of 2016, the current population of the region was 11,235.²⁷ Port McNeill and Port Hardy are the two largest centres in the region and account for approximately 77.3% of the population, with 4,434 individuals living in Port Hardy and 4,104 in Port McNeill.¹ Of the North Island population, 31.2% identify as Aboriginal, the majority as members of the Kwakwaka'wakw family.²⁷

There is a high degree of social vulnerability in North Vancouver Island as indicated by socioeconomic and demographic information on the region (Tables 1 and 2). Demographics from 2006 are included in the tables for comparison to the current demographics of the area. The region has a teen pregnancy rate (defined as number of pregnancies to women under the age of 20) of 87.6 per 1,000, as compared to the provincial average of 19.9 per 1,000.²⁸ Single parent families make up 26% of families in the region, equivalent to that of the provincial average. Alcohol related deaths in the North Island as of 2014 were 53.4 per 100,000, higher than the BC average of 26.5 per 100,000. Illicit drug related deaths were 16.3 per 100,000 in the North Island, higher than 8.3 per 100,000 in BC overall.²⁸ Life expectancy on the North Island is 77.6 years, which is below that of the province (82.3 years).²⁹ The infant mortality rate on the North Island is 6.9 per 1,000 live births, above that of the BC average of 3.7 per 1,000 live births. According to 2016 data, the average annual family income in the North Island was \$57,685, which is roughly \$12,000 below that of the BC average (\$69,979). Individuals with post-secondary credentials totaled 48.7% of the population in the North Island, falling well below the provincial average of 63.9%.²⁸

Table 1: Port McNeill and Port Hardy demographics

	2006 ^a			2016 ^{b,c}		
	Port Hardy	Port McNeill	BC	Port Hardy	Port McNeill	BC
One Hour Population	6,000	5,000	---	4,434	4,104	---
Aboriginal Population (Including First Nations, Metis or Inuit)	18.9%	5.6%	---	28.6%	14.2%	---
Employment Insurance Beneficiaries	4.0%		1.9%	2.9%		1.5%
Infant Mortality Rate (per 1,000 live births)	7.8		4.2	6.9		3.0
Teen Pregnancy (per 1,000 live births 15-19 years)	50.8		10.4	87.6		19.9
Women 20-29 years old (% total 20-29 years pop)	10.7		10.7	9.8		12.6

Source: ^aCRHR 2009 North Island Report¹¹; ^bStatistics Canada Census 2016²⁷; ^cVIHA LHA Profiles²⁸

Table 2: Port McNeill and Port Hardy socioeconomic demographics

	2006 ^a		2014/2016 ^{b,c}	
	North Island	BC	North Island	BC
Average annual family income (\$)	66,043	82,000	57,685	69,979
Individuals with post-secondary credentials	47.2%	62.8%	48.7%	63.9%
Life expectancy at birth (years)	75.9	81.1	77.6	82.3
Single parent households	31.8%	25%	26%	26%
Alcohol related deaths (per 100,000)	---	---	53.4	26.5
Illicit drug related deaths (per 100,000)	12.1	7.2	16.3	8.3

Source: ^aCRHR 2009 North Island Report¹¹; ^bStatistics Canada Census 2016²⁸; ^cVIHA LHA Profiles²⁸

The North Island population is predicted to increase by 6.72% over the next 10 years as depicted in Table 3 below.³⁰ The projected population growth is an important consideration for health service planning in the region.

Table 3: North Island population projections

Year	North Island Land Health Area Population Projections (number of residents)
2020	11,521
2030	12,334
2040	13,052

Source: BC Stats Population projection³⁰

Birth to women in the North Island remains substantially higher than the provincial average. Women from the Vancouver Island North Local Health Area have ranked higher than the provincial average in birth numbers over the past five years. Between 2011-2015, there were on average 78.2 births per 1,000 women annually in the North Island while in the province as a whole, 57.0 births per 1,000 women occurred annually in the same timeframe (Table 4).³¹

Table 4: Average fertility rates for women aged 15-49 on the North Island

<i>Year</i>	<i>Births per 1,000 women (North Island)</i>	<i>Births per 1,000 women (BC)</i>
2011	80.0	57.6
2012	88.3	57.2
2013	71.6	57.4
2014	75.5	56.3
2015	75.5	56.5
Average	78.2	57.0

Source: BC Stats Fertility rates³¹

Geographic isolation poses a significant challenge in terms of access to health care for North Island residents. Road access to the region is limited to a single lane highway along the east coast of Vancouver Island. The city of Campbell River lies 200 kilometers to the south; over two hours travel time by road. The Port Hardy airport is 11 kilometers to the southeast of Port Hardy, and flights can be subject to delay due to poor weather conditions.

1.2 Where do North Island Women Deliver?

The majority of women leave the North Island to deliver their babies, the majority travelling to either Comox or Campbell River (Table 5).

Table 5: Where do North Island women deliver?

<i>Location</i>	<i>Annual average number of deliveries to residents of North Vancouver Island</i>
Campbell River	63
Port McNeill	5
Comox	38
Nanaimo	15
Other	12
Port Hardy	<5
Home birth	<5

Source: PSBC Data averaged 2012 - 2017; "Location of delivery" is a field derived by the research team and not provided by Perinatal Services BC; *Local perspective suggests this number may be higher than what is reported here.

There are no surgical sites for Cesarean section deliveries in the North Island, and any women needing such a service or at risk of requiring a Cesarean delivery, emergent or elective, are sent to the regional referral centre. In 2011, 25% of women in the North Island had a Cesarean delivery (see Table 6 below), as compared to 31.4% overall in the province.³⁰ Generally, a lower Cesarean section rate is indication of appropriate care for a population and better outcomes, however in the case of the North Island lower Cesarean section rates may be indication of a lack of access to an appropriate level of service.³²

Table 6: Cesarean section rates in the North Island

Delivery mode	2011	
	North Island	BC
Spontaneous deliveries	89	25,800
Total C-section rate	25%	31.4%
Number of C-sections	37 (22 1 st ; 15 repeat)	13,830

Source: Birth related statistics (2011)³⁰

1.3 Maternity Services in the North Island

Geographic catchments indicate the population catchment areas included in one-hour road travel time from the Port Hardy and Port McNeill hospitals. (RHRSNbc)(Figure 1). Details on the services provided at these two hospitals are included below.¹

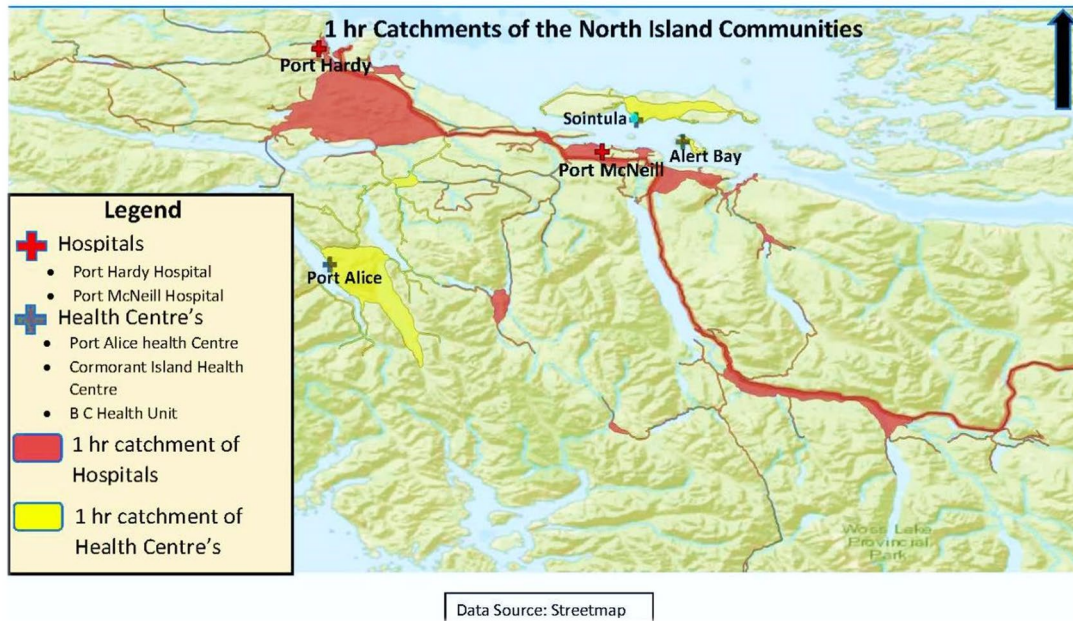


Figure 1. One-hour catchments from Port Hardy hospital and Port McNeill hospital (RHRSNbc)

¹ The Rural Health Research Services Network of BC (RHRSNbc) created one hour catchments for the North Island using Arc GIS. These catchment areas were used to extract the postal code areas within the communities. The file containing all postal code areas of Canada was derived from Abacus Dataverse Network. UBC has purchased a license to access this database and the file is cited in our work- '2016-11-11, "CanMap Postal Code Suite, v2016.3", <http://hdl.handle.net.ezproxy.library.ubc.ca/11272/10440> DMTI Spatial, Inc. [Distributor] V1 [Version]'. The Local Delivery Unit Areas (postal code areas) were intersected with the one hour catchment polygons generated on Arc GIS. This gave an output table with all the postal codes for the community of study.

Postal codes included in North Island catchment: VON0C6; VON3E0; VON1A0; VON1A0; VON1K0; VON2P0; VON0A9; VON2V0; VON1Z0; VON2R0; VON2R0; VOP2A0; VOP1J0; VOP1X0; VON3P0; VON3J0; VON1A0; VON2N0; VON2P0; VON2N0; VON2V0; VOP1J0

PORT MCNEILL DISTRICT HOSPITAL



Port McNeill Hospital

The Port McNeill hospital is an acute care facility offering low-risk obstetrical services. As such, nurses at this facility are required to have perinatal care Level 1 training from the British Columbia Institute of Technology (BCIT).³⁴ There are four physicians providing services in Port McNeill. Prenatal and post-partum care is administered by physicians, nurse practitioners, public health nurses, and outreach workers through 'Promising Babies', a BC Pregnancy Outreach Program. There are two Aboriginal Health Nurse Practitioners serving the Mount Waddington region.

Women considered 'high risk' are not eligible to birth in Port McNeill. The current local guidelines include women who are primiparous or grand multiparous, women who previously delivered by Cesarean section, women whose previous child weighed more than nine pounds at birth, women in labour before 37 and after 41 weeks, women with substance abuse issues, and women under 16 years of age. Women with any of these criteria are counseled to leave the community around 38 weeks for a referral centre, most commonly Campbell River (157 km from Port McNeill District Hospital) or Comox (257km).

For women who are permitted to birth in Port McNeill hospital, and who choose to do so, the woman's physician will at times deliver the baby. If he or she is unavailable, which is often the case, the physician on call will attend the delivery. In the event of an emergency evacuation, women are transported by ground or air ambulance to a referral centre. Expedient emergency transportation, particularly in the case of air transport, depends heavily on weather and availability, as well as the progression of the woman's condition.

PORT HARDY DISTRICT HOSPITAL

The Port Hardy hospital provides the region with emergency services among other services. The hospital is not a designated maternity site, although emergent deliveries occur at Port Hardy hospital. All parturient women are expected to leave Port Hardy at 38 weeks gestation to receive care in a referral community. Emergent delivering women in Port Hardy are usually transported to a larger centre by ground or air ambulance. If labour has progressed beyond safe guidelines or if adverse



Port Hardy Health Centre

weather conditions exist, expedient transportation can become impossible and care providers are forced to perform local deliveries.

As of 2018, Port Hardy has five practicing family physicians. All five physicians provide basic prenatal and post-partum care. Additional prenatal and post-partum support is provided through nurse practitioners, public health and community programs. Women deliver in either Campbell River (196 km from Port Hardy by road), Comox (296 km), or Port McNeill (39 km) in the case of low-risk patients.

1.4 Pregnancy Related Programs in the North Island

KWAKWAKA'WAKW MATERNAL, CHILD & FAMILY HEALTH PROJECT



First Nations Health Authority
Health through wellness

The Kwakwaka'wakw Maternal, Child & Family Health project is a partnership between First Nations Health Authority, Vancouver Island Health Authority and the Ministry of Health to provide access to maternity care that is closer to home, culturally mindful, trauma-informed and family centered, with the level, location and type of care to be determined by the person's need and preference. It is targeted towards the Indigenous community in the Mount Waddington region, which is home to about 13,000 people, including 14 First Nations communities, and urban Aboriginal community members within five municipalities. In collaboration with other programs, this project has contributed to reduced apprehensions at birth for North Island families. The project has worked with a total of 90 women since starting in October 2017. The figure below illustrates the project's vision and mission.



Figure 2. Kwakwaka'wakw Maternal, Child & Family Health project vision and mission

PREGNANCY OUTREACH PROGRAM

The Pregnancy Outreach Program is an inviting, comfortable and culturally safe drop-in space open to all pregnant women, parents and families in the North Island. This involves access to practical supports like a phone, a computer with a printer, washers and dryers, and reproductive health care supports such as contraceptive care. The coordinator is able to provide supervised visitation support and parents can meet with children who are in Ministry care. Educational and self-care activities are scheduled to enable parents to learn about rights and processes of MCFD involvement and talk about healthy relationships. Program staff are hired locally and continue to receive ongoing training. In the North Island, there are currently centres in Port Hardy and Port McNeill.



1.5 Planning the Appropriate Level of Maternity Service

The Rural Birth Index (RBI) is a validated metric used to determine appropriate level of maternity service based on geography, social vulnerability and isolation of a population. This index was created in British Columbia and validated in rural Australia.^{14,34} Although the metric suggests an appropriate level of service based on population need, the targets set are aspirational and part of a three-phased planning process that involves Health Authority assessments of feasibility (human resource issues, physical infrastructure, costs, etc.) and prioritization (considering cost priorities and other administrative and political influences). The suggested level of services (the deterministic phase) generated by the Rural Birth Index must be understood within this larger process.

$$\text{RBI} = (\text{PBS}^1 \times \text{APV}^2) + \text{IF}^3$$

PBS: 11.2 x APV: 01.24 + 2 hours, 23 mins (Travel time) +3 = 16.8 (mixed model).

Figure 3. Rural Birth Index calculation for North Vancouver Island.

¹ Annual average number of pregnancies in North Island catchment 2012-2017 fiscal year data, PSBC

² British Columbia Statistics Socio-Economic Indices, which measure the social vulnerability of a Local Health Area population over a range of -1 (socially advantaged) to +1 (socially disadvantaged) based on the following factors: economic hardship, crime, health problems, education concerns, children at risk, and youth at risk

³ Average surface travel time from Port Hardy and Port McNeill to Campbell River

2. Study Design



2.1 Objectives

The objectives of the project were three-fold:

- 1) To understand challenges faced by North Island women and families in accessing maternity care;
- 2) To understand barriers local care providers and administrators face in providing sustainable maternity services to the North Island; and
- 3) To determine system supports needed to allow for the provision of sustainable maternity services to North Island women and families.

2.2 Participants

Participants were recruited from the local communities and invited for a key informant interview or focus group discussion (see Table 7 below). In total, 117 participants were recruited with the majority of participants being mothers and nurses.

Table 7: List of study participants

<i>Participant Type</i>	<i>Number</i>
Mothers	62
Nurses	33
Physicians	10
Community health workers	8
Other (NPs, paramedics, etc.)	4

Study participants resided in the communities of Gwa’sala-Nakwaxda’xw Nation, Quatsino, Port McNeill, Port Hardy, Fort Rupert, Sointula and Alert Bay (Figure 4).

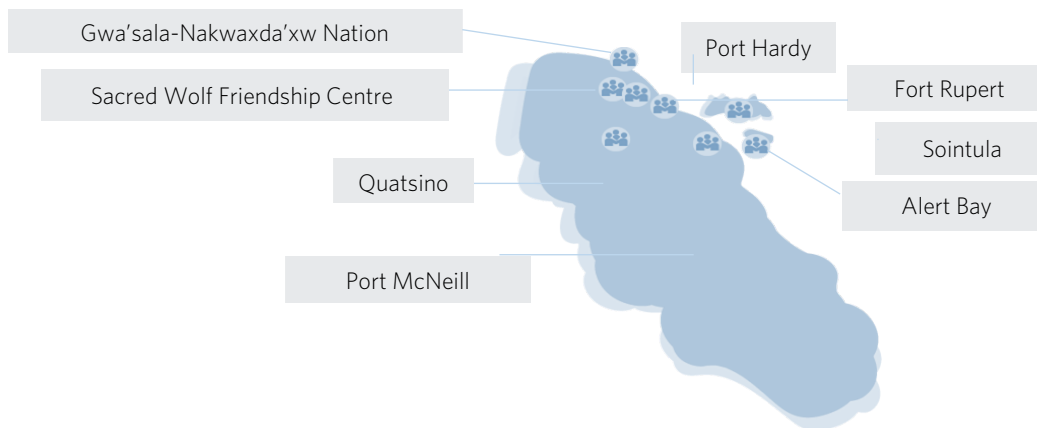


Figure 4: Participating North Vancouver Island communities.

2.4 Approach

The project team consists of Jude Kornelsen, Principal Investigator (PI) and Kira Barwich, Research Coordinator (RC). The project is supported by UBC Student Research Assistants (SRA) Evonne Tran, Lisa Hodgson, Regina Chan and Tisha Dasgupta. Phase I of the project was supported by two UBC medical FLEX students, Krista Loewen (UBCO) and Hannah Chester (Northern Medical Program). Additional interviews and focus groups capturing the experiences of mothers in vulnerable situations were conducted by Joanna Ritson and Emily McLean as part of their UBC medical FLEX research.



North Island Project Team Members

From left to right Hannah Chester (UBC Med FLEX), Kira Barwich (Research Coordinator), Emily McLean (UBC Med FLEX), Jude Kornelsen (Principal Investigator), Joanna Ritson (UBC Med FLEX) and Kristin Loewen (UBC Med FLEX)

Integrated knowledge translation is a key component throughout the project. We engaged in an iterative process bringing “what we heard” back to the participants. We gained feedback working collaboratively with communities on North Vancouver Island to ensure local voices drove the process. We created community-facing summaries and shared these resources with community members and health centres to provide updates on Building Blocks’ progress including preliminary findings.

We included community members and key decision makers in our advisory committee and involved them from the beginning and throughout the evolution of the Building Blocks project. The project has a productive multi-stakeholder advisory committee that met via teleconference bi-weekly to share updates and provide feedback and comments. This advisory group includes representatives from Vancouver Island Health Authority, First Nations Health Authority and North Island community representatives.

Building Blocks works closely with the North Island physicians through the physician representative group (comprised of two physicians from Port Hardy and two from Port McNeill). This core group served as our liaison with the larger physician community.

3. Findings



3.1 North Island Women and Community Experiences of Birth

We grounded the Building Blocks project in the narratives of women, families and community members about their experiences of and aspirations for maternity care (n=62). Interviews and focus groups were done in community health centres with an inclusive approach to recruitment (anyone interested in speaking about maternity care). Through analysis of the transcripts, three overarching themes emerged: 1) perceptions and experiences of local care; 2) experiences of leaving to give birth; and 3) what North Island women want. Each theme will be explicated below.

Perceptions and experiences of local care

The most consistent message from the interviews and focus groups was participants' observation of the lack of support for local birth and the precipitating lack of confidence that this gave rise to, expressed simply as "I think right now, the... environment and the... message that's been given out is that you just birth outside community". Lack of confidence in the services was explicitly expressed by many of the participants ("I don't have confidence in the hospital"; "I was just too afraid to stay here"). Several participants made comments that reflected the perception that physicians and nurses "just don't have the training" for local deliveries and that women are not encouraged to deliver locally. Several participants emphasized that this was not a reflection of the providers themselves but instead the reality of the need for a generalist skill-set in a low-volume setting:

For me, the main reason I wouldn't consider doing it here is I wanted to feel completely confident in the birthing team. And I just love that idea of the people attending my birth, that's all they do every day (laughs), all their training is on that one thing!

This led to the community-level normalization of leaving the community for birth and a lack of awareness among many that local services were offered for low risk deliveries. This trend was captured in the 2009 study through the following quotes:

Experiences of local care (2009 ²)	<p><i>When you go into the hospitals here, you don't get any sense at all that you'd be comfortable having a baby.</i></p> <p><i>It just seems like they're [docs] so worried that something will go wrong that they rule out everybody from delivering [locally]...I know a lot of people find that very frustrating.</i></p>
--	--

The issue of risk was thematic to many of the participants, informed for most by the tacit awareness of both an historical and current North Island context. The cultural narrative on the North Island is embedded in an adverse perinatal outcome that occurred in 2003 where an infant died in transport to Campbell River hospital. The story was repeated many times over by participants as a context for their concerns about delivering on the North Island. A lesser-known but crucial narrative was also expressed by others from the Indigenous communities. This narrative focused on the tragic stories of two Indigenous perinatal deaths that had occurred in the year prior to the third death, the emphasis in these narratives being the lack of follow up by the health system for Indigenous issues.

