

APPLIED POLICY
RESEARCH UNIT



FOCUSING ON
RURAL HEALTH

System Enablers of Distributed Maternity Care for Aboriginal Communities in British Columbia: Findings from a Realist Review

Applied Policy Research Unit (APRU)

Jude Kornelsen, PhD (Director) & Kevin McCartney (Lead Reviewer)

April 24, 2015

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
ASSUMPTIONS UNDERSCORING THIS REVIEW.....	6
CONTEXT OF THE REVIEW	7
BACKGROUND AND STRUCTURE OF THE REVIEW	8
SCOPE OF THE REVIEW	10
METHODS AND APPROACH.....	10
Identifying the Research Question.....	10
CMO – Context, Mechanism and Outcome	11
Search Approach	12
CHALLENGES AND LIMITATIONS.....	18
RESULTS.....	20
Cross-Cutting System Enablers.....	20
Level One: Pre-Natal and Post-Partum Care Only (no local deliveries).....	24
Level Two: Primary Maternity Services with No C-Section	41
Midwifery Led Models of Primary Maternity Care	43
Physician-Led Models of Primary Maternity Care.....	53
Collaborative Physician and Midwifeery Models of Primary Maternity Care	64
CONCLUSION	72
RECOMMENDATIONS.....	73

_Toc419132915

EXECUTIVE SUMMARY

On October 1, 2013, after a phased transfer process, First Nations Health Authority (FNHA) assumed responsibilities from Health Canada for health care of First Nations peoples in British Columbia (BC). This process and its vision was shaped by the Tripartite First Nations Health Plan (2007). A key policy priority, as articulated in the Transformative Change Accord: First Nations Health Plan, is improving access to maternity care for First Nations women. To provide an evidence-base for policy directions in the area of maternity care, FNHA and the Applied Policy Research Unit (APRU) at the University of British Columbia (UBC) agreed to review existing international evidence regarding how to support and enable effective distributed maternity care in small, rural, and/or remote First Nations communities. A Realist Review methodology was used to adequately capture and account for the nuances of health services in BC that will influence the applicability of international research. The guiding question for the review was, “*What systemically enables the decentralization of maternity services while maintaining safe birth outcomes in rural and remote communities?*”

A series of ‘system enablers’ were suggested as foci, including health human resource enablers (provider type, recruitment, retention, competencies and attitudes, professional development and leadership competencies) and structural and governance enablers (infrastructure and equipment, resources, policy, system incentives and legal requirements). Each enabler was applied to communities with local prenatal care only, and those with local primary maternity care. Additionally, enablers that cross-cut both services levels were considered.

Cross-cutting system enablers include the need for cultural competence among maternity care providers. Providers must understand the reverberations of colonialism, recognize the importance of place beyond geography and recognize the importance of collaborative care that respects the contribution of all members of a community.

Enablers of pre- and post-natal-only care were broken down into health human resource enablers and system enablers. The former included:

- The importance of an expanded definition of the care team inclusive of locally-defined members contributing to the psycho-social, emotional and physical health of the birthing woman; and
- The appropriate orientation of care providers towards First Nations health and wellness.

System enablers included:

- The need for health services to be owned and controlled by the community;
- Infrastructure such as maternal waiting homes or birthing centres to facilitate referral from remote communities;
- Acknowledgement of the importance of social resources for women leaving the community for birth (i.e., family), and
- An exploration of the appropriate and/or necessary skill requirements for antenatal care givers, escorts in referral transport, and traditional healers and health workers.

Models of care included outreach, accompanied travel and care coordination models.

Enablers of midwifery-led primary maternity services include:

- The need for an expansive definition of a care team to meet the needs of local communities;

- The need for recruiting strategies that include privileging local communities members to receive education and training;
- Innovative infrastructure models (e.g. Birthing Centres);
- Recognition of the importance of allied staff;
- Appropriate attitudes of care providers;
- Recognition of the importance of multidisciplinary care planning that includes both physical and biological concepts of risk as well as social, cultural and personal concepts.

Enablers of physician-led primary maternity services

The literature on culturally competent primary care focuses on integrating physicians into teams with ethno-medical professionals, midwives, health coaches, and advocates and changing the social position and power historically associated with doctors. **This is acknowledged throughout the report as a critical finding from the literature.** Key findings from this section suggest:

- There is the potential for actualizing the integrated model into physician-led services with appropriate attention to the social context of care;
- There is an under-representation of Aboriginal physicians in Canada despite educational and incentive programs to increase recruitment;
- Overseas trained doctors are often recruited to rural and isolated communities to meet Canadian practice requirements but are not prepared in settings where cultural competence is a priority;
- There is a lack of description of physician-based clinical competencies necessary for safe sustainable services;
- Evidence suggests that physicians would benefit from public health training to better serve First Nations communities where social health needs are prominent;
- Evidence suggests that community supports and health programming enables doctors to perform clinical duties effectively;
- Salary is a potential incentive for collaborative practices between physicians and community practitioners;
- Models of physician-led rural maternity care that may be conducive to Aboriginal settings include Networked models and Alternative Payment Plans.

Four summative recommended actions based on a rigorous assessment of available international literature include the following: (1) Develop and implement a system of population-based monitoring and evaluation for continuous quality improvement in maternity care. (2) Plan for and gather data alongside the implementation of any new rural Aboriginal maternity care health service model. (3) Develop an approach to determine relative need of communities based on population, isolation and vulnerability measures matched with the capacity of such communities to sustain services. (e.g. Rural birth index). (4) Explore the utility of Birth Centres as locations for labor and delivery in rural communities.

Detailed recommendations are included in the report that follows and collected on [page 73](#).

NOTES ON TERMINOLOGY

Bio-Medical (Provider): Literature regarding how to integrate traditional cultures of health with a medicalized, biologically-focused culture of health has included a number of terms for providers. Historically in maternity services, the distinction was made using 'skilled birth attendant' (or SBA) and 'traditional birth attendant' (or TBA). Efforts have been made in this report to respect that traditional birth attendants and traditional medical providers are skilled, and simply approach health and wellness from a different world view than those from a university standardized educational program. In keeping, bio-medical and ethno-medical are used to distinguish providers from different cultures of health. Bio-medical providers, then, are university trained and credentialed providers who bring with them a culture of health that sees people as primarily biological and individuated.

Caseload Midwifery: A model of continuous care where a woman receives all of her care from a single midwife (or that midwife's practice partner) during the prenatal, birthing and postnatal period. Caseload midwifery results in familiarity at delivery, which has statically improved birthing outcomes (Benjamin et al. 2001).

Continuity of Care: May be defined as "how one patient experiences care over time as coherent and linked; this is the result of good information flow, good interpersonal skills, and good coordination of care. Continuity of care occurs when separate and discrete elements of care are connected and when those elements of care that endure over time are maintained and supported." [Defusing the Confusion: Concept and Measures of Continuity of Healthcare" CHSRF March 2002].

Continuity of Carer: In many cases, women will see a variety of health care workers during their pregnancy and labour. For women who travel for birth or who are referred to a higher level of care, their primary care provider may not even be the primary birth attendant. Though the care itself may appear continuous from a system perspective, from a patient perspective, it can be disorienting. Typical definitions of continuity of carer focus on having a 'known carer in labour.' For women facing cultural barriers to a good health system experience, or who are giving birth outside their home community, the continuous presence and availability of an understanding advocate can be deeply important, even as the professional leading birth services changes for practical system reasons. In a care teamlet model, there is the expanded potential to have true continuity of carer from initial prenatal visits through intrapartum care and post-discharge care.

Ethno-medical (Provider): Used to distinguish providers from different cultures of health (see Bio-medical), ethno-medical is a term intended to recognize the health expertise of care providers trained within any socially non-dominant culture of health. No indigenous culture of health is identical to another, and the term 'ethno-medical' is not intended to homogenize across distinct cultures. Rather, the facets of a given culture of health remain community defined and dynamic, and so recommendations regarding ethno-medical providers must come with the understanding of self-definition, both professionally and culturally.

Evacuation for birth: Refers to the practice of referring women out of the community for intrapartum care. Women typically leave the community between 36-38 weeks to await labour in a hotel or hostel near the hospital, but it can happen as early as 32 weeks in some cases. BC residents use the Travel Assistance Program (TAP BC), First Nations people use the Non-Insured Health Benefits (NIHB) program that is managed Federally. Neither program pays for escorted travel for care except in the case of disability, travel by a minor, or other extenuating circumstances.

First Nations vs. Aboriginal vs. Indigenous: Indigenous is a globally used term that encompasses a variety of Aboriginal populations. According to the United Nations, Indigenous people are the descendants of the original inhabitants of a country or geographical region at the time when people of various ethnic origins arrived and became dominant through a variety of means. The term "Aboriginal" is used in Canada and Australia and characterizes the first inhabitants of both countries. In Canada, to be Aboriginal encompasses First Nations, Inuit and Metis. Although having no legal definition, the term "First Nations" represents the initial inhabitants of Canada who are neither Inuit nor Metis (United Nations 2004).

Intrapartum: The period of labour and birth. In many rural communities and for many Aboriginal women, this takes place separately from antenatal and postpartum care and requires relocation.

Midwifery Group Practice: A caseload model of women-centred maternity care where a team of midwives provide care throughout pregnancy, birth and six weeks postpartum regardless of their pregnancy risk.

Mixed Model: Mixed model maternity care refers to the interdisciplinary approach that is characterized by care being provided by two or more health care professionals. The mixed model approach where midwives and doctors share the patient caseload, on-call and clinical responsibilities has been a proposed way to alleviating the human resources shortage in rural communities. To be successful, this model of shared care between midwives and physicians must overcome current legislative and regulatory, ideological and legal barriers (Munro et al. 2012).

Pre-Natal / Antenatal: The period between conception and birth can go by both names depending on jurisdiction and is used interchangeably in this report. Antenatal care typically begins when a woman becomes aware she is pregnant. The WHO recommends a minimum of four pre-natal visits, but standards in wealthy developed nations are much higher – usually twelve pre-natal visits – over the course of a typical pregnancy to measure health indicators, screen for complications and monitor the growth of the baby.

Post-natal / Postpartum: Postpartum is an emotional, social and physiological transition period for mothers, babies and families. The immediate postpartum period begins after the end of the fourth stage of labour to 48 hours after the birth, followed by the late postpartum period which begins at 48 hours post birth and continues for six weeks. Postnatal support includes lactation consultation, postnatal nutrition, infant nutrition, caring for sick children, supporting healthy development and more.

Primary Maternity Care: Pre-natal, intrapartum and postpartum health care provided to parturient women by non-specialized providers. Primary care includes preventative medicine, skills development and support (e.g. lactation), health monitoring and diagnosis as well as delivery (including instrumental delivery), resuscitation and referral or transfer to higher levels of care when necessary. In BC, women may choose a general practitioner physician or midwife as their primary maternity care lead while a host of allied professionals may be involved in each phase of care.

Teamlet: A teamlet is a term used by the new partnership between Doctors of British Columbia and First Nations Health Authority to represent an inter-disciplinary team that aims to increase access, improve health outcomes and patient experiences through culturally competent care. The initial contact for patients will be a health coach working in partnership with a physician or nurse practitioner. In British Columbia, teamlets will be initiated throughout the 2014/15 fiscal year and aim to strengthen the relationship between physicians and First Nations populations (Burns 2014).