Perceptions of clinical risk were also precipitated through the policy prohibiting planned local deliveries for nulliparous women. This was interpreted by the community that such women were 'high risk', a designation that was internalized by many even after a successful vaginal delivery of their first child. As one participant noted:

Well and I wonder too some of their moms, if they're told um you're high-risk at first birth, all first births are high-risk, right? So then they get it into their minds that I'm just high-risk, so I'm gonna just have this, make arrangements to have this baby down island.

The counter-point reference for many Indigenous Elders was their historical experience of birth, usually in the community without the contemporary sense of risk aversion. As one Elder noted:

Well it was the days when we all had babies here. There was no such thing as risk factors, and you just walked in and had a baby (laughter), and it was great. I got fed whatever I wanted, and I was here with my other children, right? So, for me it was wonderful.

² Centre for Rural Health Research (2009). Providing Birthing Support for Women on the North Island: An Aboriginal Demonstration Project. <https://med-fom-crhr.sites.olt.ubc.ca/files/2013/08/aboriginal-midwifery-community-consultation-final-report-aug-10-2009.pdf>

The final theme expressed by participants focused on experiences of discrimination within the health care system in the context of maternity care, sometimes blatant but often subtle. Participants spoke clearly not just of the experience itself, but how it made them feel. One participant described the message implicit to her in a fleeting interaction:

It's not very nice, you know, when you go in there and you can really feel it, especially when one nurse looks at you and then just turns and walks the other way. They show that they're not gonna look after you.

Others expressed more overt experiences of racism when seeking care:

With [child] I had severe morning sickness up to six months, even with the Gravol and the morning sickness pill. I went to the hospital because of the severe dehydration, but I was mistreated about that, told I was overreacting...

Several of the participants noted a variation on discrimination directed toward non-Indigenous women:

The other hard thing is when we have non-native girls that come here and live on reserve. They have a hard time with (pauses), with how the people treat them in the hospital. Because they are having a First Nations baby.

It is well appreciated that systemic racism in the health care system is entrenched with historical roots that will take dedicated, thoughtful and committed actions to unearth. It is also clear that there are excellent in-roads being made into understanding the colonialist context that frames many contemporary Indigenous experiences. However, the juxtaposition of the experiences of participants in this study with narratives from the 2009 study (see below) suggest that more concentrated action is needed to eradicate the legacy we are left with.

Desire for More Culturally Attuned Care (2009 ³)	<i>Rather than bringing culture into practice, we need to bring practice into culture.</i>
	<i>Saying, 'this is what our culture values, and this is what birth looks like within our culture,' I think there would be a huge value in that.</i>
	<i>There's a lot of women that won't go to the hospital because of the way that they're treated.</i>
	<i>I think there's historically some distrust of the system. People were not treated well.</i>

Experiences of leaving to give birth

The most animated discussion was around the experiences of women and families who had to leave the community to give birth and the financial and psycho-social implications of this re-location. Beyond the disruptive financial and organizational consequences, re-location could also affect whether

³ Centre for Rural Health Research (2009). Providing Birthing Support for Women on the North Island: An Aboriginal Demonstration Project. <https://med-fom-crrh.sites.olt.ubc.ca/files/2013/08/aboriginal-midwifery-community-consultation-final-report-aug-10-2009.pdf>

the Ministry of Children and Family Development became involved with a family. These consequences are discussed below.

The psycho-social implications for women and families who have to leave their community to give birth are well-known and documented in the literature.^{35,36} The implications specifically for women on the North Island have been documented in a 2009 report commissioned by First Nations Inuit Health.¹¹ Below are some quotes from women in that report.

Women's Experiences (2009 ²)	<i>I finally went into labour two days before my due date. We were down there for a month and a half.</i>
	<i>We got sent to a hotel...where drug dealers work from, it's where hookers stayed, there was mould in the bathroom. [My son] came with me; I didn't even want to put him in there. I was just emotionally distraught. It was just awful.</i>
	<i>Five weeks in a hotel set us back for a year.</i>
	<i>I had a baby in Victoria, and it was the most horrendous experience of my life. I was there for six weeks. It cost my husband and I \$5,000.</i>
	<i>I'm all alone in Courtenay until [my husband] gets that phone call, 'get down here now', you know? It's added stress to the mother, just sitting and waiting.</i>

One decade later, the narratives of women and families have not changed. The stress and anxiety expressed by participants revealed not just the pragmatic difficulty of leaving the community, but also the implications for the cohesion of social relationships and the support structure around women giving birth. This had implications not only for the birthing woman, but also for the family and friends who remained behind. As one participant noted:

My mom couldn't come so that was really upsetting. Like I said, I had my best friend, I had my husband, and my mother-in-law, come and rotate in [with me], but you know I called my mom crying that night after we had him, that I wanted her there. And she was crying because she was upset she couldn't be there because of work. So, if I had the option I would have stayed, but because they were scared... they didn't want to risk it.

Beyond the social implications were financial ones as participants expressed difficulty in arranging transportation and in meeting everyday needs, even with funding from FNHA's Uninsured Health Benefits program.⁴ Allied health care providers in the community were keenly aware of the financial impact of displacement and some of the social ramifications for women. As one noted:

[She] just couldn't hack it. Hitchhiked home and now has to get back down to the hospital with no funding whatsoever. The isolation, it's brutal. I mean I can't imagine what, what they're going through. (Community health worker)

⁴ Uninsured health benefits is a program supported by First Nations Health Authority to provide a number of health related goods and services to meet medical and dental needs not covered by provincial, territorial, or other third party health insurance plans for BC First Nations.

For women and families who were not status First Nations and thus not eligible for funding support, the cost of being out of the community was significant. Participants with more access to financial resources had the financial means were aware of the difficulties incurred by others:

It's hard to say that going down island is ideal, because there's so many barriers. Like, even for us...and we're super fortunate ... super good income and everything like that. But for people with, like, lower income and other barriers, like less supportive family, or less, like, means of transportation, I understand that's, like, a huge thing to go down island.

One of the most disconcerting effects of relocation for birth that came through the participants' narratives was the involvement of the Ministry of Child and Family Development (MCFD), the provincial ministry responsible for delivering inclusive, culturally respectful, responsive and accessible services that support the well-being of children, youth and families. The interventions (apprehensions) were reported to have happened both in the referral centre with participants' infants and also in the home community with the children left behind. In the first type of scenario in a referral centre, allied health workers reported that that MCFD staff may make an inaccurate assessment; they see only a young, often single woman in the referral centre alone, without adequately understanding the support systems and plans in place for these women and their babies when they return to their community. As one worker noted:

[There are] a variety of issues, mental health, addictions, all kinds of stuff that has put them [Moms] on the radar of MCFD. But here, they may have support workers, they may have drug and alcohol counsellors, they may have outreach workers and all of these teams around them. And then when they go down island, nobody tells the hospital about this. Nobody tells them about the support systems. And they are now removed from their support systems at one of the most critical times.

The latter scenario of apprehension from the home community occurs when parents try to find support in the community when they have to relocate, perhaps placing different children in different locations to secure care. As one participant described:

They've spread out their kids amongst people. Then they're gone and Child Protection reports are now coming in on the kids that are here, 'cause they don't have adequate arrangements made. That absolutely happens.

The reverberating impact of Ministry involvement is often long-term and significant: we heard about the difficulty of getting "off the radar" of the Ministry and the corresponding continuous stress and anxiety.

There were, of course, positive experiences of birth in the referral centre. There was consistent appreciation for the Campbell River Maternity Clinic and the personalized care received both in Campbell River and through outreach clinics in Port Hardy. There was also consistent appreciation for the Indigenous Liaison Nurse in Campbell River for the attention s/he paid to families from out of town ("she literally took me in and drove me all the way [to appointment]"). For some as well, the availability of

specialist support and immediate access to Cesarean section proved invaluable in creating a positive experience of birth.

What North Island Women want

Participants in this study were very clear about what they envisioned for their maternity care. It included culturally safe care, local access to midwifery, a space for local traditions and birth in their home community (with caveats).

Cultural safety was defined more in contrast to care described by some of the participants instead of an articulation of the concept itself. This came through narratives of lack of respect experienced at the local hospital, lack of attention given to concerns, and perceived prejudicial treatment of both Indigenous women and non-Indigenous women having Indigenous children. Respectful care included care that allowed expression of cultural traditions. For some, this meant birth on traditional territory:

I think [birth on traditional territory is important]. Because in the past that's the only way it was, there was no other way... You don't really call it tradition, it's just nature. Have your baby where your home is.

For others, the desire for local birth included both midwifery care and also local access to caesarean section. The desire for respectful care was followed closely by the desire for midwifery care. This was consistent with what women reported in 2009:

Desire for Midwifery Care (2009 ²)	<i>I would really like to see midwives and better services available for clients up here.</i>
	<i>Because not everyone has the financial resources to go down-island for a month.</i>
	<i>My next baby, I'm going to go to a midwife, even if I have to go down-island.</i>
	<i>Five weeks in a hotel set us back for a year.</i>
	<i>[Home birth] would be pretty nice.</i>
	<i>I'm a little cautious when I look at home births, but midwives in the hospital?</i>
	<i>Absolutely.</i>

Many women in the current study noted that they left the community to access midwifery care and that a local midwife would “make my decision a lot harder, [laughter] to decide where to deliver.” Others described lack of access to midwifery as a “deal breaker” for local delivery and “a draw for down island.” Many participants who had a midwifery-assisted birth outside of the community spoke of the “personal connection... made with the midwife” and how this relationship, more than anything, created a pattern of care after the first delivery.

Related research

VOICES OF THE NORTH ISLAND

The Voices of the North Island (VONI) project was a FLEX project conducted by two UBC medical students, Joanna Ritson and Emily MacLean, under the umbrella of the Building Blocks to Sustainable Maternity Care Project and supervised by Dr. Jude Kornelsen at the Centre for Rural Health Research.

The *Voices of the North Island* project focused on hearing the stories from North Island mothers and families, specifically regarding their experiences with pregnancy, childbirth and leaving their communities for care in larger centres. Completed findings (anticipated late Spring, 2019) will be submitted to peer-reviewed journals and a summary will be presented back to the North Island communities, completing the data feedback loop. Specifically, the ongoing goal of this study is to provide rigorous and comprehensive evidence to serve as an instigator for change in government policy and funding for maternal healthcare in rural North Island communities.

The VONI project is a participatory health research study documenting the experiences of socially, economically, and culturally marginalized women in the North Island region who are currently pregnant or have had a child in the last five years. As part of the ongoing Building Blocks project, we visited the North Island and joined the pre-existing network of researchers, community health representatives, and families. Prior to establishing our research plan, we travelled to the North Island, where we met many community health workers and families, and were introduced to the systems in place in the communities. Discussing our project ideas with all relevant stakeholders has ensured that we approached this study with the cultural sensitivity and situational awareness that are essential to ensure we are approaching the topic from a place of shared values with the community and with clear objectives that meet the needs of the communities. We worked with community members to frame our study questions, recruit participants, and schedule meetings and interviews. We undertook 15-45 minute individual interviews that were participant-driven, focusing on narrative experience of pregnancy, childbirth, and early motherhood. We were particularly focused on the impact of travel to give birth, as many of the participants reported leaving their communities for care down-island.

We spent two weeks fully immersed in the communities collecting data: we conducted 29 interviews with local women, some interviews with their partners, and a few with elder mothers (who have had experiences with birth themselves, and often played a support role for other women). We also participated in ongoing discussions with health care workers (doctors, nurses, social workers, health directors, and midwives) about the current issues in maternal health especially amongst those who are marginalized, in order to gain more context for our study. Data analysis is proceeding with transcription of interviews, and will be followed by thematic and narrative analysis, with the goal of publishing our findings in peer-reviewed journals and bringing our findings back to the community to promote ongoing discussion.

The following narrative of one North Island woman's experience of birth is not an uncommon one for women experiencing vulnerabilities in the North Island, and sheds light on the experience of birth for some on the North Island.



Well, I wasn't in a hospital, I was here in Port Hardy and there is no maternity ward here or anything like that, so I ended up going to emergency... I wasn't fully understanding what was actually going on with me until I phoned my mom and I'm like I'm pretty sure I'm in labour...

so we get to the hospital and the doctor literally threw his hands up in the air and was like "I'm not touching you, so let's get you into the ambulance and get you on the highway". Like are you kidding me? It's like a two and a half hour drive to get to Campbell River, which is the closest bigger hospital. But I only made it to Port McNeil... so, I push out [the baby], who ends up, swallowing the poop so, she comes out like blue and like pretty much lifeless. They [care providers] are blocking me from the whole experience, so I don't know what's going on... and then, they're like, okay, we are going to get you on a plane to [referral site] cause we are not equipped to do anything more here.

Within like a few hours I was on a plane, strapped down, heading to [referral site] hospital, where we were there for a good week, I would say. But the experience I had while I was down there was totally surreal because they [referral site care providers] had nothing to do with the delivery so there was no connection, [nobody] saying "ohhh we've seen this baby being born!"

Being taught [to] breastfeed in the hospital by a nurse with a doll and this aggressive action was traumatic. I ended up not breastfeeding, just because of the wait time between the actual delivery and the attachment and everything. I personally thought that had a major impact to me and then, so I wasn't able to breastfeed...

Then after the treatment in the hospital she [baby] was declared safe enough to go home... it was like literally, "okay, ship you out". I had nothing. And the hospital didn't have anything to provide or suggest beyond there was a Christian outreach church that did baby stuff for newborn, new parents and stuff.

...But yeah, so both experiences were definitely interesting because of how the treatment towards me as the Mom was... it didn't make becoming a mom, really welcoming and that joy experience you think you'd have... it wasn't like that. And to be up here, growing up traditionally with my grandparents around and sharing stories of how, traditional birthing was taken care of, and having to rely on the hospital because that concrete knowledge was missing... [W]e do need to marry science with the oral traditions.

[N]ow I'm at the point where I'm actually going down for a hysterectomy this month because, part of it is health reasons, and the other part is that I do not want to have to go through the whole pregnancy and delivery thing again cause it was really traumatizing and traumatic.

If... you could have a baby here, or even have a baby at home in a sense a safer, with more knowledge and security. Then I'd be like, sure, let's do this. But it's not, and even when you go down island, where the facility itself is more advanced, the people that are running them are still bias and racist.

-North Island Mother



3.2 Building Blocks to Sustainable Rural Maternity Care

Out of a year of community-based research emerged a strong community desire for local maternity care. From here, the project worked with local care providers and administrators to understand the systems supports needed to provide sustainable maternity care to North Island families. Five 'building blocks' emerged from this and are depicted in Figure 5 below. These 'building blocks' or system interventions to sustain rural maternity care are: establish strong interprofessional maternity care teams, increase care provider confidence, access to timely and reliable patient transport, appropriate inclusion criteria for local deliveries, and strengthen networks of care between rural sites and regional referral centers.

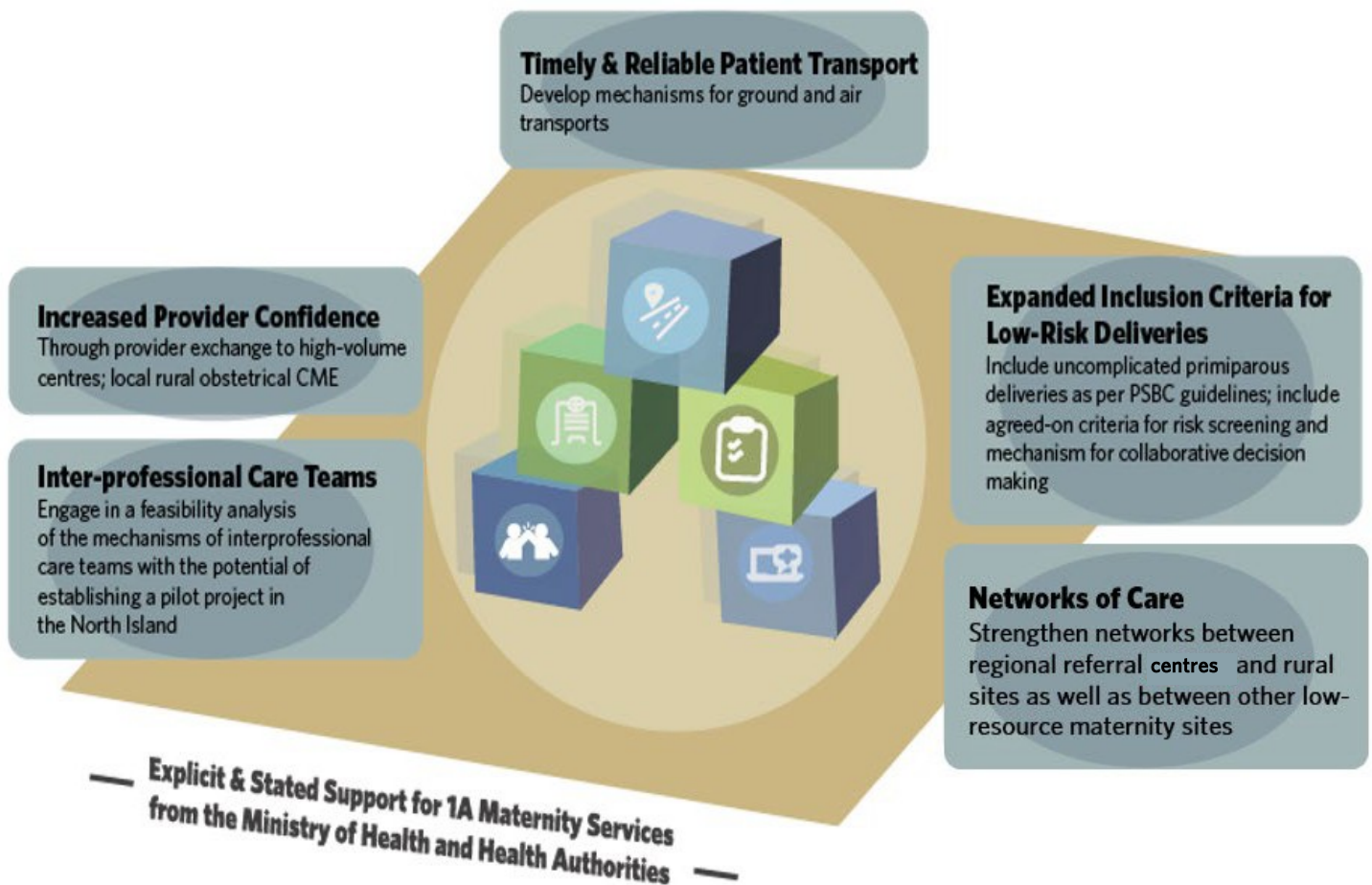


Figure 5: Five building blocks to sustainable rural maternity care.

3.3 Provincial Consensus

1A COMMUNITY SYMPOSIUM

On June 15th 2018, physicians, midwives, nurses and site administrators from all five BC communities that offer maternity care without local access to Cesarean section (1A sites) met in Richmond, BC for a consensus symposium. 1A communities in BC include Port McNeill, Hazelton, Haida Gwaii, Salt Spring and Invermere. The objective of the invitational meeting was to identify and prioritize common system supports needed to sustain rural maternity services in communities without local access to Caesarean section. Participants committed to a consensus process: that is, findings and policy recommendations reflect the prioritization of *all* 1A communities in BC. The major needs identified were compensation for midwifery, need for appropriate policy, timely patient transport, relevant data, care provider education, regional networks of support, and inter-professional teams of care (Figure 6).