ASSUMPTIONS UNDERSCORING THIS REVIEW

The following working assumptions underscore this review and the ensuing recommendations:

1. First Nations health care decision-making is guided by the Triple Aim goals of improvement in population health; lower per capita health system costs and improved patient and provider experience of care. The latter concept honors and privileges the importance of locally designed care that meets the cultural and psychosocial needs of communities;
2. Decisions regarding First Nations health care are made by First Nations communities based on best available evidence and within the cultural priorities of the communities;
3. The First Nations, Provincial and Federal policy initiative of care 'closer to home' be actualized through strategic policy directions that increase the number of communities with access to local maternity services as per population need;
4. Health services for First Nations are most effective when community owned, managed and directed and First Nations governance must be respected as an integral part of culturally and clinically appropriate care. Health care for First Nations should be designed by and with First Nations. Research on First Nations health, health services, and even health service quality improvement must adhere to OCAP (Ownership, Control, Access, and Possession) standards.

CONTEXT OF THE REVIEW

On October 1, 2013, after a phased transfer process, First Nations Health Authority (FNHA) assumed responsibilities from Health Canada for health care of First Nations peoples in B.C. This process was shaped by the Tripartite First Nations Health Plan (2007). This was part of a three-phased process of *transition, transfer* and *transformation* of health services from First Nations and Inuit Health (Health Canada). Domains of responsibility included primary care, public health programs, management, and protection of personal information, environmental and community health programs and funding agreements. Transfer, as a finite set of activities, has since given way to the beginning stages of thinking about and planning for the transformation of existing services to better meet the needs of First Nations peoples. One such need expressed through extensive regional and local community-level consultation was for a strategic approach to ensure the health service needs of Aboriginal mothers, children and families are met through an effective system that honors diversity, individual customs, values and beliefs. Improved access to services – including services during the childbearing year – are a cornerstone of this work. This is emphasized in the Transformative Change Accord: First Nations Health Plan (2006; 2007) which note the specific priority of:

Improving access to the full range of maternity services for First Nations and Aboriginal women, bringing birth “closer to home and into the hands of women.”

The mandate of ‘closer to home’ resonates with the national policy directives of the *Society of Obstetricians and Gynecologists of Canada* through their 2010 policy statement on the return of birth to Aboriginal, rural and remote communities in Canada. Key to this statement is the recognition of the cultural importance of local birth, of the need to respect women’s rights to choose where they give birth, and the need to support the larger infrastructure to facilitate birth in low-resource, low-volume communities. But emphasis on the importance of local primary care – including maternity care – to enhance the population health of rural and remote communities is not new. British Columbia began restructuring health care delivery in the 1990s, partly in response to The Royal Commission on Health Care and Costs, chaired by Justice Peter Seaton. In its final report, *Closer to Home*, Justice Seaton argued that “[m]edically necessary services must be provided in, or as near to, the patient’s place of residence as is consistent with quality and cost-effective health care” (B.C. Royal Commission on Health Care and Costs 1991: A-6). This recommendation was made based on a recognition of the challenges rural residents face in accessing health care including insufficient supply of providers, inappropriate emergency services and the cost incurred by patients forced to travel for treatment (B.C. Royal Commission on Health Care and Costs

1991). Challenges are amplified in Aboriginal communities for experiences of childbirth due to the distinct importance of traditional land and kinship ties in health and well-being (Kornelsen et al. 2010).

In spite of this mandate of closer to home, the ensuing process of regionalization contributed to or coincided with the dissolution of many rural maternity services: 24 services closed between 2002 – 2011 (Grzybowski et al. 2011). This included the closure of many rural surgical services which has been shown to not only compromise the perinatal outcomes of local residents but, significantly, creates even greater problems of access for smaller satellite communities that naturally drain into these small hospitals. A disproportionate number of these contiguous communities are First Nations, often creating an additional layer of complexity in the pathway to access services.

Recent population-based evidence demonstrates maternal and newborn outcomes are better for women and their newborns if they can access services in their home community (Miller et al. 2012). The organizational challenges of providing services in large, relatively sparsely populated regions, however, are significant. In Canada and internationally, the growing recognition of the importance of local maternity care has given rise to emerging research and policy supporting such care. A significant sub-set of the literature focuses on the unique needs and enablers of appropriate local care for Aboriginal communities. In order for health planners and policy-makers at First Nations Health Authority (FNHA) to work in partnership with First Nations communities, Health Authorities, the Ministry of Health, Aboriginal organizations and other partners to develop a shared strategic plan to support birthing in a context of safety, both physiological and cultural, FNHA and the Applied Policy Research Unit (APRU) at the University of British Columbia (UBC) agreed to review existing international evidence regarding how to support and enable effective distributed maternity care in small, rural, and/or remote First Nations communities. **The purpose of this report is to summarize this evidence and present it in a way that will support policy and planning work to maintain and build rural maternity care services in and with Aboriginal communities.**

BACKGROUND AND STRUCTURE OF THE REVIEW

Planning health services in sparsely populated regions often confounded by difficult geography has challenged health planners internationally. This has been most pronounced in the area of maternity care due to the variable timing of birth and its natural designation as a primary care service (Grzybowski et al. 2007), juxtaposed with the struggle to avoid pathologization while recognizing the potential for unpredictable, often sudden, adverse conditions needing more advanced care. Although part of primary

care, maternity services are currently not routinely offered in communities without local access to cesarean section due primarily to the sustainability of providers as opposed to safety concerns (Grzybowski et al. 2009). This is in tension with best available evidence regarding health outcomes of such services and the sometimes strong advocacy of communities rallying to institute or keep local services. From a health planning perspective, allocation of scarce resources through the support of local maternity services begs the question of where to focus said resources: namely, what size of community can support and sustain local maternity care?

Recent focus on the challenge of determining sensible placement of rural maternity services in British Columbia has yielded a parametrized measure of population need based on the number of pregnancies in a community, the distance to the nearest facility providing operative care and the vulnerability of the population. The resulting *Rural Birth Index* (Grzybowski et al. 2009) highlights the need for *tiers of service* to correspond to what the local population need can support from models of prenatal care only to local primary care (no local access to cesarean section) and local cesarean section supported by General Practitioners with Enhanced Surgical Skills (GPESS). Rural population distribution is not amenable to local specialist care due to lack of volume. This approach can accurately determine the appropriate level of service in British Columbia and has been used by the Commonwealth Government in Australia for the same purpose. However, it is based on assumptions of a predominantly medical model within a fee-for-service environment and not directly applicable to models of care that may be midwifery/alternative payment-based. To this end, modifications have been made to adjust for low-volume but high-need communities to allow applicability to First Nations communities in British Columbia. This is discussed in detail in the recommendations section, but the theoretical approach of acknowledging the need for different levels of service, based on population need, will structure the presentation of findings from the realist review.

Specifically, findings are presented in five sections: (1) enablers of services in communities likely to have only pre-natal care; (2) enablers of services in communities supporting primary care (no local cesarean section) in a midwifery led model of care; (3) enablers of services in communities supporting primary care (no local cesarean section) in a physician led model of care; (4) enablers of services in communities supporting primary care (no local cesarean section) in a mixed model of care; and (5) over-arching system competencies and enablers that are cross-cutting and applicable to all communities.

SCOPE OF THE REVIEW

The low quality of evidence available and the lack of evaluation of existing models of care are considerable limitations of secondary research in this area (Herceg 2005; Humbold and Cunningham 2008; Kildea and Van Wagner 2012), leading to inconclusive results on the most effective interventions or service models. The need for higher quality, longitudinal research and funding for meaningful evaluation of the impact of changes in health service provision is known and stated by the authors of the reviews above.

The breadth of issues surrounding rural service delivery is expansive. As well, the purpose of a realist review is to situate outcomes in the contextual circumstances in which they occur and suggest applicability to the situation at hand. For these reasons, the boundary of inclusion is less definite than it might be in a traditional systematic review.

METHODS AND APPROACH

Traditionally, research synthesis has been accomplished through standard methods include meta-analysis and systematic reviews. In these approaches, the unit of analysis is the (usually weighted) evidence from each study, taken in aggregate to determine the best course of action. This approach may be useful in consolidating the value of one clinical approach over another but less helpful when evaluating potential health service or policy solutions, due to the variability of context. That is, a solution in one jurisdiction may have evolved due to unique circumstances of time and place and could not be replicated in other settings or even the same setting at another time. The intent of a realist review is to take the dynamically changing policy landscape into consideration to identify the issues as opposed to the generalizing truths (Pawson et al. 2005). This method of looking at the research landscape to understand policy directions is based on an approach Wong (et al. 2013) call 'CMO': understanding the relationship between Context, Mechanism and Outcome. Aside from being contextually located, evidence included in a realist review reflects the broad base of evidence relating to a topic from research reports but also including, for example, clinical guidelines, practitioner opinions and patient values (McCormack et al. 2013).

Identifying the Research Question

This review was initiated to address an evidence gap in best practice for meeting the maternity care needs for rural Aboriginal populations. The research question, as articulated by the commissioners, was:

What systemically enables the decentralization of maternity services while maintaining safe birth outcomes in rural and remote communities?

Preference was requested for case studies, approaches and best practices that are driven by and/or serve indigenous communities. Further, wide-ranging ‘system enablers’ were identified and included:

- Physical infrastructure and equipment;
- Recruitment and retention approaches;
- Health provider and support staff competencies and attitude expectations;
- Professional development programming;
- Leadership competencies;
- Policy (targeted to maternity care and/or broader but supportive policy);
- System incentives; and
- Legal requirements.

The system enablers were further operationalized, expanded and separated into two organizational categories as follows:

Health Human Resource Enablers:	Structural and Governance Enablers:
<ul style="list-style-type: none"> ● Provider type / teamlet construction ● Recruitment ● Retention ● Health Provider and Support Staff Competencies and Attitudes ● Professional Development ● Leadership Competencies 	<ul style="list-style-type: none"> ● Infrastructure and Equipment ● Resources (inc. Social Assets) ● Policy ● System Incentives ● Legal Requirements

The reviewers and commissioners met several times to discuss the question, the key thematic areas useful to cover and the policy context of the review. Through these meetings, the specific intent of the review – to contribute to key-stakeholder planning discussions around the structure of maternity services for rural Aboriginal communities – was identified. The question was initially put to a feasibility analysis to determine if there was enough published and grey literature to address the question. During this phase we found 106 relevant articles and decided to proceed. Details of search terms are below.

CMO – Context, Mechanism and Outcome

In keeping with a Realist Methodology, a hypothesis regarding the relationship between context (the system-level structure of maternity care), mechanism (discrete models of care) and outcomes (those parts of the model that may enable rural Aboriginal models of care) was developed and then iteratively revised through the course of data analysis. This hypothesis is: Appropriate models of maternity care for Aboriginal women, families and their communities can be met by (1) determining level of need in the community (number of births in the population catchment, vulnerability of the population and isolation); (2) applying an

understanding of system enablers represented in the international research and grey literature and (3) creatively and collaboratively developing local models integrating (1) and (2) along with local and regional circumstances and preferences. Further local context is necessary to understand how to appropriately interpret the research literature.

The Role of Teamlets: In the case of First Nations communities in BC, the variety of health cultures, expectations, and traditions requires considerable flexibility in service planning. The evolving functional notion of care teams, or 'teamlets,' affords this opportunity for flexibility. In organizing a care teamlet for a given service community, cohort or catchment, the opportunity exists to integrate standard care providers with traditional practitioners or other expected supports to create desired models of care. Within each tier of service discussed below, various models of teamlets are considered according to sustainability and appropriateness.

Community Involvement: Considerable research indicates the preference of all community stakeholders to be involved in consultation for health system decision-making, with overwhelming preference for shared decision-making models (Abelson et al. 1995). In a study of the type of authority sought by various healthcare and community stakeholders, Abelson (et al. 1995) found that 'random citizens' (unaffiliated stakeholders) were the group least interested in having responsibility for healthcare decision making. Nevertheless, members of all study groups (random citizens, self-selected town hall attendees, appointees to district health councils, elected officials, and experts) were overwhelmingly in favor of combined decision making models and valued a consultative role at the least (Abelson et al. 1995).