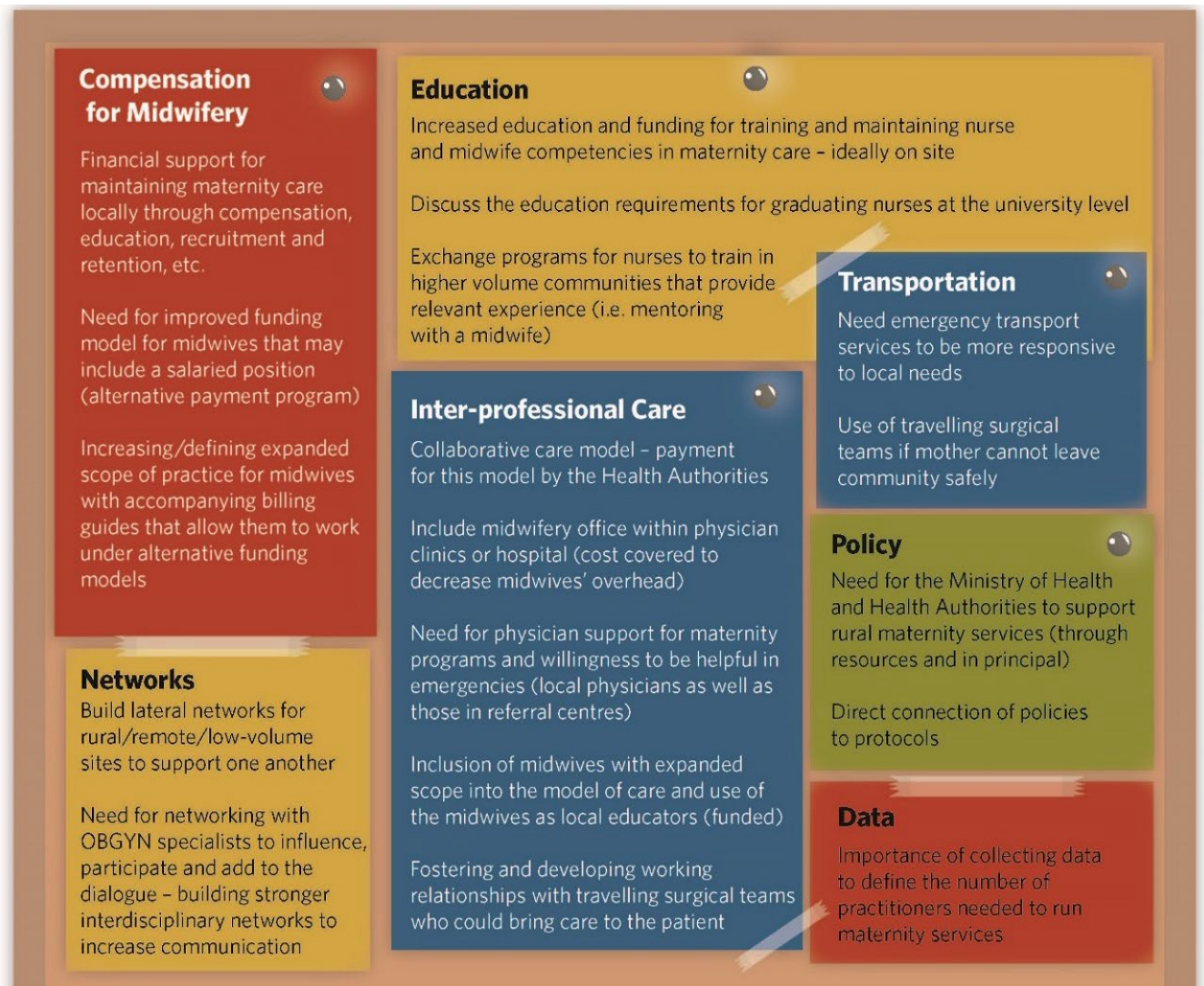


Figure 6: Summary of findings from 1A Community Symposium, June 15th 2018

Articulated priorities included:

- Rural maternity nursing education was a key identified priority for all five 1A communities.
- Exchange programs for nurses to train in higher volume communities that provide relevant experience (e.g. mentoring with a midwife), relevant ongoing practicums and practical experience for nurses, increased education and funding for training and maintaining nurse competencies in maternity care - ideally on site.



1A Community Symposium, Richmond BC

- Midwifery compensation includes increased funding for the recruitment, retention and education of midwives, along with a salaried model and extended scope of practice. Participants identified the need for rural voices to be present during Ministry of Health and Health Authority policy discussions.
- Transport protocols that address local needs within the larger system need to be designed and implemented.
- A robust evaluation and quality improvement framework to monitor outcomes and respond as required is needed.
- Building lateral networks between rural sites, and with specialists in regional referral centers, to foster working relationships is crucial.
- Lastly, a need for developing inter-professional models of care between midwifery and physicians was identified by the symposium participants.

Participants came to an agreement on recommendations for policy makers to support the common system level interventions. These were presented to Ministry, Health Authority and Professional Association representatives at a second symposium hosted by the Centre for Rural Health Research on October 29th, 2018.

If you are interested in the full proceedings from this symposium meeting, please contact the Centre for Rural Health Research.



RURAL 1A MATERNITY SITES IN BC: WORKING TOGETHER FOR SUSTAINABILITY SYMPOSIUM

Rural 1A Maternity Sites in BC symposium was a follow up invitational meeting for Ministry of Health, Health Authority and Professional Association representatives to respond to the outputs from the June 15th symposium. This meeting was hosted with hopes of collaboratively

developing timelines for key decision points and an action plan that reflects the urgent need for interventions to support community sustainability. The objectives for the meeting were three-fold:

1. To honor and acknowledge the work of key stakeholders who are involved in supporting rural maternity care;
2. To facilitate opportunities for collaboration between Ministry of Health, Health Authority, Professional Association and other key-stakeholder representatives around actions to support sustainable rural maternity care; and
3. To discuss community-level provider needs to sustain rural maternity services that were identified during the June 15th community-based symposium.



*Working Together for Sustainability Symposium
Victoria, BC*

The meeting started with discussions surrounding the closure of 1A sites across BC and the importance of local birth, with local mothers sharing their own experiences. Relevant evidence and policy on the safety and necessity of maternity care for rural women was presented by Dr. Jude Kornelsen, Co-Director of Centre for Rural Health Research. Representatives from the different key stakeholder groups addressed current positions and challenges in rural maternity care. Stakeholder groups represented at the meeting included Association of

Registered Nurses of British Columbia, Midwives Association of British Columbia, Doctors of BC, BC Ministry

of Health, Northern Health, Island Health, Interior Health, Vancouver Coastal Health and First Nations Health Authority.

The latter half of the day consisted of discussion on opportunities for collaboration and next steps. Some suggested actions supporting change were the creation of networks of support, changes to midwifery regulation and practice, increased rural perinatal nursing education and improving transport. The symposium was brought to a close by a rural mother's comments on the day's events. She highlighted several benefits of delivery locally and the challenges she encountered accessing rural maternity services and concluded with her hopes for rural maternity care in BC.

If you are interested in the full proceedings from this symposium meeting, please contact the Centre for Rural Health Research.

4. System Interventions to Sustain Rural Maternity Care





BUILDING STRONG INTERPROFESSIONAL CARE TEAMS



WHY IT MATTERS

There is strong evidence of the need for interprofessional maternity care teams to improve access and women's choice for maternity care in Canada.

Challenges creating strong interdisciplinary teams include:

- Difference in skill sets between provider types
- Inequitable funding models
- Professional orientation
- Fear of loss of autonomy

WHAT WE DID

- Focus groups and interviews with North Island care providers and administrators
- Connected with maternity care teams from other rural settings
- Hosted local maternity team discussions



WHAT WE FOUND

Local physician perspectives articulated the desire for team-based care with midwives playing an integral role on the team.



Birthing mothers and community members had a strong desire for local access to midwifery care.



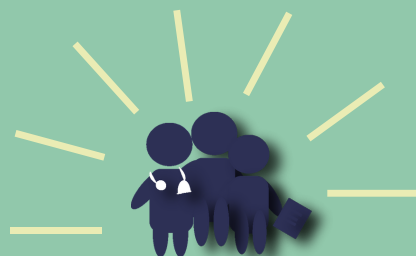
Nurses and allied health professionals expressed support for building an interprofessional care team with midwifery.



WHAT IT MEANS

Introducing a new provider group into the North Island must be done with caution so as not to destabilize existing providers.

This will require attention to the health human resource conditions in the North Island, the needs of the providers, and a localized vision for how midwifery care may work



**BUILDING THE TEAM
FROM THE GROUND UP**

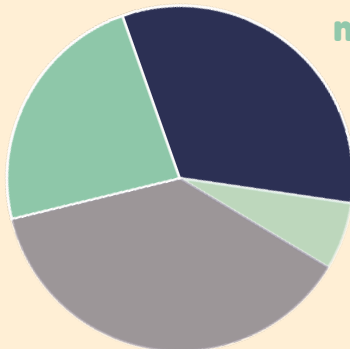
WHAT IT WILL COST

\$273,712

Over four years

\$64,000
Continuous on-call
maternity
coverage

\$102,912
Creation of an
interdisciplinary
Community of
Practice



\$89,600
Interprofessional
maternity locums

\$17,200
Facilitation for
building a local
interprofessional
team

4.1 Interprofessional Maternity Care Teams

WHY IT MATTERS

Background & context

A key required attribute of rural health care is the availability of a generalist skill set shared across a well-functioning interdisciplinary team.¹⁻³ The necessity of team collaboration in the face of emergent situations (e.g. while waiting for delayed transport) and the importance of positive interdisciplinary relationships is heightened in small communities, making siloed practice unfeasible. Interprofessional collaboration between midwives and physicians has been defined as “the exercising of effort by midwives and doctors towards each other for the purposes of shared functions, namely the provision of safe, rewarding and effective care to women and their families”⁴ and has been recognized as an effective way to meet the health needs of a community in low resource settings. Collaboration may vary from midwifery-only practice within the supportive context of local physicians to fully integrated shared patient care between provider groups in response to local needs and characteristics.

Policy & literature

The midwifery model of care is built on the key tenants of 1) choice in place of birth (home or hospital); 2) informed consent and shared decision making; 3) continuity of care; and 4) collaborative care. Midwives are extensively trained in low-resource environments due to their mandate to attend births at home.^{5,6} Likewise as ‘guardians of normal birth’, they receive extensive training on when to transfer for consultation.⁷ Both of these skills and qualities, as well as the normalized perspective of birth, position midwives to be well suited to support birth in rural communities.

There is strong evidence of the necessity of multidisciplinary collaborative maternity care teams to sustain the availability of care providers generally and improve access and women’s choice for maternity care in Canada.⁸ In 2006, The Society of Obstetricians and Gynecologists of Canada led the Multidisciplinary Collaborative Primary Maternity Care Project with the objective of developing guidelines, determining national standards and increasing collaboration among professionals.⁹ Recommendations from this project to strengthen interprofessional maternity care in Canada included a commitment by decision makers and other key stakeholders to develop coordinated care, advocating for the resources required to support appropriate care, and consensus on key strategies to establish, retain or expand multidisciplinary collaborative maternity services in Canada.⁹

There exists a strong policy context towards collaboration between nurses and midwives in Canada.^{10,11} The Canadian Nurses Association, the Canadian Association of Midwives and the Association of Perinatal and Women’s Health Nurses acknowledge the importance of strong collaboration between the two professions and recognize leadership (including support for infrastructure, interprofessional education and research) being a key element in effective collaboration.¹⁰

Despite this, disciplinary differences between provider groups including in skill sets, professional orientation and funding models pose significant challenges to collaboration.¹²⁻¹⁴ Munro et al discuss how barriers such as inequitable funding models often fuel interpersonal conflicts between providers.¹² A study in Quebec looking at barriers to collaboration between obstetricians, family physicians, midwives and nurses found that high workloads, mistrust between professions, and competition between professional 'territory' all challenge the potential for collaboration.¹⁵ Professionals in a Québec birth centre reflect that hierarchy in the hospital, with physicians primarily in positions of influence, poses a challenge to the development of strong interprofessional teams.¹⁵ Barriers to collaborative practice for midwives include fear of losing autonomy.^{8,15}

Addressing the structural and relational barriers to collaborative practice necessitates strong leadership⁷ and attention to mitigating interprofessional dissonance. One such area stems from funding models and the disparate way in which midwives and physicians are remunerated.^{12,14} Ensuring midwifery representation at a government level to influence key decisions is important in strengthening collaborative opportunities between maternity professionals.¹⁵ In a community context, clear communication and documentation outlining roles and responsibilities of professions is recommended to mitigate potential interpersonal and interprofessional conflict.¹⁶ Additionally, Vedam et al recommend additional education and/or resources for physicians to feel more comfortable working with midwives.¹⁴

A conceptual framework for physician-midwife collaboration based on a review of 12 case studies of interprofessional collaborative practice models in the United States lists trust, shared power, synergy, commitment and respect as core to a strong interprofessional working relationship.¹⁷ Consensus in care plans and comparable recommendations by disparate care provider types is key in establishing trust between groups.¹⁸ Likewise, Xyrichis and Lowton found that regular communication in the form of team meetings is important for a well-functioning maternity care team.¹⁹

Simulation team training is a key tool for building interprofessional collaboration in rural obstetric situations as the simulations reinforce the importance of each team member's role and scope of practice, particularly in emergencies.²⁰ Simulation training also increases interprofessional learning, confidence in and respect for fellow team members by providing a common purpose.²⁰

Taken together, this literature emphasizes the importance of inter-professional care teams while acknowledging some of the structural and relational challenges. There are emerging and established models of successful interprofessional collaboration relevant to the North Island context, including the examples from the other four 1A communities in BC of Hazelton, Haida Gwaii, Salt Spring Island and Invermere.

In the communities of Queen Charlotte, Haida Gwaii and Invermere, midwives and physicians share maternity care. In Haida Gwaii, the midwife is part of the GP Maternity Network quarterly incentive.¹ These sites prioritize ongoing interprofessional educational opportunities and fund nursing education opportunities such as a nursing seat in the BCIT perinatal nursing course and MOREOB. Salt Spring Island's solo midwife provides maternity care for the community in a midwifery model of care. The physicians are supportive of the midwife, but do not provide maternity care themselves. In a somewhat

¹ Under this funding incentive, GPs who practice in a network model and do at least four deliveries in a six month period are eligible to receive \$2,100. <http://www.gpsc.bc.ca/sites/default/files/uploads/GPSC%20Billing%20Guide%20-%20Maternity%20201801.pdf>

similar model, the solo midwife in Hazelton is transitioning to a collaborative midwifery model with a new midwifery graduate providing care as well. Physicians in Hazelton are not interested in providing maternity nor is the site designated for maternity⁵, which has detrimental implications, particularly in regards to funding nursing maternity education.

WHAT WE FOUND

In this feasibility analysis, we consider what it would look like for midwives to practice alongside physicians and nurse practitioners in the North Island. We conducted focus groups and interviews, connected with maternity care providers from other rural settings and held local maternity team discussions.

Community, nursing and physician perspectives on interprofessional maternity care teams



The project team conducted focus groups and interviews with North Island physicians and nurses.⁶ The theme of ‘desire for local midwifery’ emerged in the transcripts. Key aspects of local midwifery practice as well as potential concerns were documented and findings from the focus groups and interviews were ‘member checked’ periodically with regular check ins with the North Island care providers.

There was a strong desire for local access to midwifery care articulated by birthing mothers and community members (“If there was a midwife, I would be very happy to see a midwife up here”). This theme came through the majority of community discussions. Participants expressed the challenges associated with having to leave their home community to birth in order to access midwifery care (“I think for a lot of people I know wanting a midwife is a big deciding factor, for going [to a referral community]. That was how it was for me.”).

Nurses and allied health care providers in the community expressed support for building an interprofessional maternity care team in the North Island. Many nurses expressed the positive impact working with midwives would have on their own maternity practice (“I think it [midwifery] would make a significant difference. A significant positive difference... I just love the energy that comes from them.”). One of the attributes of midwifery that nursing staff recognized and valued was the midwife’s active role and presence throughout delivery, relieving nursing staff of being the most responsible provider during labour (“they [midwife] would come in and they would do the birth, and the nurse could assist them, but they would be the primary [care provider], and I think all the nurses would be perfectly happy to do that.”). Nursing staff expressed the importance of having a local midwife with cultural context and understanding of the local community.

⁵ Perinatal Services BC designates the level of a maternity service for a facility. A description of designations and list of sites can be found [here](#).

From the local physician perspective, there was a clear articulation of the desire for team-based care with midwives playing an integral role on the team; others saw a potential for midwives to “lead the maternity program for the region.” Some participants noted their desire to continue doing deliveries and the understanding that if difficulties are encountered by the midwife, ‘all hands will be on deck’ so it was sensible for all providers to maintain their skills. Others pointed out financial implications of physicians staying within a maternity care team, including receiving the GP Maternity Network quarterly incentive fee.⁷ Several participants suggested that unsupported midwifery would “be a struggle” both for existing providers on the North Island and for the midwife who, given the potential caseload, could be at risk for burnout. Others emphasized midwives would not only “take a lot of pressure off” existing providers but could also play an important role in community outreach activities (e.g. sexual health education) and a key role in educating nurses. Concerns were expressed about ‘losing the (maternity) service to midwifery’ instead of midwifery working within a team framework. To this end, emphasis was placed on the need to ensure local input in the midwifery hiring process. One participant expressed the desire to have two sites open for deliveries (Port Hardy and Port McNeill), as opposed to centralizing care in the one site currently open now, while others noted that although this may be good for the community, it may have a negative impact on physician retention. Ultimately, participants acknowledged the need to stabilize the North Island maternity service to ensure midwifery is introduced into a ‘robust system of care’.

Midwifery key stakeholder perspectives

When we initiated the *Building Blocks* project in the spring of 2017, women who wanted access to midwifery care traveled out of the community (usually to Campbell River, but to other communities as well) as there were no midwives practicing on the North Island. Although a Registered Midwife moved to the community in 2018, hospital admitting privileges had not been secured at the time of this report (winter, 2019). In order to ensure a midwifery perspective was represented in the discussion on interprofessional models of care, we interviewed midwifery leadership representing the College of Midwives of BC, the Midwives Association of BC (MABC), MABC’s Rural and Remote Committee and University of British Columbia’s Midwifery educational program. Themes reported were consistent between the participants and included an awareness of *characteristics and challenges of rural practice, system challenges and potential solutions*. These themes were underscored by the recognition that the optimal model of care was one identified by the local community: “It needs to be flexible and different, depending on the community [and] match needs with local capacity.” Each theme is explicated in brief, below.

Characteristics and challenges of rural practice

Participants recognized the practice consequences of low procedural volume including solo or dyad practice and the attendant lack of wider professional community of practice (all participants articulated the undesirability of solo practice but saw it as an understandable recourse in low volume settings in a course of care billing model). One of the responses to this was the recognized need for interprofessional practice with physician colleagues. As participants noted, “There needs to be a team approach to care and collaboration is so necessary”; “Care needs to be interprofessional, midwifery cannot exist on its

own". Alongside the need for local, collegial support, part of the rationale for interprofessional care was the broader scope of care rural midwives may take on, due to the absence of local specialists.

Outside of financial concerns, most participants did not see low procedural volume as a barrier to practice efficacy once consolidation of skills (two years post-education) had been achieved. However, all participants noted the importance of ensuring provider fit with the local community: "You have to find the right people".

System challenges

Most of the overarching system challenges identified were common among all participants and included inadequate procedural volume to maintain confidence, resentment around inequitable payment² and lack of transparency and expediency regarding hospital privileging. Midwifery participants identified the challenges of participation in discussion tables around maternity care due to the lack of negotiated funds to support such meetings and several noted that when funds were forthcoming, they were not on par with physician funding. One participant observed that sessional funding for some provincial meetings was provided through the Doctors of BC and in fact, Midwives needed an independent funding mechanism to support non-clinical work. Another participant observed that midwifery remuneration in BC is significantly behind other jurisdictions in Canada.

All participants referred to challenges of gaining hospital privileges, a necessary part of full-scope practice. Several felt there was a lack of transparency on how privileging decisions were made, giving the impression that in communities without a history of local midwifery practice, decisions were heavily weighted towards the preferences of existing physician providers.

There was general agreement that British Columbia is not optimizing the potential of midwifery in contributing to the growing challenge of ensuring women's access to maternity care providers.

Potential solutions to current challenges

There was agreement regarding the need for a provincial, adequately resourced interdisciplinary committee to support interprofessional collaboration and the further integration of midwives into communities across the province. The spirit of true collaboration was highlighted as key to success, grounded in core principles: "[We need] a group of people willing to work together and respect each other." In addition to this, one participant identified a gap in the structure of clinical practice due to the lack of designated Health Authority or regional practice leads. The participant saw the importance of building a mechanism for on-going clinical support into the provincial infrastructure and availability of resources similar to nursing educators. In small sites, a regional practice lead could also carry some of the administrative organization for Continuing Professional Development for interprofessional teams.

Closely related, several suggested that midwifery needs to be recognized as a key component of the

² Within the context of this study, both physicians and midwives identified inequitable remuneration as a barrier to interprofessional collaboration with participants from each profession asserting disadvantage in funding.

provision of primary care within the context of provincial initiatives such as the Patient Medical Home and Primary Care Networks. The provincial commitment to collaboration through these initiatives provides an existing infrastructure for midwifery participation.

All participants identified the need for alternative funding models to better facilitate low volume and interprofessional practice. Most suggested this would be best accomplished through salaried funding for midwives, although with caveats that within this context, midwives need to be able to maintain the independence to practice to full scope, including responding to choice in place of birth for women.

Other participants suggested that alternative funding could include payment for services currently within midwifery scope (a common example was Papanicolaou (pap) tests which is currently only included in the post-partum course of care and the funded up to 3 months post-partum). Other suggestions, such as participating in reproductive health care counselling, were offered as ways to use midwifery skills as a broader resources.

Shared experience from other rural interprofessional teams

We hosted a videoconference session with a physician, administrator and midwife from Haida Gwaii and the physician representatives and administrators in North Island (March 5th, 2018). The Haida Gwaii team shared their maternity care model, as their community faces similar isolation and demographic challenges as the North Island. Maternity services in Haida Gwaii have transitioned from “hoping birth won’t happen locally” to “expecting it to happen” and building a maternity care team that is prepared for local birth. Haida Gwaii developed their own locally relevant training workshops for maternity, which built confidence in the team. Local nurses feel supported working with the midwife as she is there with the mother through active labour along with the nurse. Midwifery is now well established in the community with nearly all maternity care being midwifery-led, barring the midwife being away and a physician covering call. Another key aspect of the service is regional support from the referral centre specialist. The Obstetrician from Prince Rupert conducts training with the local team, which mutually builds trust and understanding. The site administrator acknowledged a fundamental shift in building a sustainable service is moving from being reactive to proactive, with the understanding that births will happen and thus planning for them as safely as possible in the given context. This session raised and answered basic questions around what working in an interprofessional maternity care model could look like in the North Island.

⁷ Under this funding incentive, GPs who practice in a network model and do at least four deliveries in a six month period are eligible to receive \$2,100. <http://www.gpsc.bc.ca/sites/default/files/uploads/GPSC%20Billing%20Guide%20-%20Maternity%20201801.pdf>

Local discussions on how to build an interprofessional team

The project team planned a series of three interprofessional team discussions in the North Island (December 4th, 5th and 6th 2018). The objective of these meetings was to bring back project findings to date and engage in discussions around what building an interprofessional maternity care team in the North Island could look like. The first of these discussions took place with the project physician representatives and North Island administrator and was facilitated by Lee Yeates, a midwife and Collaborative Practice Development Consultant from the Shared Care Committee. The project team presented community consultation findings to date. The physicians acknowledged the findings and a discussion followed regarding how to build an interprofessional team in the North Island. There was an acknowledgement that the physicians would like to build this team and are open to next steps. This discussion was graphically recorded (Appendix A).

The second in the meeting series included the larger North Island care provider group, administration from the Public Health Unit, nursing administration, Health Authority leadership and community leadership (~30 attendees). Findings from the community consultations were presented and discussion around an emerging interprofessional team followed. There was an acknowledgement that next steps need to include bringing the local North Island maternity care providers together and having the local team start the conversation. The development of an interprofessional team will need to be an iterative and self-reflexive process on the North Island to respond to the local care provider compliment and needs of the community. The graphic recording of this discussion can be found in Appendix B.

The third discussion in the series was held at a regular 'mom's group' meeting in Port Hardy to bring in the experiences and voices of the local community. Here, findings were shared in a more informal way with opportunity for feedback on what we had learned. We also hosted an afternoon meeting with Health Centre Directors, community health workers, nurses and community members with the same objective. We presented an update on the project, 'member-checked' our findings and shared an overview of the 'interprofessional care team' discussions to date.

WHAT IT MEANS

Introducing a new provider group into the North Island must be done with caution so as not to destabilize existing providers. This will require attention to the health human resource conditions in the North Island, the needs of the providers, and a localized vision for how midwifery care may work. As there were no midwives practicing in the community during the data collection phase of this project, the midwifery perspective is missing from the discussion, namely what a model of care may look like that allows midwives to work to the full scope of their training and skills and, if a feasible model for the North Island is a fully integrated one, whether there is interest in the midwifery community to participate. Next steps must include having these discussions with all key stakeholders represented, within a context of mutual trust and respect. Funding and support from programs such as the Shared Care Committee may be leveraged (\$15,000 seed funding) to strengthen the team as it develops. The Shared Care funding will serve to enhance the work of this project on building strong interprofessional maternity care teams.

WHAT IT WILL COST

The focus of this system intervention is to support dialogue within the community regarding how midwives, physicians, nurses and allied health can work together to effect seamless local access to maternity care. These discussions are essential regardless of whether or not physicians will be actively involved in intrapartum care due to their role in urgent situations and nuances of inter-professional practice in rural settings. Sessional funding will support the development of an inter-disciplinary community of practice locally. This may involve establishing shared values as a team, negotiating terms of understanding between the two or more professions participating and developing resources for navigating potential conflict. Funding will allow for the resource of an external interprofessional facilitator to support the developing interprofessional teams.

Draft Budget to Support the Development of Interprofessional Maternity Care Teams					
Inter-disciplinary community of practice	Lump sum	1	102,912	102,912	Based on meetings once per month for 2 hours; sessional fees for 2 physicians; two midwives and 4 nurses (may include nurse practitioner if applicable); this community of practice may support/develop into M&M rounds
Local administrative costs to support interprofessional collaboration	Lump sum	1	1,000	1,000	Local administrative costs to support interprofessional collaboration (i.e. journal access for journal clubs; video or teleconference costs)
Interprofessional consulting	Hour	50	134	6,700	This resource will allow local teams to utilize provider-level expertise in establishing and supporting their interprofessional maternity care team; based on GP sessional rates
Interprofessional facilitation and consulting	Hour	50	120	6,000	This resource will allow local teams to utilize team facilitation expertise in establishing and supporting their interprofessional maternity care team; based on average professional facilitator rates
Travel for facilitator	Lump sum	1	1,500	1,500	Flight, hotel, food for two 2-day trips for one facilitator to each 1A site
Interprofessional CPD	Lump sum	1	2,000	2,000	Professional team building is covered under clinical coaching (section 1.2) and building networks of care (section 1.5). The interprofessional CPD funding will be used specifically for simulation models. This technology will provide the framework for ongoing simulation in communities.

Interprofessional maternity locums if not covered by existing funding mechanisms	Lump sum	1	89,600	89,600	This funding will allow for some locum coverage if not covered by existing funding mechanisms. This is based on an average locum rate of \$800/day for 28 days per year (over 4 years)
<i>Rural Maternity Session Fees</i>					
Continuous on-call maternity coverage	Annual	4	16,000	64,000	Payment of \$4,000 per quarter
Subtotal				273,712	

References:

1. Kornelsen J, Friesen R. Building rural surgical networks: An evidence-based approach to service delivery and evaluation. *Healthcare Policy*. 2016;12(1): 37-42.
2. Iglesias S, Kornelsen J, Woollard R et al. (2015) Joint position paper on rural surgery and operative delivery. *Can J Rural Med*. 2015;20(4).
3. Larson EB, Roberts KB, Grumbach KM, Laine C. Coordinating care across diseases, settings, and clinicians: a key role for the generalist in practice. *Ann Intern Med*. 2005;142(8): 700-708.
4. Guuberman S. McCreary lecture 2002 [cited November 11, 2002]. Available from: www.healthandeverything.org.
5. Stoll K, Kornelsen J. Midwifery Care in rural and remote British Columbia: A retrospective cohort study of perinatal outcomes of rural parturient women with a midwife involved in their care, 2003 to 2008. *Journal of Midwifery and Women's Health*. 2014;59 (1):60-66.
6. Kornelsen J Ramsey M. Maternal and newborn outcomes in a rural midwifery-led maternity service in British Columbia: A retrospective chart review. *Canadian Journal of Midwifery Research and Practice*. 2014;13 (2):8-17.
7. Ten Hoop-Bender P, de Bernis L, Campbell J, Downe S, Fauveau V, Fogstad H. Improvement of maternal and newborn health through midwifery. *Lancet*. 2014;384(9949): 1226-1235.
8. Peterson WE, Medves JM, Davies BL, Graham ID. Multidisciplinary collaborative maternity care in Canada: easier said than done. *J Obstet Gynaecol Can*. 2007;Nov;29(11):880-886. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17977491> on January 15 2019.
9. SOGC Multidisciplinary Collaborative Primary Maternity Care Project. Final Report. 2006. Retrieved from <https://sogc.org/wp-content/uploads/2013/09/repFinlHlthCA0606.pdf> on January 15 2019.
10. Canadian Nurses Association (CNA), the Canadian Association of Midwives (CAM) and the Canadian Association of Perinatal and Women's Health Nurses (CAPWHN. Joint Position Statement: Nurses and midwives collaborate on client-centered care. 2011. Retrieved from https://www.cna-aic.ca/~media/cna/page-content/pdf-en/joint_ps_nurses_midwives_e.pdf?la=en on January 15th 2019.
11. SOGC Joint Position Paper: rural maternity care. 2012. Retrieved from https://sogc.org/wp-content/uploads/2013/01/gui282PP1210E_000.pdf on January 15th 2019.
12. Munro S, Kornelsen J, Grzybowski S. Models of maternity care in rural environments: Barriers and attributes of interprofessional collaboration with midwives. *Midwifery*. 2013;29:646-652.
13. Collin J, Blais R, White D, Demers A, Desbiens F. Integration of midwives into the Quebec health care system. L'Equipe d'Evaluation des projets-Pilotes Sages-Femmes. *Can J Public Health*. 2000;91(1):116-20.
14. Vedam S, Stoll K, Schummers L, Fairbrother N, Klein MC, Thordarson D, Kornelsen J, Dharamsi S, Rogers J, Liston R, Kaczorowski J. The Canadian birth place study: examining maternity care provider attitudes and interprofessional conflict around planned home birth. *BMC Pregnancy and Childbirth*. 2014;14: 353.
15. Behruzi R, Klam S, Dehertog M, Jimenez V, Hatem M. Understanding factors affecting collaboration between midwives and other health care professionals in a birth center and its affiliated Quebec hospital: a case study. *BMC Pregnancy and Childbirth*. 2017;17: 200.
16. Bell. Maternity nurses and midwives in a British Columbia rural community: Evolving relationships. *Canadian Journal of Midwifery Research and Practice*. 2010;9;2.
17. Smith DC. Midwife-physician collaboration: A Conceptual Framework for Interprofessional

- Collaborative Practice. *Journal of Midwifery & Women's Health*. 2014; 60(2).
18. Beasley S, Ford N, Tracy SK, Welsh AW. Collaboration in maternity care is achievable and practical. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2012;52(6).
 19. Xyrichis A, Lowton K. What fosters or prevents interprofessional team working in primary and community care? A literature review. *Int J Nurs Stud*. 2008;45: 140-153.
 20. Gum L .Clinical simulation in maternity (CSiM): interprofessional learning through simulation team training. *Quality and safety in health care*. 2010;19;5:e19-e19.



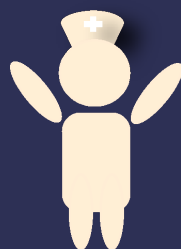
INCREASED NURSING CONFIDENCE AND COMPETENCE

WHY IT MATTERS

In small communities with only a few local deliveries per year, it is difficult for nurses to feel confident attending births.

Nursing confidence is influenced by:

- Health Authority infrastructure
- Nursing management
- Lack of maternity exposure in RN training
- Professional development opportunities
- Support from colleagues



WHAT WE DID

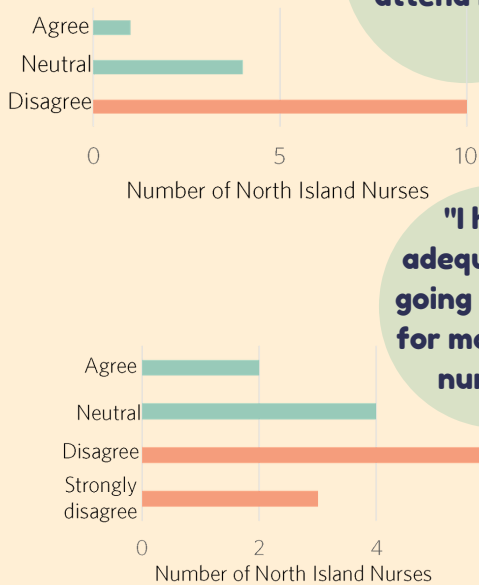


- North Island nursing survey (n=15)
- Focus groups and interviews (n=26)
- Local Continuing Nursing Education sessions and evaluation
- 1A Maternity Community Symposium for validation of North Island nursing findings

WHAT WE FOUND

CONCERNS:

- Lack of clinical preparedness for local delivery
- Lack of training opportunities
- Adverse outcomes if there are no local maternity services



DESIRES:

- Increase on-the-ground training (including simulations)
- More exposure to low-risk deliveries
- Work with midwives

WHAT IT MEANS

ROTATE NURSES TO HIGH VOLUME MATERNITY SITES

- Rotate nurses to rurally-relevant maternity sites (eg. high-volume midwifery practice) to increase exposure to low-risk deliveries

CLINICAL COACHING

- Relevant ongoing local education sessions led by local midwife (or other maternity care provider)
- Curriculum development for on-going rural low-volume maternity nursing education

RURAL NURSING EDUCATION WORKING GROUP

- Creation of a working group with members from First Nations Health Authority and Nurse and Nurse Practitioners of BC to guide curriculum development

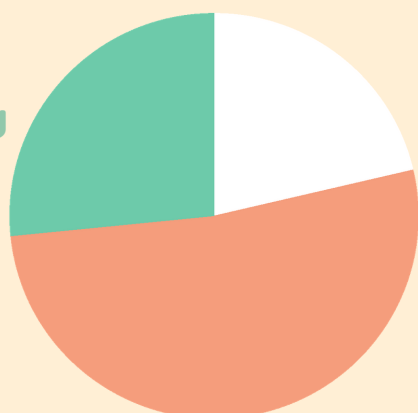


WHAT IT WILL COST

\$184,368

Over four years

\$49,008
Clinical coaching



\$39,360
Rural perinatal nursing curriculum development

\$96,000
Rotating nurses to higher-volume centres

4.2 Increased Care Provider Confidence

WHY IT MATTERS

Background & context

In small communities with only a few local deliveries a year, it is difficult for nurses to feel confident attending births.^{1,2} This is due primarily to low incidences of birth (such as on the North Island) and the concomitant lack of maternity experience afforded to nurses.^{1,3} Frontline nursing confidence is influenced by many factors including initial training to become a nurse, nursing management, professional development opportunities, Health Authority infrastructure and supports, team work and support from physician colleagues.^{1,4} Through focus groups and interviews with current nursing providers on the North Island, the theme of low provider confidence was clearly articulated. The low nursing confidence has resulted in a lack of support for maternity care in general, which in turn, is reflected to the community. This has led to the destabilization of the primary maternity services, which are currently viewed by many nurses to be sub-optimal or unsafe.



In Port McNeill, a level 1A maternity site, Registered Nurses are required to complete their basic perinatal course as per PSBC guidelines.⁵ In Port Hardy, nursing staff may have limited to no perinatal nursing training as the site is not a designated delivery site. Current nursing education opportunities in the North Island include the [Managing Obstetrical Risk and Emergencies](#) program (MOREOB), a performance improvement program that creates a culture of patient safety in obstetrics.

Policy & literature

The challenge of maintaining rural maternity nursing education has been a widely articulated challenge in sustaining rural maternity care.^{1,3,6} In rural maternity care settings, nurses require contextual knowledge about their community in addition to biomedical and nursing knowledge.⁷ Many new nurses report feelings of abject fear surrounding maternity nursing in low-resource settings.^{1,3} Maternity care in particular is a cause of fear among rural nursing staff due to a feeling of 'higher stakes' when the care of babies is involved.⁷ Many nurses do not feel safe to practice with the limited training and/or continuing education and experience afforded them.^{1,8} Challenges rural nurses face include the low volume of deliveries in rural settings, increased nursing workload and limited mentorship opportunities.³ Many rural nurses report feeling underprepared by the maternity training received in post-secondary education for their role in rural.⁹

Rotating rural nurses to higher volume maternity settings is a proposed solution to increase rural maternity skills and exposure.^{1,10,11} This high-volume training must take place in rurally-relevant centers,

as experience in an tertiary center may instill fear with nurses learning to care for patients in contexts with resources unavailable in a rural context.⁷

Simulation based training accounts for a large portion of the literature available on continuing education for rural nurses and was shown to increase confidence in nursing staff.² Two studies looking at lecture-based learning, simulation training and a combination of both found that any education involving simulation had improvements in teamwork and confidence and reduced anxiety.^{12,13}

A study in rural Scotland found inter-professional training programs to have high value in rural communities and served to increase nursing comfort and confidence in maternity.¹⁰ Others recommended the use of technology as a training tool.¹⁴ Few studies, however, have evaluated the effectiveness of these interventions in terms of maternal and neonatal outcomes. In rural British Columbia, nurses working alongside registered midwives reported positive collaborative relationships and mutual learning opportunities.³ Kildea et al suggest the addition of a midwife could be part of the solution to the rural maternity crisis.¹⁵ Another study found that nurse-midwifery may allow for a style of maternity care desirable to many women as well as increase the volume of deliveries, thereby stabilizing maternity services.¹⁶ With low birth volume being identified as a barrier to maintaining competency,¹⁷ the addition of a midwife to the rural health care team seems promising. Mutual respect, continuing education to strengthen skills and being part of a strong interprofessional care team are fundamental to the long term sustainability of rural nurses.¹⁸

Literature suggests that local continuing professional development is the basis for increasing healthcare professionals' confidence in maternity care. Simulation training is effective for increasing nurses' confidence and teamwork in rural settings, in combination with increased exposure to maternity care in high-volume centers. Finally, the addition of a midwife to a rural site may be beneficial to both increase the number of deliveries done locally and provide expertise to the generalist maternity care provider teams.¹⁶ As rural nurses are essential to providing rural maternity care, more research is needed to understand which mechanisms will be cost-effective in low resource settings.

WHAT WE FOUND

Key activities as part of this feasibility analysis included:

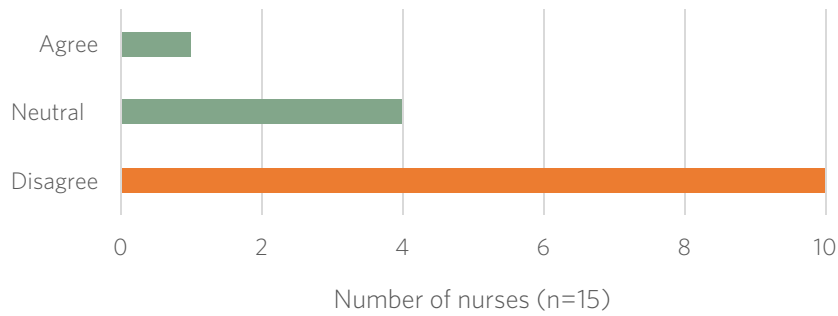
- a North Island nursing survey;
- focus groups and interviews; and
- local Continuing Nursing Education (CNE) sessions.

North Island nursing survey results

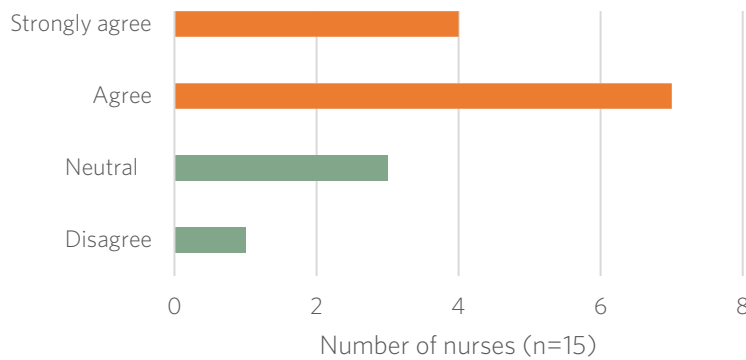
As part of this feasibility analysis, a UBC Flex medical student and former North Island nurse, Hannah Chester, facilitated a survey of North Island nursing staff (n= 15) in the Port McNeill and Port Hardy Hospitals to capture the obstetrical experiences of nurses on North Vancouver Island and to

understand local priorities for continuing nursing education. The following charts depict findings from the nursing survey. Only one nurse felt prepared to attend birth on the North Island and six nurses felt unsupported or strongly unsupported in their maternity care practice. Nine of the fifteen nurses did not feel they had adequate ongoing education for maternity nursing. Eleven of the nurses feel that in the current system, it is dangerous to offer birthing services in the North Island, however eight of the fifteen nurses feel that it is necessary to offer local birthing services. (Figure 7).

"I currently feel prepared to attend a delivery on the North Island."



"In the current system, I feel it is unsafe to offer local birthing services."



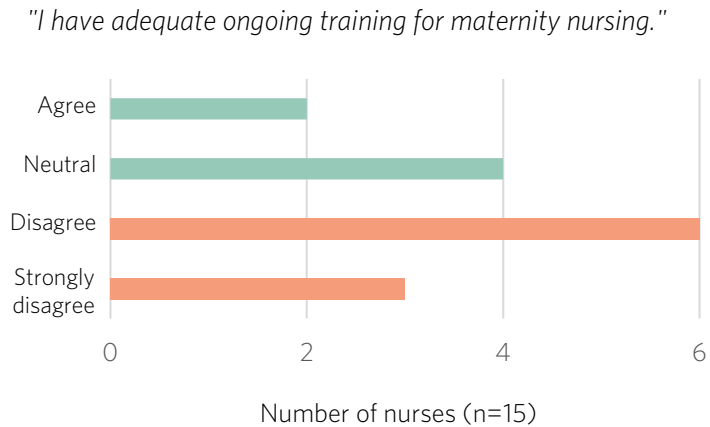


Figure 7. Selection of North Island nursing survey results

Nursing perspectives on providing maternity care currently

The Building Blocks project team held follow-up focus groups and interviews with the nurses to further understand what they would need to feel confident providing maternity care in the North Island (n=26). An overarching concern, thematic to most nurses' narratives was in regards to lack of clinical preparedness for local delivery, precipitated by the lack of support they felt. Participants noted, "At the best of times, we are hanging on my our fingernails" and "It is scarier than trauma...". Several nurses voiced medico-legal concerns due to high staff turnover and the challenge in consistently meeting standards that this precipitated, suggesting that these concerns lead to "fear" of local deliveries.