Search Approach

A significant challenge existed in defining the parameters of the literature search. System-level enablers of decentralized care for underserved populations is not a discreet academic or even grey literature corpus. Instead, with consideration for a variety of plausible factors in establishing and maintaining rural maternity services, we assembled literature that addressed discrete models of care. From literature regarding health human resource concerns, capital and infrastructural investment, and health system governance, data regarding best practices for rural and remote maternity services for indigenous women and communities was extracted and analyzed.

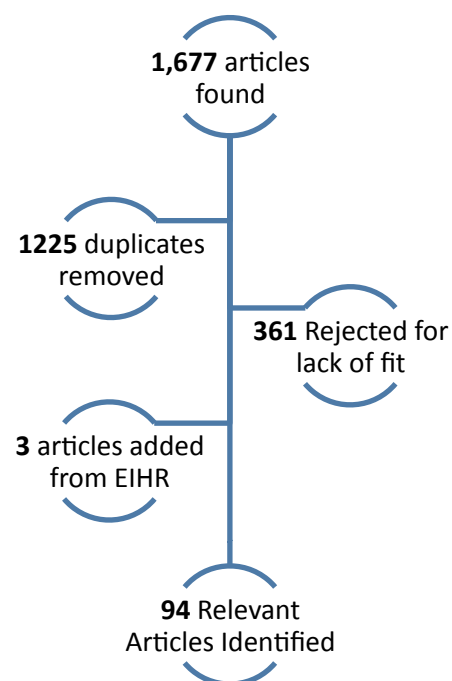
Searching for literature took place in three distinct phases. Phase I included testing key word combinations to construct search parameters of various sensitivities. The most sensitive model was eventually used (below) on June 20th, 2014. Results were restricted to English language material published

since 1990. Phase II encompasses a series of purposive strategies to collect further academic and grey literature resources. Phase III involves high-specificity searches on each of the identified system enablers of distributed maternity care for rural and remote indigenous women in BC. References and abstracts were managed using Mendeley.

Phase I Search Structure:

Component Concept	Keywords	Reasoning
Maternity Care / Birthing	birth* maternity obstetric* "returning birth" "birthing on country" (Other terms trialed: delivery)	Though this review focuses on maternity care, strictly biomedical and/or health service definitions of care may exclude research on traditional and holistic models of care. "Birth" was used as both an index/MeSH term and a keyword search term (in the form of birth*) to expand the search for care models as broadly as possible.
Rurality	Rural Remote Rural health Rural hospital (Other terms trialed: community; access; "remote-dwelling")	A rural setting was presupposed in the research question, and both 'Rural health' and 'Rural hospitals' are known entry points to literature on rural health services. Both broader and more narrow definitions were considered but deemed unnecessary at a practical level.
Serving the interests and needs of Indigenous people	First Nations Aboriginal Aborigines Indigenous Metis Inuit Native American American Indian Maori	This group of terms used by academics and policy makers across international contexts triangulates the search toward health interventions and models of care by and for Indigenous people(s).

Academic databases searched included PubMed, MEDLINE Ovid, MEDLINE Ebsco, Native Health Database, EMBASE, CINAHL, EBM Reviews, PAIS International, and the NHS Economic Evaluations Database. A total of 1,677 articles were identified using the high-sensitivity model, with a high rate of duplication (n=1225 duplicates removed) indicating a very narrow field of literature. Researchers excluded a further 361 during abstract and full-article review, mostly related to health surveillance of indigenous populations. This review begins with an awareness of the health outcomes disparity between indigenous and non-indigenous people persistent in all jurisdictions. However, the reviewers and commissioners intentionally chose a strengths-based approach and agreed that an exploration of the details of said health disparity was outside the scope of this review.



In addition to those academic databases, the policy-focused database *Evidence Informed Healthcare Renewal* (EIHR) from McMaster University was searched using the same keywords. A total of 27 articles were identified, of which 5 were deemed relevant on title review and 3 were included after abstract and full article review.

In Phase II of data collection, the research team used purposive methods to add relevant material. Inclusive of those methods, chaining was performed starting with the bibliographies of those articles found relevant in Phase I (n=110 additional sources, narrowed to 28); key policy makers in Australia and BC known to the researchers were contacted for grey literature (n=8); researchers in Australia responsible for a 2012 literature review on models of maternity care for rural aboriginal women were contacted (n=7 unique additions). The commissioners supplied the research team with an environmental scan of known aboriginal maternity/birthing service programs in BC and Canada with some select international programs. A cold call was placed to a known rural aboriginally focused birth centre, which led to contact with two other researchers in the area of First Nations and maternal health (n=0 unique additions). As well, the Aboriginal Maternity Care Resource Book (2005) created by the Northern Ontario School of Medicine, University of Ottawa and researchers at the Sioux Lookout Meno Ya Win Health Centre was examined, adding six unique articles to this review. Finally, using Google Scholar, articles that cited the 1990 WHO report,

“Health System Decentralization: Concepts, Issues, and Country Experience” were examined (n=219), resulting in 10 potentially relevant additions narrowed to one additional source after full article review. Phase II thus resulted in 50 additional resources.

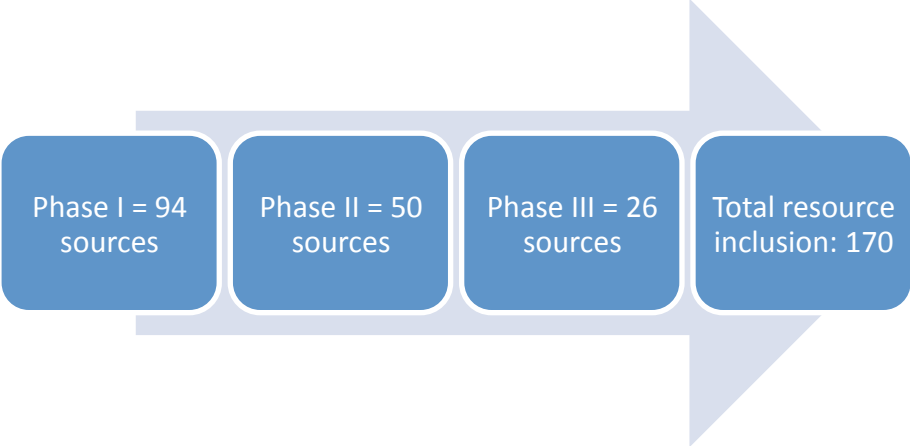
The final phase of data collection (Phase III) came from concerns that the original search had not yielded the quality of information hoped for by the research team. A new search strategy focused on each independent enabler was devised and executed, resulting in a total of 26 additional resources. These searches were completed between August 1st and 8th, 2014 using MEDLINE Ovid and are detailed below.