In juxtaposition, almost all of the participants recognized the importance of local birth to the community, particularly for populations in vulnerable situations. Participants also acknowledge the concomitant risks of lack of local care (such as women going "underground" in pregnancy and presenting at the hospital in labour). The risks identified included social risks ("one woman... her kids had to go into foster care so she could go and delivery her baby because... she had no family, and there was no one to care for her children"). The inevitability of local deliveries underscored many participant narratives ("we can't close, because people are going to have unexpected babies on the North Island, period... you can't stop that process").

Participants clearly expressed their professional needs, which included increased on-the-ground training (mock simulations and practice sessions) and rotating through high volume maternity exposure. A few noted that at times, the MORE_{OB} training sessions "increases [fear] a little bit" due to scenarios that end in 'going to the OR', a resource not available locally to North Island care providers.

There was near unanimous support for working with midwives locally, several participants identifying the advantage of midwives' focus on and expertise with maternity care and the key role they could play in education and training. This was underscored by the normalizing approach midwives have to birth and their "most responsible person" role in deliveries.

Local continuing nursing education sessions

In response to what the nurses prioritized in their interviews, we facilitated two Continuing Nursing Education sessions during the Building Blocks study, one interprofessional session with Dr. Andrew Kotaska from Yellowknife and a day-long in-service on 'normal birth'. The project team submitted a proposal to FNHA to fund a Continuing Nursing Education (CNE) session on 'normal physiological birth' on the North Island. The proposal was approved and Kim Campbell, RN, RM, MN from UBC Continuing Professional Development and Celina Laursen, RM from Haida Gwaii co-led two full-day sessions on 'normal physiological birth' with North Island nurses. Including a rural midwife in the faculty contributed to the local relevance of the content. Topics included defining normal labor and birth, identifying clinical assessment criteria and applying it to risk assessment, labor management skills and approaches to avoid and manage labor dystocia. The sessions took place in both Port Hardy and Port McNeill. Six nurses attended the Port Hardy CNE session and three nurses attended the Port McNeill CNE session. Positive feedback from the session suggests that ongoing training in this model would improve North Island maternity nursing confidence and competence.

Additionally, the project team hosted a Continuing Medical Education (CME) session on birth for North Island care providers led by Dr. Kotaska, an OBGYN from Yellowknife. The session was attended by over 30 participants including paramedics, physicians, nursing staff, midwives and students both in-person, and by videoconference in three additional sites across the North Island (Port Hardy, Sointula and Alert Bay). Dr. Kotaska began the session by posing the question, 'What are your biggest clinical fears about birth on the North Island?' and proceeded to address the issues raised. Topics included appropriate management of post-partum hemorrhage, shoulder dystocia and other labor-related questions the group raised.

WHAT IT MEANS

In addition to the concerns expressed by North Island nurses and care providers regarding nursing confidence and competence, rural maternity nursing education was a key identified priority for all five 1A communities during the 1A consensus symposium held June 2018. The following were consensus priorities to stabilize rural maternity nursing:

- Exchange programs for nurses to train in higher volume communities that provide relevant experience (e.g. mentoring with a midwife);
- Relevant ongoing education and practical experience for nurses and the development of a corresponding curriculum that can be delivered locally;
- Increased education and funding for training and maintaining nurse competencies in maternity care – ideally on site.

These recommendations can be actualized through the creation of a working group with members from First Nations Health Authority and NNPBC. This group will serve to advise and guide future activities around increased rural maternity nursing competence.

WHAT IT WILL COST

Key considerations for rural maternity nursing training and education include the need for rural relevance (e.g. managing complications with no local access to Cesarean section), local simulations and hands on experience. The costing includes on-the-ground training by a local care provider in normal birth, high-volume exposure and the development of a rurally-relevant perinatal nursing curriculum. Many 1A nurses have little or no maternity nursing experience or training, thus we also included funding to have nurses 'shadow' birth to begin to build confidence both informally and more formally through Clinical Coaching. Clinical Coaching, a program developed by UBC Continuing Professional Development, provides an opportunity for physicians, midwives and nurses to achieve and maintain competency in maternity care. Whether the coaching takes place in the rural community or in a higher volume maternity center, maintaining continuity and longevity of the coaching relationship is a key component.

Assumptions in the costing analysis include annual cost for four years based on:

- Working towards gaining nursing confidence in maternity care in the North Island (~4 nurses annually)
- A modest procedural volume estimate (~30 local deliveries annually)
- Nurses rotating through high volume midwifery practices (backfill with agency nurses may be required)

Not included in the cost analysis, however, are additional nursing lines should the volumes increase to require dedicated positions.

Draft Budget to Increase Nursing Confidence					
<i>Clinical coaching - nursing</i>					
Item	Unit	# of Units	Unit cost	Cost	Details
Full day education sessions led by local provider	Per day	16	1,072	17,152	Based on sessional rate of \$134/hour; for an 8 hour day; four days per year <i>Ongoing evaluation will determine appropriate length of time and frequency of training sessions, contingency funding may be utilized here based on this iterative approach</i>
Backfill for nurses to attend training (assuming 4 nurses/training day)	Per nurse	64	424	27,136	Based on 4 nurses attending an 8 hour training day, 4 days per year (rural agency nursing rate of \$53/hour)

Funding for extra nurse on shift to 'shadow' local birth	Per nurse, per 12 hour shift	120	456	54,720	Based on average Vancouver Island nurse rate of \$38/hr as of Sept 2018; assuming 30 local births in a year
Sub total				99,008	
<i>Rotating nurses to higher volume centers</i>					
Backfill (agency nurse staff)	per rotation (14 days; 5 shifts)	16	31,80	50,880	Based on average rural agency nurse rate of \$53/hr as of Sept 2018; for 5 12-hour shifts in 2 weeks, for 4 nurses once per year for 4 years
Accommodation for nurse rotating to higher volume center	Per night, per nurse	224	120	26,880	Based on average hotel room cost
Travel costs	Per nurse, per round trip	16	300	4,800	Based on average travel costs from rural community to higher volume center UBC Travel Reimbursement Policy of \$0.49/km Port McNeill to Campbell River, for 4 nurses once per year for 4 years
Per diem	Per nurse, per 14 day trip	16	840	13,440	Based on UBC Per Diem Travel Expenditure Guidelines of \$60/day, for 4 nurses once per year for 4 years
Sub total				96,000	
<i>Rural perinatal nursing curriculum development</i>					
NNPBC consults	Hours	40	100	4,000	Based on estimate rate
CPD UBC consults	Hours	40	100	4,000	Based on estimate rate
Physician consults	Hours	20	134	2,680	Based on sessional rates
Nursing sessionals	Hours	40	100	4,000	Based on average rate
Local midwifery consults	Hours	20	134	2,680	Based on midwifery sessional rates
Department of Midwifery, UBC consults	Hours	20	100	2,000	Based on estimate rate
Key stakeholder meetings	Per meeting	2	10,000	20,000	In person, key-stakeholder meeting to conceptualize an appropriate curriculum; and to meet again for curriculum refinement
Subtotal				39,360	
TOTAL				234,368	

References

1. MacKinnon, KA. Labouring to nurse: the work of rural nurses who provide maternity care. *Rural and Remote Health*. 2008;8: 1047. (Online) Retrieved from <https://www.rrh.org.au/journal/article/1047> on October 15th 2018.
2. Kenny A, Duckett, S. Educating for rural nursing practice. *Journal of Advanced Nursing*. 2003;44; 6. Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1046/j.0309-2402.2003.02851.x> on October 15th 2018.
3. MacKinnon, KA. Learning maternity: the experiences of rural nurses, *CJNR* 2010;42, 1. Retrieved from <http://cjr.archive.mcgill.ca/article/view/2234/2228> on October 15th 2018.
4. Onlock, S. Designing an on-line course on traumatic childbirth: considerations for rural nurse educators, *MSN Thesis*. Retrieved from http://dspace.library.uvic.ca:8080/bitstream/handle/1828/5682/Onlock_Susan_MN_2014.pdf?sequence=1&isAllowed=y on October 15th 2018.
5. Perinatal Services of BC. Perinatal Tiers of Service Module. January 2016. Retrieved from <http://www.perinatalservicesbc.ca/Documents/Resources/SystemPlanning/TiersOfService/TiersofService.pdf> on January 15th, 2018.
6. Jukkala, AM, Henly SJ, Lindeke LL. Rural Perceptions of Continuing Professional Education. *Journal of Continuing Education in Nursing*. 2008;39(12); 555-563.
7. MacKinnon, K. Rural nurses' safeguarding work: re-embodiment patient safety. *Advances in Nursing Science*. 2011; 34(2):119-29.
8. Medves, JM, Davies BL. Sustaining rural maternity care: don't forget the RNs. *Can J of Rural Med*. 2005;10(1): 29-35.
9. Hegney D, McCarthy A, Rogers-Clark C, Gorman D. Why nurses are attracted to rural and remote practice. *The Australian Journal of Rural Health*. 2002;10,3.
10. Ireland J, Bryers H, van Teijlingen E, et al. Competencies and skills for remote and rural maternity care: a review of the literature. *J Adv Nurs*. 2007;58: 105-115.
11. Cook CA. Imparting Knowledge, Skill, and Confidence to Rural Nurses...Proceedings of the 2015 AWHONN Convention. *JOGNN*. 2015;44: S33-S33.
12. Riley W, Davis S, Miller K, Hansen H, Sainfort F, Sweet R. Didactic and simulation nontechnical skills team training to improve perinatal patient outcomes in a community hospital. *Joint Commission Journal on Quality and Patient Safety*. 2011;37: 357-364.
13. Birch L, Jones N, Doyle PM, et al. Obstetric skills drills: evaluation of teaching methods. *Nurse Educ Today*. 2007;27: 915-922.
14. Grant J. The best start: a five year forward plan for maternity and neonatal care in Scotland. Health and Social Care Integration Directorate Scotland: Scottish Government; 2017.
15. Kildea S, Kruske S, Bowell L. Maternity emergency care: short course in maternity emergencies for remote area health staff with no midwifery qualifications. *Aust J Rural Health*. 2006;14:111-115.
16. Nesbitt TS. Rural maternity care: new models of access. *Birth*. 1996;23:161-165.
17. Grzybowski S, Kornelsen J, Cooper E. Rural maternity care services under stress: the experiences of providers. *Can J Rural Med*. 2007;12: 89-94.



ACCESS TO TIMELY AND RELIABLE PATIENT TRANSPORT



WHY IT MATTERS

The North Vancouver Island region consists of isolated geography and changing weather.



92% of North Vancouver Island mothers travel more than 2 hours to deliver.

The Ministry of Health, Professional Associations, and Health Authorities, including First Nations Health Authority, all recognize the importance of appropriate access to birth services.



WHAT WE DID

- Interviews
- Focus groups
- Key-stakeholder meetings
- Policy engagement



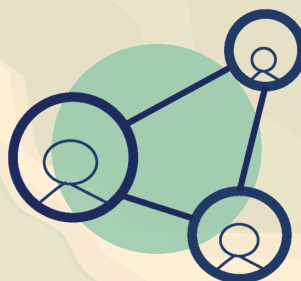
WHAT WE FOUND



Complex inter-organizational communication [BCEHS, Health Authority and local site]



Frequent need to travel to tertiary centre for care (>4 hours)



Challenge to arrange care provider escort

WHAT IT MEANS

NEXT STEPS INCLUDE
EXPLORING LOCAL SOLUTIONS TO IMPROVE ACCESS TO
MATERNAL TRANSPORT

SOME LOCAL SOLUTIONS INCLUDE:



- Development of local transport algorithm
- Adequate funding for care provider escort to return to community
- A data request to BCEHS to analyze transport segment times

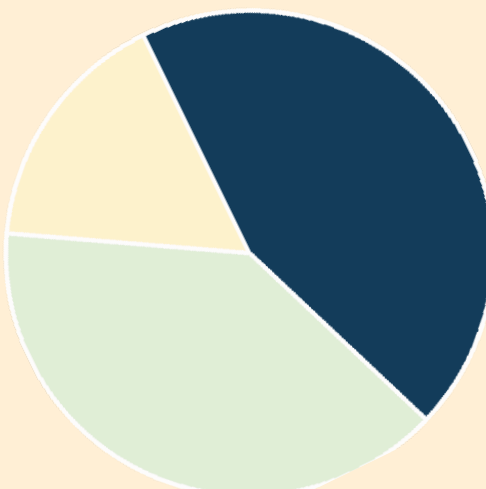


WHAT IT WILL COST

\$30,360

\$5,000
BCEHS data request

\$11,920
Key-stakeholder meetings in community to support local solutions



\$13,440
Return travel funding for care provider escort

4.3 Timely and Reliable Patient Transport

WHY IT MATTERS

Background & context

Local access to maternity services is challenged in the Mount Waddington region of North Vancouver Island, with a low volume of births in the designated site (Port McNeill) requiring most of the population to travel for care. A 2013 report by the Canadian Institute for Health Information found that across Canada, 40.5% of rural women experienced >1 hour of travel time to a hospital.¹ North Vancouver Island was identified as a 'hot spot' where 62.5% of women travelled greater than two hours to deliver.¹ Increasing access to local birthing services for rural women is a mandate of the Ministry of Health, Professional Associations and Health Authorities including the First Nations Health Authority.²⁻¹⁰ Although local access to perinatal surgical services (Cesarean section) is preferred, in many communities this is not feasible due to low population density. As such, solutions to address delays in transport need to be considered to improve access to care.

Policy & literature

The Society of Obstetricians and Gynecologists of Canada (SOGC) Maternal Transport Policy describes regional transport system guidelines which include equipment and personnel to facilitate safe and effective transfer if required, 24-hour availability of transport systems, and reliable and accurate communication between referring hospitals and transport teams.¹¹ It states that care providers involved in maternal transport should have the ability to assess the condition of the mother and fetus, to respond to any changes and to conduct emergency deliveries.¹¹ The statement also suggests that each region should be responsible for developing transport protocols. This is in line with international best practices literature from New Zealand as well as recommendations from the joint working group of the Society of Rural Physicians of Canada (SRPC), The Maternity Care Committee of the College of Family Physicians of Canada (CFPC), and the Society of Obstetricians and Gynecologists of Canada (SOGC), all of whom recommend the development of a risk-management strategy by rural maternity care services including issues around management of obstetrical risk regionalized care, local resources, and transfer options.¹² In New Zealand, common challenges to timely transport included delays in securing an ambulance or assembling a crew.¹³ In some communities, a midwife is available to accompany women in transfer and another midwife, GP or nurse covers the community in her absence, however systems vary between communities.¹³ The Royal Flying Doctor service in Australia demonstrates aeromedical transport of high-risk obstetric patients in a safe and timely way.¹³ Decision to transfer via aircraft is based on parity, uterine contractions, cervical dilation, membrane integrity, fetal heart rate and fetal presentation.¹⁴

Local guidelines for effective maternal transfers have been developed in other Canadian jurisdictions and internationally. In the Northwest Territories, midwives and local ground ambulance services and regional air services have worked together to develop appropriate, contextually specific protocols including midwifery escorts on transports.¹⁵ Similarly, the College of Midwives of Ontario encourages paramedics and midwives work cooperatively in making decisions, including registering planned out-of-

hospital births with local emergency services in case of the need for urgent transport.¹⁶ Basic Life Support (BLS) Patient Care Standards provide guidelines for transport and emergency delivery management as well as guidelines for a decision of rapid transport or delivery at scene.¹⁷ These BLS guidelines in Ontario also include individual roles and responsibilities if a there is a midwife on scene.¹⁷

BC Emergency Health Services

The BC Emergency Health Services Patient Transfer Network (PTN) is responsible for the planning and coordination of all inter-facility patient transfers in British Columbia. The service aims to provide 24/7 clinical oversight, improve conditions for inter-facility transfers and better communicate between sending and receiving sites. There are three types of transfers carried out by PTN namely; pre-booked inter-facility patient transfers requiring an ambulance, Critical Care Transport (CCT), and Infant Transport Team (ITT).¹⁸ BCEHS' CCT is comprised of highly skilled paramedics available for emergency care and transfers between facilities. Neonatal, maternal and pediatric transfer services are processed through the Patient Transfer Coordination Centre based in Vancouver. BCEHS provides emergency medical care to BC pediatric, neonatal and high-risk obstetrics patients while on route to specialized care units in hospitals and liaises with specialist physicians en route who provide support and guidance.¹⁹

Efficient (timely) access to emergency transport for laboring women is a key enabler of safe care in rural communities.²⁰ Research indicates that although maternal-newborn health outcomes of women from communities without local access to Cesarean section have outcomes as good as those from communities with local access, there is a higher rate of non-urgent maternal transfer in no-local access communities.²⁰ Inadequate access to emergency transport, however, is a key determinant of lack of sustainability for providers.²¹ Rural transport is being considered through a time-limited sub-committee of British Columbia Ministry of Health's Access and Flow committee, attesting to the urgency of the need for solutions. Concurrent to this process is the need to consider local solutions that can be effected expediently within a framework of Continuous Quality Improvement.

WHAT WE FOUND

Key activities as part of this feasibility analysis include interviews and focus groups, key-stakeholder meetings and policy work regarding concerns about emergency maternal-newborn transport and what is needed to reinforce local care.

“Transportation for Birthing Disproportionally affects Indigenous Women”

Through community consultation with mothers, paramedics, community workers, and primary and allied health care providers, we learned that a significant concern regarding local deliveries was in regards to delayed transport and the risk of not being able to transfer high acuity laboring women efficiently. This diminishes comfortably offering the option of local birth on the North Island, for those women who could otherwise deliver locally. Transport was not specifically an intended point of discussion in focus groups and interviews, but inevitably the topic was raised by many of the participants. Transport was consistently described as ‘not working’ due to

overarching system characteristics such as difficulty arranging a care provider escort⁸ and complex inter-organizational communication. Subthemes included challenges of the dilation cut offs for safe transport (currently at 4 cm), inclement weather conditions, and shift change concerns. These themes are discussed in more detail below.

All physicians expressed concerns regarding the inefficient transport of maternity patients within the context of wider concerns about patient transport. The notion expressed by one, “we come to expect that transport will be complicated,” underscored a widespread sense of frustration with the current system. A closely linked, although administratively distinct issue was the challenge of referring high acuity cases to the regional referral centre (Campbell River) due to limitations put on criteria for referrals, particularly preterm deliveries (current acceptance criteria is a pregnancy or infant >37 weeks). Although resource limitations in the referral centre were appreciated, in relative measure participants felt the higher resourced setting was more amenable to a positive outcome on route to definitive care.

A shortage in health human resources (through escorts) was mentioned as a barrier to timely transport. Having a nurse or designated care provider that could immediately transport with the transport team would help to alleviate this delay. Concerns with pulling a nurse or physician from the hospital include the potential staffing shortage of the local hospital itself. Additionally, there is no funding mechanism for care providers who escort a patient to an accepting site to return back to their community. Delays due to complex inter-organizational communication came up as a prominent issue in the discussions. There were experiences of miscalculated reporting of a situation between organizing bodies which led to delays when the transport team arrived (“*The biggest challenge for us in our entire province is acceptance- ...it's about accepting that patient and handing over the confidence from one physician to another to get that acceptance of the hospital.*”). We heard of frustrations around the many phone calls needed to make a decision around transport, which led to delays in transport. We also heard that often there is a lack of consensus in triage between organizing bodies, which requires further clarification and phone calls, contributing to delays. Challenges discussed include incorrect triage assessment, conflicting policies between physicians and Health Authorities, and the unavailability of an accepting physician and facility. The concept of a no-refusal policy at Campbell River Hospital was also deliberated, and a need for communication with local pediatricians was acknowledged. Physicians also raised the challenge of having to inform patients’ families of long delays in transport, when they themselves cannot give a reason for it. Discussion around PTN taking on the role of communicating with families about delays and expected transfer times took place as well.

The majority of North Island women deliver in Campbell River and Comox. The best case return trip from the North Island to Campbell River is ~6 hours (depending on departure site) and longer to Comox. Furthermore, if the situation is non-LLTO (Life, Limb, Threatened Organ) and inter-facility ground transport is requested near BCEHS shift change, departure may be delayed to reduce paramedic overtime. This delay has significant consequences for laboring patients as women with dilation greater

⁸ North Island paramedics are trained in Basic Life Support and do not accompany women in active labor without a physician or nurse escort.

than four centimeters are not usually transported to avoid on route deliveries. A secondary issue that arose in focus groups was an unwritten practice protocol suggesting 4 cm dilation is a 'cut off' for safe transport, despite a lack of awareness of where the protocol originated (*"I don't know [where the 4cm cut-off came from], that's just what I was taught when I came here... it's just an unspoken rule that's just been passed down"*). We heard frustration from nurses who were not able to perform an accurate vaginal exam.

To a lesser extent, weather and geography were discussed as barriers to timely and reliable transport. The challenges pertaining to the natural geography include daylight-only helicopter access and reduced flying time due to fog.

The project team held a meeting with BCEHS leadership (June 14th, 2018) to discuss and understand the organizational challenges surrounding timely and reliable transport for rural maternity care. Following these initial conversations, BCEHS leadership traveled with the project team to the North Island to hold several meetings with local care providers (July 20th, 2018). At these meetings the Patient Transfer Network (PTN) was introduced by BCEHS, the triage process elucidated and associated challenges identified.

A policy brief was submitted to the Rural Transport Working Group, part of the provincial Access and Flow committee, requesting a proof of concept trial of a staggered start time on the North Island to avoid delay and dispatch due to shift change (Appendix C). Here, several root causes of transfer delays were detailed, including (1) protracted processes of requesting emergency transport; (2) difficulty securing a receiving site, and (3) delayed departure due to shift change. Although transport is a 'high level' systems issue, the work started on the North Island included the development of a mechanism for elevating the call status for maternity transports (Appendix D). This is being trialed in the North Island as part of a potential solution to mitigate maternal transport delays.

WHAT IT MEANS

Stemming from North Vancouver Island and the Building Blocks project and validated at the 1A Community Symposium, each of the current five 1A communities have articulated frustration with the emergency transport system due to delays and a perceived misunderstanding of rural maternity care (e.g. isolation and vulnerability). Funding is recommended to explore local solutions to improve access to maternal transport for the 1A communities. Further research using the BCEHS database is warranted to analyze length of time for maternal transports by transport segment (call to dispatch, dispatch to leaving the community, leaving to arriving in referral centre). The following were identified and necessary next steps in working towards timely and reliable patient transport for maternity patients in North Vancouver Island:

- (1) Local and regional key stakeholder discussions to explore local solutions to delays in maternal transport
- (2) Data request for BCEHS data for North Island maternity transport cases.
- (3) Meetings between Island Health Authority and BCEHS to discuss common challenges and solutions.

WHAT IT WILL COST

Although transport is a high-level systems issue, costing for this system intervention seeks to explore local solutions to improve access to maternal transport for the 1A communities. A local solution articulated by the North Island communities and validated by the other four 1A communities is to have adequate funding for care providers who leave their community on transport to be funded to return to their home community. A data request to BCHS is a necessary next step to analyze reasons for delay in maternal transports

Draft Budget to Support Access to Timely and Reliable Patient Transport					
Item	Unit	# of Units	Unit cost	Amount (CAD)	Justification
BCEHS data request	Lump sum	1	5,000	5,000	Data from BCEHS will be analyzed as part of the evaluation
Exploratory study regarding local solutions for improved access to maternal transport	Lump sum	1	11,920	11,920	Assumes 20 meeting hours per community with sessional funding for two physicians and two midwives to attend as well as a meal and meeting room costs (we anticipate the meetings will include Health Authority administration and BCEHS personal as well). <i>*This is meant to compliment the Access and Flow Committee's current work on this issue</i>
<i>Travel funding for care provider to accompany transport/transfers (assuming one care provider escort per month, for 4 years)</i>					
Accommodation	Per night	48	120	5,760	Based on average hotel cost
Transport home	Per trip	48	100	4,800	Car rental for day and drop off fee
Per diem	Per day	48	60	2,880	Based on UBC Per Diem Travel Expenditure Guidelines of \$60/day
TOTAL				30,360	

References

- 1) Canadian Institute for Health Information. Hospital Births in Canada: A Focus on Women Living in Rural and Remote Areas. Canadian Institute for Health Information; 2013.
- 2) Canada Health Act, R.S.C. 1984, c C-6, c.6, s.3 [<https://laws-lois.justice.gc.ca/eng/acts/c6/FullText.html>].
- 3) BC Ministry of Health. Primary and community care in BC: a strategic policy framework. Cross Sector Policy Discussion Paper. 2015. Retrieved from <https://www.health.gov.bc.ca/library/publications/year/2015/primary-and-community-care-policy-paper.pdf> on January 25th 2019.
- 4) Seaton PD. British Columbia Royal Commission on Health Care and Costs. Closer to home: report of the British Columbia Royal Commission on Health Care and Costs. Victoria, B.C: Crown Publications. 1991.
- 5) Society of Obstetricians and Gynecologists of Canada. Returning birth to aboriginal, rural, and remote communities. *Journal of Obstetrics and Gynecology Canada*. 2010;32(12): 1186-88.
- 6) Society of Obstetricians and Gynecologists of Canada. Rural Maternity Care. SOGC Joint Position Paper. Oct 2012. Retrieved from https://sogc.org/wpcontent/uploads/2013/01/gui282PP1210E_000.pdf on January 11 2019.
- 7) BC Ministry of Health. 2005/06 - 2006/07; 2013/14 - 2015/16; 2014/15 - 2015/176; 2015/16 - 2016/17. Service Plans. Retrieved from <https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministriesorganizations/ministries/health/service-plan> January 11 2019.
- 8) Ministries of Health Services and Health Planning. Standards of accessibility and guidelines for provision of sustainable acute care services. 2002.
- 9) Truth and Reconciliation Commission of Canada. Truth and Reconciliation Commission of Canada: Calls to Action. Winnipeg: Truth and Reconciliation Commission of Canada, 2015. Retrieved from: http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls_to_Action_English2.pdf on January 25 2019.
- 10) BC Ministry of Health and First Nations Health Council. Health Partnership Accord. 2012. Retrieved from <https://www.health.gov.bc.ca/library/publications/year/2012/health-partnershipaccord.pdf> on January 11 2019.
- 11) Society of Obstetricians and Gynecologists of Canada (SOGC) Maternal transport policy. *J Obstet Gynaecol Can* 2005;27(10): 956-958.
- 12) Iglesias S, Grzybowski S, Klein MC, Gagné G, Lalonde A. Rural obstetrics. Joint position paper on rural maternity care. Joint Working Group of the Society of Rural Physicians of Canada (SRPC), The Maternity Care Committee of the College of Family Physicians of Canada (CFPC), and the Society of Obstetricians and Gynecologists of Canada (SOGC). *Canadian Family Physician*. 1998;44: 831-843.
- 13) Patterson JA, Foureur M, Skinner JP. Patterns of transfer in labour and birth in rural New Zealand. *Rural Remote Health*. 2011;11(2): 1710-1710.
- 14) Alk N, Coghlan EA, Nathan EA, Langford SA, Newnham JP. Aeromedical transfer of women at

- risk of preterm delivery in remote and rural Western Australia: Why are there no births in flight? *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2012;52(4): 327-333.
- 15) Department of Health and Social Services Government of the Northwest Territories - Midwife Program Review and Expansion Analysis. 2012. Retrieved from <http://www.hss.gov.nt.ca/sites/www.hss.gov.nt.ca/files/midwifery-options-report.pdf> on January 25 2019.
 - 16) College of Midwives of Ontario. Ambulance Transport Standard. 2014. Retrieved from <http://www.cmo.on.ca/wp-content/uploads/2015/07/Ambulance-Transport-January-2014.pdf> on January 14 2019.
 - 17) Emergency Health Services Branch Ministry of Health and Long-Term Care. Basic Life Support Patient Care Standards. 2017. Retrieved from http://www.health.gov.on.ca/en/pro/programs/emergency_health/docs/ehs_bsc_life_spprt_patient_care_standards_v3_01_en.pdf on August 17 2018.
 - 18) British Columbia Emergency Health Services. The front-line ambulance paramedics, call-takers and dispatchers at BC Emergency Health Services provide emergency patient care and inter-facility patient transfers throughout the province. 2018. Retrieved from <http://www.phsa.ca/our-services-site/Documents/Fact%20Sheet%20BCEHS.pdf> on January 31 2018.
 - 19) British Columbia Emergency Health Services. Annual Report. 2012. Retrieved from <http://www.bcehs.ca/about-site/Documents/annual-report-11-12.pdf> on January 31 2018.
 - 20) Kornelsen J, McCartney K. The safety of rural maternity services without local access to Cesarean section. *An Applied Policy Research Unit Review*. 2015. Retrieved from https://med-fom-crhr.sites.olt.ubc.ca/files/2015/11/apru_the-safety-of-rural-maternity-services-without-local-access-to-c-section_2015.pdf on January 31 2018.
 - 21) Kornelsen J, McCartney K, Newton L, Butt E, Sax E. Rural patient transport and transfer: findings from a realist review. *An Applied Policy Research Unit Review*. 2016. Retrieved from <https://med-fom-crhr.sites.olt.ubc.ca/files/2016/12/rural-patient-transport-and-transfer-findings-from-a-realist-review.pdf> on February 13 2019.



APPROPRIATE INCLUSION CRITERIA FOR LOW-RISK DELIVERIES



WHY IT MATTERS

Providers must err on the side of caution when determining the appropriate level of care for safe delivery in low-resource settings.

An unintended consequence of restricting criteria for local deliveries is the **EXASPERATION OF A LOW PROCEDURAL VOLUME.**

- *Currently there are no national guidelines or frameworks to suggest a decision making process for low-resource deliveries*

WHAT WE DID

- Worked with community members to understand and appreciate comprehensive risk, both clinical and social
- Consolidated existing clinical guidelines that could be applied to the North Island context



WHAT WE FOUND

CLINICAL RISK and being deemed 'high risk' was a reoccurring theme in community and care provider discussions, although a certain amount of confusion exists around details of the label.

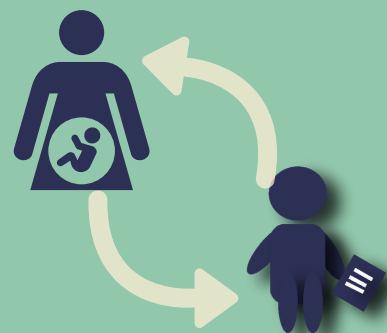
We were told by a physician at one point if you smoked, you were high-risk. You can be high-risk just by being Aboriginal by one physician.... so I don't know what the criteria [is].



SOCIAL RISKS incurred in having to leave the community for care include lack of family and community supports and difficulty making travel arrangements, including substantial out-of-pocket costs.

WHAT IT MEANS

In the absence of clinical practice guidelines, there is ambiguity regarding appropriate inclusion criteria for local delivery in low-resource settings. Given the contextual nature of such decisions and the significant role of psycho-social and cultural influences, instead of codifying inclusion criteria, a more helpful way forward is to **DEVELOP SHARED DECISION MAKING**, including the values propositions that underscore the process.



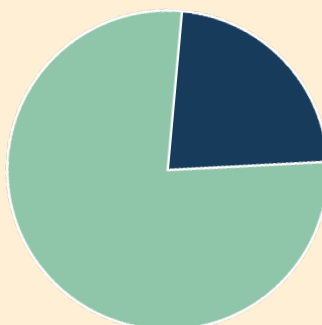
SHARED DECISION MAKING

WHAT IT WILL COST

\$133,806

Over four years

\$101,910
Development of a
Patient Decision
Air



\$30,000
Two key-stakeholder meetings as part of the creation of a task force

4.4 Appropriate Inclusion Criteria for Low-risk Deliveries

WHY IT MATTERS

Background & context

The low volume of deliveries on the North Island (<10 deliveries locally of a birthing population of ~120 pregnancies annually) may be due, in part, to stringent inclusion criteria for local birth (current local guidelines included in Appendix E). It is well understood that providers must err on the side of caution when determining the appropriate level of care that is likely to be required to effect a safe delivery. However, an unintended consequence of restricting criteria for local deliveries is the exasperation of low procedural volume. This is particularly notable in the exclusion of nulliparous women (those who have not given birth previously) eligible to deliver in the North Island. Not only does this drastically reduce the number of eligible woman to give birth in the community, once women leave the community their care patterns are established and they are likely to repeat their care pathway for subsequent births. Currently, there are no national guidelines or frameworks to suggest a decision making process for appropriate inclusion for low-resource deliveries.

An alternative paradigm to consider inclusion criteria for local deliveries is one of shared decision making where, within a context of informed consent, social risks are appreciated alongside clinical ones. That is, understanding the interplay between clinical risks and perceived social risks to both leaving the community to give birth or in remaining is an essential part of the decision making process.

Policy & literature

Risk criteria and risk screening processes for birth in low-resource centers are generally highly localized processes. No published clinical guidelines were found specific to risk assessment or inclusion criteria for birth in communities where medical facilities are available but lack access to obstetrical or surgical services. One exception is the Royal Australian and New Zealand College of Obstetricians and Gynecologists clinical guideline “Maternal suitability for models of care”, which describes six different service levels and gives some exclusion criteria. Under these guidelines, Level 2 maternal services may or may not have a GP obstetrician on staff, and are otherwise staffed by midwives. While some exclusion criteria are noted, individual maternal medical factors that would include or exclude women from this birth setting are not included, and the literature indicates these types of criteria are generally developed locally.¹

In looking at how risk assessment and subsequent decision-making occurs, one study with midwives and obstetricians in the UK showed that risk assessment was consistent between professions, but that subsequent decision-making was highly variable between and within professions, and was dependent on personal risk tolerance of the care provider.² Midwives working in remote areas chose to transfer more often.²

There are detailed referral guidelines for midwives that describe when to consult and when to transfer care to other medical care providers, such as the National Midwifery Guidelines for Consultation and Referral.³ These are not directly intended to be applied to risk assessment in low-resource primary maternity centers, but in countries such as Australia where primary maternity care is midwife-led, these guidelines do inform the risk assessment process in rural birthing centers.¹

Intrapartum clinical guidelines from the UK recommend that all women designated as 'low-risk' give birth under midwifery care, which includes receiving care at stand-alone midwifery units in rural areas without local surgical services. Being nulliparous does not preclude women from receiving care and giving birth in these rural midwifery units. Prior Caesarean or birth complications, or need for intervention such as induction/augmentation, generally indicates referral to an obstetrical unit. Various medical factors are also described that indicate an obstetrical unit as the recommended place of birth (e.g. hypertension, diabetes, BMI >30).⁴ A table indicating of transfer and Caesarean section of UK women planning birth in freestanding midwifery units can be found in Appendix F.

Clinical guidelines in Australia and New Zealand generally discourage birth in settings without surgical capability, however they acknowledge that some 'very low-risk women' may elect to give birth in Primary Maternity Units in rural areas. These units are described as 'Level 2 services' and are midwife/GP led, providing intrapartum care to women delivering at term and who have not had prior Caesarean section, and providing care without ability to provide emergency Caesarean section, instrument assisted birth, or continual fetal monitoring.⁵ There was previously a recommendation by the local government in Queensland, Australia, that Caesarean access should be available to these centers within 75 minutes transfer time. This requirement however has been removed.⁶

Predicting risk of complications

A chief concern for risk screening related to birth is predicting the likelihood of complications, and it is widely acknowledged throughout the literature that predicting the occurrence of complications during labour and delivery with certainty is impossible. A 2012 Cochrane Review on planned home birth versus planned hospital birth (with surgical services) discussed the risks related to the most concerning birth complications: abruption placenta, cord prolapse, shoulder dystocia, and plummeting fetal heart rate for unknown reason.⁷

- Abruption placenta is considered to be the highest risk complication, but it occurs in <1/10,000 women planning home birth (i.e. women who are low-risk), and is generally slow to progress.
- Cord prolapse occurs in approximately 1/10,000 births, and is acknowledged as one complication that can be fatal and is preferred to occur in hospital.
- Shoulder dystocia occurs in up to 2.1% of births, but is often managed by maneuvers that can be easily performed in any setting (e.g. the all-four maneuver).
- Decelerating fetal heart rate is often resolved with conservative measures (e.g. maternal position, maternal oxygen administration), and is often a false-positive, meaning that more involved interventions may be done unnecessarily.

The authors note that while the risks for abruption placenta and cord prolapse exist in the mathematical sense, they are essentially non-risks in the context of clinical practice, as the true risk for any one low-risk woman's pregnancy is almost non-existent.⁷

The Birthplace in England national prospective cohort study – which largely informed the UK intrapartum clinical guidelines – found that low-risk nulliparous women benefitted the most from planning to give birth in midwifery units, as opposed to home birth or obstetrical unit settings. Despite having a higher rate of intrapartum transfer than multiparous women, they benefitted from fewer interventions, higher breastfeeding rates, and higher incidence of normal spontaneous vaginal birth. The study also did not find a difference in outcomes from freestanding versus alongside (attached to hospital) midwifery units, despite the inherent increase in transfer time from the former.⁸

One Scottish study, which analyzed transfer times from community settings (home or freestanding midwifery units) to obstetrical units, estimated the likelihood of low-risk women needing an urgent Caesarean for reasons of “an immediate threat to the life of the mother or fetus” to be <4/1000. They found that most transfers are non-urgent, and while nulliparous women were more likely to require a transfer and for the transfer to be potentially urgent, they confirmed the Birthplace in England findings that there was no difference in outcomes related to transfer. They also noted that the incidence of actual emergencies in low-risk births planned in community settings is not well established.⁹

Choice in Place of Birth guidelines from the Association of Ontario Midwives note that nulliparous clients do have an increased likelihood over multiparous women of emergency transport from home birth, and an increased likelihood of Caesarean section, labour augmentation and post-partum hemorrhage, regardless of place of birth. However, because these risks are not associated with any difference in mortality, low-risk nulliparous women are included for eligibility and may choose home birth.¹⁰

Examples of successful primary maternity services in rural regions without obstetrical services

Outcomes from rural Scotland midwifery-led birth centers indicate approximately half of women assessed as low-risk at the outset of pregnancy go on to complete their deliveries in these units. These rural freestanding midwifery units (i.e. birth centers without obstetrical support) were up to 60 miles by ground transport to the nearest surgical center, and 9% of women required intrapartum transfer.¹¹ Detailed exclusion criteria for births in these centers includes prior Caesarean section or difficult delivery; nulliparous women were not excluded (full exclusion criteria listed in Appendix G. Another study in Scotland which assessed transfers from home births and freestanding midwifery units to obstetrical units confirmed the Birthplace study findings that nulliparous women did receive transfers more often, and also found they were more likely to be for potentially urgent reasons, however they did not find there were any resulting negative impacts for perinatal outcomes.⁹ Denham (2017) similarly found that rural community birth units in Scotland provided safe and effective care, with approximately half of the women giving birth in the two analyzed units being primiparous, and transfer time of >30 minutes.¹²

In Primary Maternity Units in rural Australia, local risk criteria are developed with input from the Australian College of Midwives referral guidelines. Units profiled in the literature demonstrate that

more than half of local women remain there to deliver. Low-risk criteria varied between units, and included factors such as: maximum BMI, number of weeks gestation, gestational or insulin-dependent diabetes, willingness to accept blood products, and being “well-known” to the unit antenatally.⁶ An analysis comparing outcomes between 2 freestanding maternity units and 2 tertiary obstetrical units similarly found that approximately half of women intending to give birth at the FMU completed their deliveries there, with an intrapartum transfer rate of 13.2%. Similar to findings in England, these women also had greater likelihood of a normal, spontaneous vaginal birth and a decreased likelihood of intervention. There was also no significant difference in incidence of post-partum hemorrhage greater than 1000mL, and neonatal outcomes were good, with decreased likelihood of requiring resuscitation or admittance to NICU.¹³ These units are generally within 75 minutes transfer time to a facility with surgical services, due to previously in place requirements by the government of Queensland.⁶

In Nunavik, a successful midwifery-led program has operated since 1986, with no surgical service or capability of Caesarean, with excellent outcomes. One community acts as a local referral center, having the ability to provide some medical services including induction/augmentation, lab work, blood transfusions, and neonatal monitoring. Higher-risk cases are referred to Montreal, comprising 9-10% of cases, with transfer time ranging from 4-8 hours depending on weather.¹⁴ The majority of women in Nunavik (86.3%) are able to deliver in Nunavik, many in their home communities.¹⁵ Risk assessment is a careful, ongoing process conducted by the perinatal committee of physicians, midwives and nurses. Each pregnant woman's case is assessed at 32 weeks by the committee and a joint decision is made if referral is necessary to the local referral center or to Montreal.¹⁶ Some risk criteria is outlined in the literature; reasons for referral to Montreal include: hypertension/pre-eclampsia, VBAC, multiple gestation, breech presentation, hyperthyroidism, pulmonic stenosis, and previous birth complication such as cervical tear. Primiparous women have been allowed to remain in Nunavik to deliver since 1999.¹⁴⁻¹⁶

In New Mexico, a community hospital serving Zuni Pueblo and Ramah Navajo communities has a successful primary care maternity service attended by GP's and nurse midwives, without local surgical services (although vacuum-assisted delivery was available). Sixty five percent of births in the population occur in the community hospital, which was attributed to effective perinatal screening. Local exclusion and transfer criteria includes: prior Caesarean, multiple gestation, malpresentation, inter-uterine growth restriction, severe preeclampsia, placenta previa, significant vaginal bleeding, major fetal anomalies, suspected preterm delivery, non-reassuring fetal heart tones, and need for induction or augmentation. Women with well-controlled diabetes and without signs of macrosomia or end-organ damage were not excluded from local delivery. First pregnancy was also not excluded from local delivery. A review of obstetrical emergencies and urgent transfers showed there was no negative impact by the lack of on-site surgery and transfer time, and perinatal mortality was comparable to national averages. The most common reasons for transfer were arrested first-stage of labour and prelabor rupture of membranes without active labour.¹⁷ These examples suggest that, even with extended transfer times, careful risk screening can promote a successful and sustainable primary maternity service without increasing adverse outcomes.