PHASE III Searches:

Component Concept	Operationalized Keywords	Results
Infrastructure	“Birthing Centers” (Ovid Subject heading) “hospitals, rural” (Ovid subject heading) “maternal health services” (Ovid subject heading) “perinatal care” (Ovid subject heading) “rural health services” (Ovid subject heading)	These terms were used in a variety of combinations and alongside the inclusive list of indigenous keywords and/or high-sensitivity rural terms shown above. The relevant material identified in each attempted search overlapped entirely with resources found in Phase I. In conclusion, researchers accepted that the literature is not currently organized to reflect infrastructural models of care (i.e. birthing centre vs hospital maternity unit) and so this avenue is not fruitful, especially when limited to FN and/or rural and remote. This enabler remains embedded within the literature as a contextual and background factor.
Recruitment and Retention	“health manpower” (Ovid subject heading) “health personnel” (Ovid subject heading)	Neither recruitment nor retention exist as MeSH or Ovid Subject terms. Instead, broader concepts of “health manpower” and “health personnel” were used. Understandably, a high sensitivity search using rural and indigeneity terms with health personnel terms revealed 176 articles since 1990 in English. Many of these articles were focused on mental health, adult health, and health disadvantage. We attempted to narrow the search by adding inclusive birth service terms (too specific, n=15), and “maternal health services” heading (n=49, no unique additions). However, manual sorting of the 176 articles found 45 to be of potential interest to the research team, both

		in recruitment/retention approaches and in other overlapping enablers such as health profession competencies and professional development.
Health personnel attitudes and expectations	"Attitude of health personnel" (Ovid subject heading)	Used 'Attitude of health personnel' subject heading with focus. Combined with inclusive indigeneity, rural, and/or birth terms in various combinations to limited effect. Low resource environments dominated the few results. Relevant references were already captured in previous search attempts.
Health personnel competencies and professional development	"in-service training" (Ovid subject heading) "staff development" (Ovid subject heading)	Used alongside narrowing component terms (rural, indigeneity, birthing services) with limited results. Using birthing terms, rurality, and staff development (n=23), three unique additions were made.
Leadership	"leadership" (Ovid subject heading) "health care facilities, manpower, and services" (Ovid subject heading) "health services administration" (Ovid subject heading)	Leadership is housed under psychological characteristics in the Ovid database and so was triangulated using exploded health terms ("health care facilities, manpower, and services" OR "health services administration"). Alongside indigeneity terms, this resulted in 62 results of which 7 were considered for further review. Health service administration alongside rural, birth services, and indigeneity terms resulted in 140 records, all of which were captured in the original search.
Legal requirements	"Jurisprudence" (Ovid subject heading)	Using just jurisprudence and indigeneity terms, 11 records were returned and discarded. Ultimately, MEDLINE Ovid is not a legal database (despite over 30,000 records under jurisprudence) and the legalities of interest to this review (clinical standards and service obligations for indigenous birth in rural communities) exist primarily in grey literature.
Policy	"Policy Making" (Ovid subject heading) "Public Policy" (Ovid subject heading) "Health Policy" (Ovid subject heading) "Policy" (Ovid subject heading)	This is a very large body of literature in the Ovid database (136,811 records), but when combined with inclusive indigeneity terms and birthing services terms, just 39 records result, of which 4 were determined possibly important to this review.
System Incentives	Incentiv* (.mp)	Incentives are difficult to operationalize, and

		<p>there is not a subject or MeSH term. Instead, the keyword term was used, showing a large body of literature related to incentivization in a variety of contexts including provider incentives for relocation and population incentives for fertility and preventative health. Rural and indigeneity terms were found most effective, but with just 32 records and one unique addition.</p>
--	--	---



Phase III did provide new resources (n=26), almost exclusively on recruitment, retention, competencies, and attitudes of health providers. It also served to validate Phase I of the data collection process in two important ways. Firstly, this field of study is extremely fragmented, with entire bodies of research devoted to each system enabler as a mechanism of effective service and positive outcomes. Of those identified bodies of research, a small proportion is dedicated to any or all of rural health, maternity services, and/or health services for indigenous people(s). This validates the high rate of duplication between databases and the low rate of relevancy of the higher sensitivity search of Phase I. Secondly, the lack of suitability found between academic literature about health services and the intention to use that literature for health service planning is noted to be endemic of the fields themselves and not a reflection of a poorly targeted search in Phase I. Suitability is addressed in more detail in the next section on Limitations.

CHALLENGES AND LIMITATIONS

There was a surprising dearth of rich description of maternal health interventions from any jurisdiction, a fact discussed by Hartz, Foureur and Tracy (2012) in their review of mechanism of effective midwifery care and by Hodnett (et al. 2012) in their Cochrane Review of birth setting effects. Brown and Grimes (1995) argued in their study comparing physician and nurse-midwifery models of maternity care that inconclusive results follow from a lack of description of service models and the incidental obfuscation of the causal mechanism of good outcomes. Even indicators of good health among rural Aboriginal people are not established in the literature, with 42 different sets of indicators for Aboriginal and rural health – including a total of over 1,000 distinct indicators – found by Steenkamp (et al. 2010). Finally, Kildea and Van Wagner (2012) also noted a lack of high-quality outcomes-based research, with the highest quality of research available being cross-sectional studies with historical comparison groups. As well, Kildea and Van Wagner write, “[t]he wide variation in design, outcome data and quality make it difficult to combine results to draw conclusions” (2012, p5).

One of the most significant challenges faced by the review team was the way academically published data is organized and presented. The accepted format of program evaluation and case study reporting is not in line with program and policy development. Articles are typically formatted with a description of the health system or population health context, a review of the participants and logistic requirements of the study implementation, and the results of the study supported by critical discussion and concluding remarks. Important comparative features such as the infrastructure and human resources required for the intervention, governance of the program, and legal, political or financial factors enabling implementation are very often missing entirely or only noted perfunctorily. This was not exclusively the case, however, and we extracted data with careful consideration of the details sought to maximize relevance.

For making policies and devising functional programs to support decentralized maternity care for Indigenous women, families and communities in British Columbia, knowing that an intervention was successful is only useful in the context of knowing how the intervention functions. It is imperative that rich description of the intervention or program be included in academic evaluations of health services so as to more closely align program evaluation with program development and knowledge translation. In the language of a realist review, each of the ‘Context,’ ‘Mechanism’ and ‘Outcome’ are important for understanding health services, but are typically partially or wholly obscured in the way data is reported currently.

The research team made efforts to move the data past descriptions of interventions, programs, policies, or populations and toward an efficacious 'how-to' structure for developing maternity services. On the one hand, this meant applied reading. Researchers kept in mind the Context-Mechanism-Outcome relationship, continuously asking the questions 'what are the mechanisms that affected those outcomes?' and 'in what situational context did those outcomes occur?' In this way, the research team extracted detailed information regarding existing health service programming and applied it to the BC context actively.

Still, this approach comes with some assumptions. Most prominently, the commissioning body (FNHA) and the research team agreed to assume the safety of all models of professionalized, skilled birth attendant services in developed-world health systems unless found otherwise. That is, models of group midwifery, caseload midwifery, GP-led models, and mixed models were not compared systematically for their safety and outcomes, though outcomes found in case studies and other sources were recorded as an integral part of health service evaluation and are noted in the appropriate places. The review, then, is not intending to answer which model of care is the most safe (i.e. clinically effective) under given conditions, but instead, which models are most likely to be sustainable, acceptable to the community, and appropriate to community need. Further, this review seeks to provide support to decision makers on how to establish and support those sustainable services through policy innovation and strategic health system investment.

RESULTS

As previously noted, the results of this analysis are organized according to three levels of service likely to be sustainable in various rural and remote First Nations communities and one cross-cutting theme of enablers applicable to all levels of services. These levels of service respond to the need for care as close to home as possible within the realities of sustainability by positing models of care to fit with the individual needs of BC's 206 First Nations reserve communities. Individual system enablers have been considered within the service delivery categories (see below). Evidence is of variable quality, depth, and frequency for the various enablers at the different levels of care. Further, while some of the literature includes tested approaches to health service delivery, there is considerable research that is conceptual in nature, providing insight into untested or proposed solutions. We present this data as well for consideration by decision makers and stakeholders.

Figure 1.0: Conceptual Framework for Organizing and Presenting Data

Model of Care by Service Level	Health Care Human Resource Considerations							Structural and Governance Considerations				
	Members of Care Team(let)	Recruitment	Retention	Competencies/ Attitudes	Professional Development	Leadership Competencies	Accountability	Infrastructure and Equipment	Resources (incl. Social Assets)	Policy	Systemic Incentive	Legal Requirements
Level One Pre-Natal Only / No Local Birth Services												
Level Two Primary Maternity Care: Midwifery Physician Only Shared Care												

Cross-Cutting System Enablers

CULTURAL COMPETENCY AND MATERNITY CARE

The notion of 'cultural competence' has gained currency in contemporary pedagogical literature in health care in response to both the recognized shortfall in the ability of some care providers to meet the

needs of diverse cultural groups and the disparate quality of care such groups receive (SOGC, 2013).

FNHA has defined cultural competence as referring to

a specific set of values, attitudes, knowledge and skills that sensitize and improve sharing of information and assistance between people of different cultural orientations. (FNHA, 2013)

The essence of cultural competence goes beyond recognition of the need for respect for difference and extends to the social responsibility of providers to appropriately prepare for the clinical encounter. FNHA notes that in the context of Aboriginal health, this requires knowledge and understanding of the history of colonization, Indian residential schools, Indian Hospitals, the Indian Act, and the ongoing legacy of colonial interference and racism (FNHA, 2013). In the document, 'BC First Nations and Aboriginal Maternal and Child and Family Tripartite strategic Approach' the authors emphasize the importance of the iterative process of gaining knowledge, critical reflection and application through clinical relationships leading to a further deepening of one's understanding. These skills occur at both an individual and organizational level. Closely linked is the notion of cultural safety, or "providing safe, effective and respectful care to a patient of a different culture while acknowledging that every individual is a cultural bearer of their own cultural identity and being cognizant of the impact that their culture has on their own clinical practice" (SOGC, 2013).

There is an emerging Canada-wide and international body of literature on providing culturally competent and safe care. Perhaps most significantly to this context, SOGC recently published the output of a national working group convened to develop consensus guidelines titled, *Health Professionals Working With First Nations, Inuit and Metis Consensus Guidelines (2013)*. This document, along with a parallel Australian publication released in 2011 by The Standing Council on Health in Australia, *The Characteristics of Culturally Competent Maternity Care For Aboriginal and Torres Strait Islander Women* and various documents produced by the First Nations Health Authority (see reference list) form the primary understanding of cultural competency in health services used in this review.