Nunavik's transfer times can be very high, yet safe outcomes remain on par with national averages. For example, a review of outcomes from 2000-2007 in Nunavik, where transfer time is up to eight hours, found a total of one maternal death, four fetal deaths and five neonatal deaths among 1372 pregnancies. Canada's combined fetal and neonatal mortality rate in 2005 was 9.7 per 1000 live births. The maternal death occurred post-partum in a woman who had planned antenatal transfer to Montreal for multiple birth and medical complications. Neonatal deaths included three preterm births (24, 25 and 29 weeks), and two with anomalies incompatible with life.¹⁵

Notable that some of these populations (Nunavik, New Mexico) are actually higher-risk in general, with higher rates of conditions such as diabetes and substance use, but with effective screening more than half of their deliveries are able to remain in their home communities without adverse outcomes.

How is "low-risk" defined?

A 'low-risk pregnancy' is often locally defined, in terms of specific criteria. In general, low-risk is defined in the literature as:

- Woman having no medical conditions (or having certain conditions that are well-controlled)
- No pregnancy complications identified
- If there are previous pregnancies and deliveries, these were uncomplicated
- Birth occurring at term

Of the low-resource birth centers described here, none required women having their first birth to transfer out for that reason alone. Some noted that nulliparous women do have to be transferred intrapartum more often, but with no increase in adverse outcomes.

The literature summarized suggests that there is evidence to safely allow first-time mothers to deliver on the North Island. Suggestions for criteria to stay:

- No pregnancy complications
- No maternal medical conditions that increase risk of obstetrical complications
 - o Use PSBC framework to categorize what manageable medical conditions might be acceptable to remain in inclusion criteria
 - o Refer to exclusion criteria utilized by other communities to examine what might be applicable in the North Island
- No anticipated need for higher level neonatal care
- Transport can be accessed quickly if needed
 - o Seasonal considerations?

Consider encouraging nulliparous women who are otherwise healthy to plan to deliver in Port McNeil:

- Informed consent/choice integral aspect of decision
 - o Discussion about possibility of transfer

WHAT WE FOUND

Our work in this area was two-fold: (1) to work with community members to understand and appreciate comprehensive risk, including both clinical and social attributes, and (2) to consolidate existing clinical guidelines that could be applied to the context of the North Island. The project team listened to community member's descriptions of the social risks incurred having to leave their community to birth away through focus groups and interviews.

Clinical Risk: Being "risked-out" or considered 'high-risk' was a reoccurring response we heard from moms, community members and care providers as a rationale for birth outside of the community. We heard many mothers and community members indicate they were 'high risk', though the understanding of what their risk factors were was unclear; *"We were told by a physician at one point if you smoked, you were high-risk. You can be high-risk just by being Aboriginal by one physician.... so I don't know what the criteria [is]."* Many mothers established referral patterns 'away' by delivering in a referral center for their first pregnancy *"[S]ome of their moms, if they're told you're high-risk at first birth... So then they get it into their minds that I'm just high-risk, so I'm going to make arrangements to have this baby down island."* Being 'high risk' meant the mom was not eligible to deliver in the North Island and would have to travel to deliver.

Social Risks incurred in having to leave the community for care include lack of family and community supports and difficulty making travel arrangements, including substantial out-of-pocket costs associated with having to birth away.

One mother's experience: *"We stayed in a hotel. It was, well I didn't really like it. It was far away from home. And, I just felt lonely. My husband was at work, he was working up at [location]. He didn't get to meet our daughter until she was about a week old..."*. A community health worker commented; *"I absolutely believe, between the economics of the issue and the, the social impacts, and the child welfare issues for us are huge."* Additionally, we heard of the substantial social risks associated with increased child apprehensions when mothers present for delivery in a referral community without their family or community supports and advocates.



UBC Medical Flex student Krista Loewen reviewed relevant literature and policy around risk-screening processes in other rural communities in Canada and internationally. We also facilitated a working session with local North Island care providers and specialist obstetricians to look at criteria that make sense at a local level. The project team hosted discussions with Dr. Kotaska, OBGYN from Yellowknife, and the North Island physician representatives on the philosophy of risk in the context of medical ethics, namely the concepts of autonomy and beneficence. Dr. Kotaska spoke to the importance of maintaining the therapeutic alliance between the mother and her care provider. A summary of Dr. Kostaka's presentation is included below, and the full recording can be accessed [here](#).

Autonomy and beneficence and maintaining the therapeutic alliance

Autonomy is the idea that competent patients are able to make decisions around their own medical care. Beneficence is when the physician's values are primary in deciding what is best and possibly safest for the patient. For the most part, beneficence and autonomy align however, in cases where they do not,

conflict occurs. In many settings autonomy may have superiority over beneficence. For example, patients have the right to refuse chemotherapy if they have pancreatic cancer even though the physician recommends it to be the best course of action for the well-being of the patient. When the decision pertains to obstetrics, however, this view shifts. This is primarily due to the fact that a third person, the baby, is involved and the baby is incompetent of making an informed decision.

Care providers have the obligation to provide women with the information to make an informed choice. To avoid coercion, care providers must be committed to the woman's autonomy, allow for an honest assessment of objective risks, and detach from her ultimate decision ("this is her choice, not my choice"). If a woman makes a decision against what is recommended, it is the clinician's duty to accept her autonomy and let her know that legally, the clinician is not responsible for the risk she takes. In order to maintain the therapeutic alliance with the woman, the clinician should continue to support her decision and provide her with care she needs through the process.

WHAT IT MEANS

In the absence of clinical practice guidelines, there is ambiguity regarding appropriate inclusion criteria for local delivery in low-resource settings. Given the contextual nature of such decisions and the significant role of psycho-social and cultural influences, instead of codifying inclusion criteria, a more helpful way forward is to develop an approach to shared decision-making, including the values propositions that underscore the process. Patient Decision Aids (PtDA) have increasingly been seen as an effective way to support shared decision making in health care in a way that ensures the clear representation of patient values and preferences.^{18,19} They have been identified as both improving patient knowledge regarding the decision at hand and, importantly, minimizing anxiety and decisional conflict,²⁰ particularly when decisions lack clear evidence for best practices and known benefits and harms may conflict.²¹

The process must be responsive to local circumstances and conditions, but also recognize and mitigate the potential implications to providers (e.g. being the Most Responsible Provider at a high-risk delivery with no local backup). This demands the need for appreciating the potential for an adverse outcome and the effect this may have on care providers and on the community. For providers this requires resilience training and support at the outset of offering such services. At a community level, informed consent discussion must be undertaken in a way that is accessible and clear. This will provide a framework for the more specific work of discussions with obstetrical specialists on reasonable guidelines to frame discussions at a local level. This will be accomplished through the creation of a working group between the Society of Obstetricians and Gynecologists of Canada, Doctors of BC and Midwives Association of BC. The in-depth literature and policy review done as part of the feasibility analysis will be utilized in the working group's discussions to guide the establishment of appropriate criteria for local delivery in the North Island.

WHAT IT COSTS

Currently there is no mechanism for facilitating the interprofessional community-level discussions on appropriate inclusion criteria, there are no resources to enable care provider resilience in rural maternity care and there are no guidelines for appropriate inclusion criteria for local deliveries without access to local Cesarean section. Funding will be sought for the creation of a task force with Society of Obstetricians and Gynecologists of Canada, Doctors of BC and Midwives Association of BC that will serve to develop, through a holistic lens, a shared decision-making framework. This framework must privilege the culture and values of the local Indigenous population through their clear representation in the process. (See Appendix H for a complete description of the development of a patient Decision Aid.)

Draft Budget to Support Appropriate Inclusion Criteria for Local Deliveries					
Item	Unit	# of Units	Unit cost	Cost	Details
Specialist sessionals	Hour	12	158	1,896	Based on 12 meeting hours with specialists for the creation of a task force.
Key stakeholder meeting	Per meeting	2	15,000	30,000	Based on two in-person meetings as part of the task force.
Development of a patient decision aid for choice and place of birth	Lump sum	1	101,910	101,910	Based on proposal "Supported Decision Making for Choice in Place for Birth for Rural Women: Towards a Comprehensive Discussion of Risk"; estimated timeframe for development of a decision aid is one year; includes HR, fieldwork, participant compensation and interdisciplinary pilot testing.
TOTAL				133,806	

References

1. Kruske S, Kildea S, Jenkinson B, Pilcher J, Robin S, Rolfe M, Kornelsen J, Barclay L. Primary Maternity Units in rural and remote Australia: results of a national survey. *Midwifery*. 2016;40: 1-9.
2. Cheyne H, Dalgleish L, Tucker J, Kane F, Shetty A, McLeod S, Niven C. Reassessment and decision making about in-labor transfer from rural maternity care: a judgement and signal detection analysis. *BMC Medical Informatics and Decision Making*. 2012;12: 122.
3. Australian College of Midwives. National Midwifery Guidelines for Consultation and Referral, 3rd ed. 2014. Retrieved from <https://www.midwives.org.au/resources/national-midwifery-guidelines-consultation-and-referral-3rd-edition-issue-2-2014> on February 19, 2019.
4. National Institute for Health and Care Excellence. Clinical Guidelines: Intrapartum care for healthy women and babies. 2014. Retrieved from <https://www.nice.org.uk/guidance/cg190> on February 19 2019.
5. Royal Australian and New Zealand College of Obstetricians and Gynecologists. Maternal Suitability for Models of Care. 2015. Retrieved from [https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women's%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Maternal-suitability-for-models-of-care-\(C-Obs-30\)-Review-March-2015.pdf?ext=.pdf](https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women's%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Maternal-suitability-for-models-of-care-(C-Obs-30)-Review-March-2015.pdf?ext=.pdf) on February 19, 2019.
6. Kruske S, Schultz T, Eales S, Kildea S. A retrospective, descriptive study of maternal and neonatal transfers and clinical outcomes of a Primary Maternity Unit in rural Queensland, 2009-2011. *Women and Birth*. 2014; 28: 30-39.
7. Olsen O, Clausen JA. Planned hospital birth versus planned home birth. *Cochrane Database of Systematic Reviews*. 2012;9: CD000352.
8. Birthplace in England Collaborative Group. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. *BMJ*. 2011;343: d7400.
9. Rowe R, Townend J, Brocklehurst P, Knight M, Macfarlane A, McCourt C, Newburn M, Redshaw M, Sandall J, Silverton L, Hollowell J. Duration and urgency of transfer in births planned at home and in freestanding midwifery units in Scotland: secondary analysis of the Birthplace national prospective cohort study. *BMC Pregnancy and Childbirth*. 2013;13: 224.
10. Expert Advisory Panel on Choice of Birthplace. Association of Ontario Midwives. Guideline on discussing choice of birthplace with clients. 2016. Retrieved from http://www.aom.on.ca/files/Health_Care_Professionals/Clinical_Practice_Guidelines/Choice_of_birthplace.pdf on February 19, 2019.
11. Tucker J, McVicar A, Pitchforth E, Farmer J, Bryers H. Maternity Care models in a remote and rural network: assessing clinical appropriateness and outcome indicators. *Quality and Safety in Health Care*. 2010;19: 83-89.
12. Denham S, Humphrey T, Taylor R. Quality of care provided in two Scottish rural community maternity units: a retrospective case review. *BMC Pregnancy and Childbirth*. 2017;17: 198.

13. Monk A, Tracy M, Foureur M, Grigg C, Tracy S. Evaluating Midwifery Units (EMU): a prospective cohort study of freestanding midwifery units in New South Wales, Australia. *BMJ Open*. 2014;4: e006252.
14. Van Wagner V, Epoo B, Nastapoka J, Harney E. Reclaiming Birth, Health and Community: Midwifery in the Inuit Villages of Nunavik, Canada. *Journal of Midwifery & Women's Health*. 2007;52: 4.
15. Van Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote Midwifery in Nunavik, Quebec, Canada: Outcomes of Perinatal Care for the Inuulitsivik Health Centre, 2000-2007, *Birth*. 2012;39 :3.
16. Houd S, Qinuakuak J, Epoo B. The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998-2002. *International Journal of Circumpolar Health*. 2003;63: Sup2, 239-241.
17. Leeman L, Leeman R. Do All Hospitals Need Cesarean Delivery Capability? *Journal of Family Practice*. 2002;51: 2.
18. Elwyn G. Developing a quality criteria framework for patient decision aids: online international Delphi consensus process. *BMJ*. 2006 Aug 26;333(7565):417-0.
19. Dugas M, Shorten A, Dubé E, Wassef M, Bujold E, Chaillet N. Decision aid tools to support women's decision making in pregnancy and birth: A systematic review and meta-analysis. *Social Science & Medicine*. 2012 Jun;74(12):1968-78.
20. Say R, Robson S, Thomson R. Helping pregnant women make better decisions: a systematic review of the benefits of patient decision aids in obstetrics. *BMJ Open*. 2011;1(2): e000261.
21. Stacey D, Légaré F, Col NF, Bennett CL, Barry MJ, Eden KB, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev*. 2014;1: CD001431.



STRENGTHENING NETWORKS OF CARE



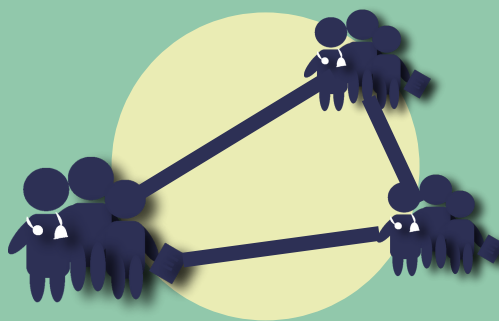
WHY IT MATTERS

Maternity care can be provided safely in rural settings without local access to Cesarean section given three things:

1. Efficient access to emergency transport,
2. Appropriate risk screening, and
3. Provider support within regional networks of maternity care.

WHAT WE DID

The project team held discussions with local providers on the desirability and feasibility of creating stronger links with their regional referral sites.



WHAT WE FOUND

- Low-resource maternity providers would like to link with others in the province to create a **COMMUNITY OF PRACTICE TO SHARE CHALLENGES AND OPPORTUNITIES**
- **CARE PROVIDERS DESIRE MENTORSHIP AND OPPORTUNITIES FOR INTERPROFESSIONAL LEARNING** with referral sites, emphasizing the importance of reciprocal learning
- Desire to build stronger interdisciplinary networks to **INCREASE COMMUNICATION AND SUPPORT** with referral centers

WHAT IT MEANS



Funding and time for rural maternity providers and referral centre providers to **CONNECT, BUILD TRUSTING RELATIONSHIPS, and RECIPROCALLY EXCHANGE KNOWLEDGE.**



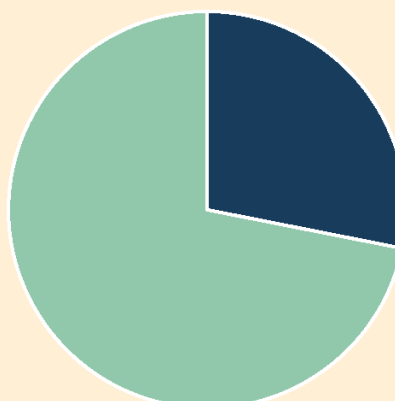
Funding for the development of a **COMMUNITY OF PRACTICE** between low-resource maternity care providers in BC.

WHAT IT WILL COST

\$71,576

Over four years

\$51,456
Creation of a
Community of
Practice between
low-resource
maternity sites in
BC



\$20,120
Strengthening
networks or care
between the
rural site and
referral centre

4.5 Strengthening Networks of Care

WHY IT MATTERS

Background & context

Findings from a systematic realist review have shown that maternity care can be provided safely in rural settings without local Caesarian section given three caveats. They include (1) efficient access to emergency patient transport if needed during labour; (2) supporting local delivery for women who are likely to proceed with a normal vaginal delivery and ensuring those who are may need a higher level of care can be referred out of the community prior to the onset of labor; and (3) provider support within regionalized networks of maternity care.¹ When local providers feel supported by their specialist colleagues in the services they provide and know that they are available should emergency consultation be necessary, the level of anxiety decreases and confidences increases.¹ The effectiveness of formalizing and optimizing usual referral patterns into networks of care has been increasingly appreciated as a mechanism to support rural communities in diverse practice areas such as emergency care through BC Emergency Medicine Network and surgical care through the Rural Surgical and Obstetrical Networks.

Policy & literature

Networks in rural are vital in recognition of the perpetual challenge of limited resources and the inevitable shared benefit when care providers collaborate to share resources and knowledge.² According to Popp et al., benefits to network members include shared risk, greater advocacy, innovation and flexibility to provide care.³ Additionally, networks can serve to increase tacit knowledge exchange and enhance the capacity of individuals to work in a multidisciplinary way.⁴ Networks not only serve to support care providers, but also contribute to the community in ways such as improved quality of care and increased local access to services.^{2,4}

Robeson identifies four stages of network development including planning, formation, maturation, sustainability and transition.⁵ An effective health service network is one built on trust and collaboration and arises from natural relationships or pre-existing commonalities between members (e.g. shared purpose to provide rural maternity care).^{3,6} Ideally, rural networks should be based on geographic population catchments, where responsibility for the populations' health within that catchment is born by the network of care providers.⁶ In recognition of network members' voluntary role, a key aspect to maintaining a network is its capacity to preserve the commitment and enthusiasm of its members.⁷ In a complex adaptive systems approach, networks develop over time in a dynamic way through interactions with their various actors.⁵ In a maternity network, leadership and a multidisciplinary approach are key, as well as clarity of each member or provider type's discrete role within the multidisciplinary structure.⁸ Additionally, within a maternity network, clear protocols for emergency maternity transfers are necessary.⁸ Appropriate access to and transfer between levels of care within the network must be a key element of the maternity network.⁸

Challenges within networks may include dissonance around philosophies of care, a lack of consensus around shared goals and the potential loss of individual autonomy.³ Furthermore, as trust is essential to an effective network, time to build this may be a barrier to network establishment.³

There are emerging examples of how the concept of networked care has provided the framework for clinical practice. For example in BC, the Maternity Care Network Initiative provides financial incentive to GPs to support shared physician care in obstetrics. This is accomplished through the creation of a supportive working environment and peer group of maternity care GPs for mutual support and sustainability of practice. The network uses financial remuneration (a payment of \$1,250 quarterly per GP) to establish the network.⁹ In New South Wales, Australia, a Maternity Support Network was established to provide leadership and support maternity care providers in providing high quality maternity care.¹⁰ The development of such a network was in effort to enable women to birth as close as possible to their home community, in an appropriate facility and with an appropriate provider.¹⁰ The Dutch health system has placed a priority on health system networks to improve maternity care. There Dutch found community-based midwives to be a vital link between in- and out of hospital settings as well as the 'most connected' provider type in the maternity network.¹¹

Due to rural geography across BC (and Canada) the 'shoulder to shoulder' learning that underscores productive relationships is often compromised due to logistical challenges due to distance and weather. However, the use of virtual technologies to link rural and referral sites in real time video conferencing not only provides an efficient mechanism of communication, but also contributes to building relationships that underscore good care.¹ Telehealth technologies are being leveraged in rural BC to connect rural maternity care providers (GPs) to specialist providers in referral communities for consults and support ([MOM project](#)).¹²

WHAT WE FOUND

The feasibility analysis included discussions on the desirability and feasibility of creating stronger links with the regional referral centre. This provides the foundation for further engagement with specialists colleagues to optimize and formalize the regional obstetrical network.

We heard from physicians and nurses on the North Island and 1A midwives across the province that stronger networks of care are desired. Nurses in 1A sites would like to link with maternity nurses at referral centers for ongoing mentorship and support. Likewise, there was consensus among 1A providers that there is a need for networking with specialist colleagues to influence, participate and add to the dialogue around sustaining rural maternity care. Building stronger interdisciplinary networks was seen as a way to increase communication with referral centres and thereby increasing support to the local providers. There is a desire for mentorship and inter-professional learning with referral sites with rural providers emphasizing the importance of reciprocal learning so the referral sites understand the unique challenges of working in a rural environment.

WHAT IT MEANS

Funding is needed to allow time for rural maternity care providers and referral care providers to connect, build trusting relationships, and reciprocally exchange knowledge. Attention and resources need to focus on building and strengthening networks of care between rural 1A sites and their referral sites as well as between all 1A sites. Lateral networks, or the development of a Community of Practice between 1A maternity care providers and administrators in BC would support knowledge exchange and serve as supportive environments to share successes and challenges.



WHAT IT COSTS

This system intervention entails strengthening relationships by allowing time and resources to be devoted to relationship building between referral center specialists and 1A maternity care providers. An additional network of support lies between the 1A communities themselves. This initiative will allow for regular meetings between all 1A maternity care providers to share local challenges and solutions as well as participate in visiting maternity care rounds. Funding will support in-person meetings as well as regular videoconference meetings allowing providers to build and develop supportive relationships.

There is potential to utilize funding from the Shared Care Initiative towards the aim of building strong interprofessional maternity care teams (teams include a midwife, GP and Obstetrician). Additionally, telehealth technology such as the Mobile Maternity Project may be leveraged to provide virtual linkages to support the establishment and ongoing connection of maternity networks.