UNDERSTANDING COLONIZATION AS A KEY CONCEPT FOR ACHIEVING CULTURALLY COMPETENT CARE

The history and effects of colonization of Indigenous populations must be understood by care providers in order to allow the provision of care that meets the psycho-emotional and physical realities of Aboriginal communities (FNHA, 2014). Colonization is understood as racial discrimination and state-sanctioned (legal) confiscation of land from original inhabitants (SOGC, 2013). Colonization benefits the colonizer at the expense of the colonized and leads to extreme inequities. The barriers that Indigenous populations in

Canada face today are rooted in the history of European colonization: the resulting hierarchical structures precipitated segregation, racism, culture identity loss and gender inequity of the Indigenous populations.

The effects of these structures are still relevant today and inform many of the health and social challenges faced by Aboriginal communities (Adelson, 2005). One consequence of imposed hierarchies was the disruption of traditional Indigenous culture in which both men and women had a spiritual, political and social role within their communities (SOCG, 2013). Colonization disrupted the equality of Indigenous populations and demoted the importance of women in the community by revoking their abilities to own land and voice their opinions while removing their power as promoters of health. *This resulted in profound implications for the sexual health and maternity care of Indigenous women.* Evacuation from traditional land and concomitant community and kinship ties both exacerbates and resonates the intergenerational trauma faced by Aboriginal communities.

CULTURAL COMPETENCE AND PLACE

Providing health care with respect for the influence of culture and history is a process that requires consideration of place, both geographic and physical. This requires honouring both the importance of traditional territory – and the implications of potentially receiving care outside of it – and creating an environment that reflects the expression of the culture of the community. This may include displaying traditional artwork, providing care in the traditional language or a using translator and creating a space for the Elders to contribute to health counselling (Standing Council on Health, 2011). The understanding of the importance of place (Kornelsen 2012) and culture should be conveyed to referral sites should transfer be necessary (SOCG, 2013). Evidence suggests that having a culturally-supportive site may contribute to improved outcomes (Standing Council on Health, 2011).

THE ROLE OF COLLABORATIVE CARE

The remoteness of many Indigenous communities in British Columbia gives rise to the need for interprofessional care teams working both within a woman's local community and at the referral site where she may deliver. The coordination of care requires respect for both the enhanced capacity for procedural care at the referral site and the role of the local practitioner and their knowledge of the lived context of the parturient woman. Effective communication between maternity care providers can reduce redundancy as well as over- or under-servicing of care that many Indigenous women face when transferred between numerous health facilities (Standing Council on Health, 2011).

PROVIDER APPROACH

The disposition of the health provider is foundational of providing culturally competent maternity care. Latent or unconscious disrespect or discrimination may act as more of a deterrent to accessing health care than geographical or financial barriers (Standing Council on Health, 2011). Meaningful cultural education from a spiritual, historical, practical and geographical perspective alongside on-going self-reflection is key to creating an ethos of healing. The Hunter New England Health Aboriginal and Torres Strait Islander Strategic Leadership Committee argues the need for this same cultural education training to take place among health leaders and managers to improve the culture of whole organizations (2012). In maternity care, this implies respect for traditional birthing values and practices and active advocacy by providers for policies and protocol that respect the values of Indigenous patients. Understanding the various political and cultural differences between various Indigenous groups and viewing each community and patient individually provides more effective and accurate care.

For maternity health care to be culturally competent there must be compliance on individual, community and organizational levels that can be monitored and evaluated. Individually, health providers are responsible to treat patients in a culturally safe manner that is resonant with their own cultural identity and respects their patient's cultural identity. Relationships built on respect and humility should be facilitated. Communities should be involved in decisions surrounding maternal health care and communication and collaboration between the community and health providers should be facilitated by both groups. Culturally competent policies should be instigated, monitored and evaluated by health authorities in all jurisdictions of maternity care to ensure cultural competency is evolving.

Common to the literature on cultural competence is the caution that despite a common historical path, care providers must resist the potential to homogenize individuals from a community or communities or assume that common challenges are necessarily faced by all community members. That is, experiences differ within and across groups (Nova Scotia Department of Health 2005).

COLLABORATIVE CARE

A critical component of effective maternity care outlined by Australian researchers Barclay and Kildea (2006) in their review of literature on models of rural and remote maternity care is what they call the "5 C's." They include: Communication; Choice; Coordination of Care; Collaboration; and Continuity of Care. The FNHA's Teamlets Discussion Paper (2014) highlights the importance of collaborative, interdisciplinary care that incorporates appropriate birth culture practices and practitioners with existing bio-medical health

services to ensure high-quality, culturally recognizable and comfortable care. Examples of maternity oriented teamlets in the Discussion Paper consist of two Midwives or one Midwife and one Physician and any of the following: Elder; Doula; Community Health Worker; Registered Nurse; Traditional Healers and Traditional Counselors. International literature supports this collaborative model and offers qualities to ensure effectiveness and sustainability when applied to any level of service.

MAIN POINTS – CROSS-CUTTING SYSTEM ENABLERS INCLUDE:

- The need for cultural competence in maternity care providers including an understanding of colonization as a key concept for achieving culturally competent care;
- The recognition of the importance of place;
- The recognition of the importance of collaborative care, and
- Importance of provider orientation to the community.

Level One: Pre-Natal and Post-Partum Care Only (no local deliveries)

INTRODUCTION AND OVERVIEW

With this level of service, local birthing support is not available. In British Columbia this includes communities with an RBI score of <7 (Grzybowski et al. 2009). Findings from analysis of this level of service include the need for local, high-quality pre-natal care (Bar-Zeev 2013; Benoit, Carroll and Millar 2002; Homer et al. 2001; Rumbold and Cunningham 2008), a re-imagining of how women travel for birth (Chamberlain and Barclay 2000; Hancock 2007; Ireland et al. 2011), and effective coordination of discharge and follow-up care (Barclay et al. 2014; Bar-Zeev et al. 2012) to improve health outcomes and close the well-documented health disparity suffered by Aboriginal and especially rural Aboriginal people. This rests on the involvement of adequate (but sometimes non-typical) health human resources in the community, including but not limited to: community and/or traveling doulas (O'Driscoll et al. 2011); post-natal workers (Couchie and Sanderson 2007); Aboriginal Health