Draft Budget for Creating Networks of Care: Linkages between Referral Centers and Rural Sites and Building a Community of Practice between the 1A Sites					
Item	Unit	# of Units	Unit cost	Amount (CAD)	Justification
<i>Creation of strong linkages between rural sites and referral centers</i>					
Specialist sessional funding	Hour	30	158	4,740	Based on sessional rates
Physician sessional funding	Hour	30	134	4,020	Based on sessional rates
Midwife sessional funding	Hour	30	134	4,020	Based on sessional rates
Networks facilitator	Hour	10	134	1,340	Support to develop strong networks of care between rural sites and regional referral center

Key-stakeholder meetings	Per meeting	4	1,500	6,000	Facilitate in-person meetings between sites; includes meeting room costs, a meal and travel costs
<i>Establish and strengthen a network of care between all maternity care providers in the five 1A sites</i>					
Video/teleconference to link 1A maternity care providers	Lump sum	1	51,456	51,456	Meeting once every two months for two hours; first hour to share local challenges/solutions; second hour with visiting maternity care rounds; sessionals for two physicians, two midwives and four nurses to attend *We anticipate local Health Authority administration attendance as well
TOTAL				71,576	

References:

- 1) Kornelsen J, McCartney K. The Safety of Rural Maternity Services without Local Access to Cesarean Section. An Applied Policy Research Unity Review. 2015. Retrieved from https://med-fom-crhr.sites.olt.ubc.ca/files/2015/11/apru_the-safety-of-rural-maternity-services-without-local-access-to-c-section_2015.pdf January 31 2018.
- 2) Bonk G. Principles of Rural Health Network Development and Management. Washington, DC: Alpha Center. 2000.
- 3) Popp JK, Milward HB, MacKean G, Casebeer A, Lindstrom R. Inter-organizational networks: a review of the literature to inform practice. The IBM Center for the business of government. 2014.
- 4) Huerta T, Casebeer A, VanderPlaat M. Using Networks to Enhance Health Services Delivery: Perspectives, Paradoxes and Propositions. *Longwoods Healthcare Papers*. 2006;7(2).
- 5) Robeson P. Networking in public health: exploring the value of networks to the national Collaborating Centres for Public Health. Hamilton, ON: National Collaborating Centre for Methods and Tools. 2009. Retrieved from <https://www.nccmt.ca/uploads/media/media/0001/01/56143af45c22ac442a0af87ccbbf26e83af55b96.pdf> on February 19, 2019.
- 6) Kornelsen J, Friesen R. Building rural surgical networks: An evidence-based approach to service delivery and evaluation. *Healthcare Policy*. 2016;12(1): 37-42.
- 7) Taylor M, Whatley AMS, Coffman JMS. Network evaluation in practice: approaches and applications. *The Foundation Review*. 2015;7(2): 22-37.
- 8) Department of Health. Maternity matters: choice, access and continuity of care in a safe service. London DoH. 2007. Retrieved from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_074199.pdf on February 19, 2019.
- 9) Health Services BC. The Maternity Care Network Initiative. 2005. Retrieved from <http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/373850/maternitycare.pdf> on January 31st 2018.

- 10) Forde S, Clements V, Cooke H et al. Creating a new environment for networking: Maternity Support Network (MSN). *Women and Birth*. 2011;24:1 S18.
- 11) Groenen CJM, van Duijnhoven NTL, Faber MJ et al. Use of social network analysis in maternity care to identify the profession most suited for case manager role. *Midwifery*. 2017;45:50-55.
- 12) Centre for Rural Health Research. Mobile Maternity Project. 2018. Retrieved from <https://crhr.med.ubc.ca/mom/> on February 19, 2019.

5. Provincial Implications



The community-based, regional and provincial consultations within the context of the *Building Blocks* project revealed that the question of maternity services for women on the North Island is an enduring one, as it has come a decade after a previous First Nations Inuit Health – commissioned report on the same topic (Centre for Rural Health Research 2009). We can predict that the issue will remain when the service delivery level offered in a community is not congruent with population need. Unlike 2009, however, we now have a different set of contextual influences that, when juxtaposed with the needs of the local community, provide the momentum needed to address the health service gap. They include the provincial commitment to the Patient Medical Home and Primary Care Networks and the attendant assumption of interprofessional practice they are predicated on. There is also a new urgency to work towards solutions as we witness the up-stream effects of the closure of small maternity sites which include the over-burdening of regional referral centres and the potential for to destabilization leads to. If there was ever an optimal time to address these challenges, it is now. Although the recommendations offered below are directly targeted to the North Island, we also offer a set of provincial recommendations that arise from the primary data collected across the 1A sites in the course of this work. This allows us to action the commitment to recognizing this issue as a systems issue and realize the danger of addressing only one part.

The recommendations are rooted in the following five key **values propositions**:

- (1) That health service planning *must* respond to the needs of communities within the context of feasibility and safety, with the caution that feasibility and safety issues must not be used as obstacles to impede planning;
- (2) That all key stakeholders be involved in discussions regarding local services including policy and decision-makers, health care administrators, health care providers (physicians, midwives and nurses), researchers and community members;
- (3) That services be planned through a *rural lens* to ensure responsiveness to the unique characteristics of rural communities. This includes but is not limited to low procedural volume, lack of immediate access to specialist

services and the potential for challenges with transport from the community. It also, however, recognizes the attributes of rural community practice underscored by a generalist model which gives rise more easily to enablers such as integrated care planning for patients across disciplines, a broader understanding of the life context of citizen-patients and the propensity for innovative health service delivery solutions in the face of limited resources;

- (4) In addition, due to the confluence of rural and Indigenous communities and with respect for the calls to action issued by the Truth and Reconciliation Commission and BC's 2006 Health Partnership Accord, we must understand community experience, including the impact of relocating services when local services are not provided and the concomitant impact on service planning through a *trauma-informed lens* and honor the policy commitments of returning birth to Indigenous communities; and
- (5) A *systems approach* is required, that recognizes that perturbations in one service delivery level will have consequences across other strata and addressing the challenges in one level of care without attending to the others may lead to further de-stabilization. As an example, alongside the challenges to sustainability of 1A and 1B sites, maternity services underscored by a solo obstetrician (BC currently has 5 such sites) also face significant instability as does any model that is depended on one provider. Considering the 'building blocks' necessary to secure these sites is an essential part of strengthening the whole system.

Recommendations

Within this context, **recommendations for maternity care on the North Island** are as follows:

Recommendation 1: Regional maternity services be organized between the two sites

- (1) That due to the close proximity of the two hospital sites and the low population density, *maternity services be organized regionally between the two North Island hospital sites* (Port Hardy and Port McNeill). This may involve services being available at both sites with innovative regional health human resource staffing or discrete service distribution between the sites. This should be determined with input from local care providers from both sites and community representatives within the context of existing Island Health mechanisms for decision-making and appreciating the nursing staffing and other administrative challenges endemic in all maternity sites across rural BC.

Recommendation 2: Local Midwifery services with a two-midwife model

- (2) That in response to the clearly articulated needs of the community, *local midwifery services be supported on the North Island through a two-midwife model*. These services should be provided in the context of interprofessional models of care. Such models should be community-driven by local providers and representatives of rural midwifery practice with the support of Shared Care's Interprofessional Care initiative;

Recommendation 3: Local access to Cesarean section

- (3) That due to the volume of deliveries, the vulnerability of the population and the distance to the nearest cesarean section services, *local access to cesarean section be provided by Family Physicians with Enhanced Surgical Skills (FPSS) supported by General Practitioner Anesthetists (GPAs) and nurses with OR training;*

Recommendation 4: Culturally safe maternity care

- (4) A clear message from Indigenous community participants was the need for care that is culturally safe. We have interpreted this as per First Nation's Health Authority definition to mean that "... health care professionals adopt a humble, self-reflective clinical practice that positions them as respectful and curious partners when providing care, rather than as a figure of higher knowledge and authority." To this end, encourage uptake of the San'yas Indigenous Cultural Safety Training program (funded training for physicians,

midwives and nurses by JSC, MABC, and Health Authorities, respectively) for all maternity care provider but also provide support for the maternity care team to build relationships with the Indigenous communities they serve by spending time in community with local leadership and members. This shoulder-to-shoulder exposure is essential in building a sense of shared understanding of cultural strengths, values and approaches;

Recommendation 5: Funding to support a rural maternity care demonstration project

(5) Due to existing administrative, interprofessional, scope of practice and funding issues that require on-the-ground resolution, a *rural maternity care demonstration project* be funded and supported as per the recommendations above. This would involve attention to the nuances of the North Island (such as the value of outreach prenatal care to the smaller and remote communities) while also creating provincially-relevant learnings (for example, alternative fund holding mechanisms and funding models).

Appreciating the integrated nature of health care provision and the essential relationships between rural sites and sites with higher capabilities, it is essential to interpret these recommendations within the context of overarching system-embedded recommendations. These provincial recommendations to support 1A sites are as follows:

Recommendation 1: The development of a provincial maternity care strategy

A provincial strategy is needed to provide a coherent plan for addressing the system wide challenges in providing maternity care services to women and families in BC. This will deter 'one-off' solutions that provide only a temporary fix in favor of a coherent approach more likely to promote both equity across the province and solution sustainability. The strategy must include:

- Equitable input from all key-stakeholder groups including health care policy and decision makers, administrators, care providers (midwives, physicians and nurses) researchers and community members including citizen patients, industry and other key stakeholders;
- Recognition of the longstanding provincial policy commitment of birth 'closer to home' and the commitment to respond to the national Truth and Reconciliation Commission calls for action;
- The development of a transparent system of clear accountability for maternity care at local and regional tables, at the level of the Health Authority and at the Ministry of Health;
- A provincial review of the process for privileging midwives in sites where midwives have not previously practiced to ensure values of community responsiveness and practice sustainability are met alongside a process that privileges the input of local care providers and regional or provincial midwifery representation;
- A values-driven approach that recognizes the importance of local maternity care in the health of communities and in a woman and families' life;
- Service level targets for where maternity services should be supported based on an established and validated metric;
- A clear articulation of support for maternity services in the absence of local Cesarean section OR the intentional closure of such services;
- A review of barriers and solutions to interprofessional practice including addressing the persistent challenge of funding and remuneration and other existing disincentives, with training as another important focal area;
- A clear, reasonable and clearly communicated timeline for implementation;
- A rigorous, iterative evaluation framework; and
- Flexibility to permit agility in responding to emerging system feedback.

Recommendation 2: A focus on interprofessional models of care

In British Columbia, interprofessional care has been embraced through the Patient Medical Home model and Primary care Networks, based as they are on collaboration between professions to provide seamless patient care. When applied to maternity care, this implies collaboration between physicians, midwives and nurses at the centre, where collaboration is understood on a continuum to mean anything from respectful collegiality between professions practicing in a shared location to full integration of practice responsibilities including sharing a patient load. The nuances of the interprofessional models are in response to local conditions and the priorities of and relationships between care providers. In 1A maternity sites, there needs to be system recognition and incentivization that interprofessional care is essential for safe patient care. This must not limit the autonomy of any profession nor the capacity to work to full scope of practice, but instead recognize that safe practice is contingent on having a local community of practice for support should challenges be encountered. Developing effective models of care has already begun through the Shared Care Committee's Inter Professional Care (IPC) funding. This work should be further supported with discrete focus on the implications for 1A sites. A specific embedded recommendation is to ensure midwives are recognized as key partners within PMH/PCN initiatives.

Recommendation 3: Stabilize funding models to meet current needs

The disparate provider funding sources for maternity care has resulted in inequity between provider groups and barriers to collaborative practice. New interprofessional fund-holding mechanisms need to be developed to allocate regional funding for maternity care, enabling regional geographies to determine the most responsive application of the funds to meet community needs. Opportunities to address this include Midwifery master agreement renegotiations, work in the Ministry of Health on alternative payment methods and a look at GPSC maternity incentives.

Recommendation 4: Ongoing evaluation and established mechanisms for timely system response

A robust cost-benefit analysis of BC's 1A sites must be undertaken to address the lack of empirical evidence on value on investment. This will move us from decisions being made in the interplay between reactions to critical incidents or budget contractions and on-the-ground influences (attrition of providers). A clear understanding of cost-benefits will contribute to service planning based on optimizing health outcomes for rural residents and achieving fiscally responsible goals.

Recommendation 5: Development of clear mechanisms of health services accountability

The stark lack of progress around service delivery on the North Island since the previously commissioned report (2009) and the current report points to the lack of system accountability regarding supporting appropriate levels of care, particularly to rural communities. Mechanisms for such accountabilities must be developed at a provincial level, with clear designation regarding Health Authority reporting on service delivery targets. Without these accountabilities, BC's vision of achieving patient (and community) centred care will not be achieved.

References

1. Canada Health Act, R.S.C. 1984, c C-6, c.6, s.3 [<https://laws-lois.justice.gc.ca/eng/acts/c-6/FullText.html>].
2. Seaton PD, British Columbia Royal Commission on Health Care and Costs. Closer to home: report of the British Columbia Royal Commission on Health Care and Costs. Victoria, B.C.: Crown Publications. 1991.
3. Ministries of Health Services and Health Planning. Standards of accessibility and guidelines for provision of sustainable acute care services. 2002.
4. BC Ministry of Health. Primary and community care in BC: a strategic policy framework. Cross Sector Policy Discussion Paper. 2015. Available from: <https://www.health.gov.bc.ca/library/publications/year/2015/primary-and-community-care-policy-paper.pdf>
5. Society of Obstetricians and Gynecologists of Canada. Returning birth to aboriginal, rural, and remote communities. *Journal of Obstetrics and Gynecology Canada*. 2010;32(12):1186-88.
6. BC Ministry of Health. 2005/06 - 2006/07; 2013/14 - 2015/16; 2014/15 - 2015/176; 2015/16 - 2016/17. Service Plans. Accessed January 11 2019 at <https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/health/service-plan>.
7. Society of Obstetricians and Gynecologists of Canada. Rural Maternity Care. SOGC Joint Position Paper. Oct 2012. Accessed on January 11 2019 from https://sogc.org/wp-content/uploads/2013/01/gui282PP1210E_000.pdf.
8. Truth and Reconciliation Commission of Canada. Truth and Reconciliation Commission of Canada: Calls to Action. Winnipeg: Truth and Reconciliation Commission of Canada, 2015. Available from:

- http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls_to_Action_English2.pdf
9. BC Ministry of Health and First Nations Health Council. Health Partnership Accord. 2012. Accessed on January 11 2019 from <https://www.health.gov.bc.ca/library/publications/year/2012/health-partnership-accord.pdf>.
 10. Perinatal Services BC, Tiers of Service Agreement. 2016. Accessed on March 8 2019 from <http://www.perinatalervicesbc.ca/Documents/Resources/SystemPlanning/TiersOfService/TiersofService.pdf>
 11. Grzybowski S., & Kornelsen J. Providing a Birth Support Program for Women of the North Island Region, Vancouver Island. An Aboriginal Midwifery Demonstration Project. 2009;1-70.
 12. Grzybowski S, Stoll K, Kornelsen J. Distance Matters: A Population Based Study Examining Access to Maternity Services for Rural Women. *BMC Health Services Research*. 2011;11(147),1-8.
 13. Grzybowski S, Fahey J, Lai B, Zhang S, Aelicks N, Leung B, Stoll K, Attenborough R. The Safety of Canadian Rural Maternity Services: A Multi-Jurisdictional Cohort Analysis. *BMC Health Services Research*. 2015;15:410.
 14. Grzybowski S, Kornelsen J, Schuurman N. Planning the optimal level of local maternity service for small rural communities: A systems study in British Columbia. *Health Policy*. 2009;92(2-3),149-157.
 15. Kornelsen J, Grzybowski S. Rural Women's Experiences of Maternity Care: Implications for Policy and Practice: A major report regarding rural maternity care, including thorough academic and BC-specific policy literature reviews and findings from interviews with rural women and care providers. Status of Women Canada. 2005.
 16. Kornelsen, J., & Grzybowski, S. Rural maternity practice: How can we encourage family physicians to stay involved? *Canadian Journal of Rural Medicine*. 2010;15 (1),33-35.
 17. Grzybowski S, Kornelsen J, Barclay L. Closing Rural Maternity Services: Is it worth the risk? *Canadian Journal of Rural Medicine*. 2016;21(1):17-19.
 18. Kornelsen J and McCartney K. The Safety of Rural Maternity Services without local access to Cesarean section, https://med-fom-crhr.sites.olt.ubc.ca/files/2015/11/apru_the-safety-of-rural-maternity-services-without-local-access-to-c-section_2015.pdf
 19. Kornelsen J, McCartney K. System enablers of distributed maternity care for aboriginal communities in British Columbia: findings from a Realist Review. APRU. 2015. Retrieved on March 8 2019 from https://med-fom-crhr.sites.olt.ubc.ca/files/2015/05/apru_fnha_system-enablers-of-distributed-maternity-care-for-aboriginal-communities-in-bc_report_final.pdf.
 20. Cornthwaite K, Edwards S, Siassakos D. Reducing risk in maternity by optimizing teamwork and leadership: an evidence-based approach to save mothers and babies. *Best Practice & Research Clinical Obstetrics & Gynecology*. 2013; 27,4. <https://www.sciencedirect-com.ezproxy.library.ubc.ca/science/article/pii/S1521693413000515>
 21. Siassakos D, Fox R, Bristowe K, Angouri J, Hambly H, Draycott T. What makes maternity teams effective and safe? Lessons from research on teamwork, leadership and team training. *Acta Obstetrica et Gynecologica Scandinavica*. 2013, 92(11).
 22. Raab CA, Brown Will SE, Richards SL, O'Mara E. The effect of collaboration on the obstetric

- patient safety in three academic facilities. *Journal of Obstetric Gynecologic & Neonatal Nursing*. 2013; 42(5).
23. Guuberman S. McCreary lecture 2002 [cited November 11, 2002]. Available from: www.healthandeverything.org.
 24. British Columbia Ministry of Health. The British Columbia Patient-Centered Care Framework. 2015. https://www.health.gov.bc.ca/library/publications/year/2015_a/pt-centred-care-framework.pdf
 25. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Annals of Family Medicine*. 2014; 12(6).
 26. 19. First Nations Health Authorities. Directives. Available from: <http://www.fnha.ca/about/fnhaoverview/>
 27. Statistics Canada. 2016 Census Community Profiles. Retrieved from www.statcan.gc.ca. Accessed Dec 12, 2018.
 28. Island Health. Local Health Area Profile. 2018. Retrieved from <https://www.islandhealth.ca/sites/default/files/2018-09/local-health-area-profile-vancouver-island-north.pdf>.
 29. PHSA. BC Community Health Profile Port Hardy. Retrieved from <http://communityhealth.phsa.ca/HealthProfiles/PdfGenerator/Port%20Hardy>.
 30. British Columbia Vital Statistics Agency. Selected Vital Statistics and Health Status Indicators. Retrieved from <https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/statistics-reports/annual-reports/2011/pdf/births.pdf>
 31. BC Stats. Sub-Provincial Population Projections- P.E.O.P.L.E. 2018. Retrieved from <https://www.bcstats.gov.bc.ca/apps/PopulationProjections.aspx> . Accessed Dec 12, 2018.
 32. Grzybowski S, Fahey J, Lai B, Zhang S, Aelicks N, Leung B, Stoll K, Attenborough R. The Safety of Canadian Rural Maternity Services: A Multi-Jurisdictional Cohort Analysis. *BMC Health Services Research*. 2015;15:410.
 33. Island Health. Hospitals & Health Centre Locations. Retrieved from <https://www.islandhealth.ca/our-locations/hospitals-health-centre-locations/port-mcneill-hospital>. Accessed Dec 12, 2018.
 34. Longman J, Pilcher J, Morgan G, Rolfe M, Donoghue DA, Kildea S, Kruske S, Grzybowski S, Kornelsen J, Oats J, Barclay L. ARBI Toolkit: A resource for planning maternity services in rural and remote Australia. University Centre for Rural Health North Coast, Lismore. 2015. Accessed <http://ucrh.edu.au/wp-content/uploads/2018/05/AUSTRALIAN-RURAL-BIRTH-INDEX-TOOLKIT-FINAL-24Sep2015.pdf> on January 9 2019.
 35. Kornelsen J., Grzybowski S. (2012). Cultures of risk and their influence on birth in rural British Columbia. *BMC Family Practice*. England: Centre for Rural Health Research, Department of Family Practice, University of British Columbia, Vancouver, Canada.
 36. Backe, B. (n.d.). Maternity Care in Norway. Norwegian University of Science and Technology, National Advisory Committee for Obstetrics. Retrieved from [http://www.helse-nord.no/getfile.php/RHF INTER/Prosjekter/Making it Work/Maternity care in Norway - Bjorn Backe.pdf](http://www.helse-nord.no/getfile.php/RHF%20INTER/Prosjekter/Making%20it%20Work/Maternity%20care%20in%20Norway%20-%20Bjorn%20Backe.pdf)

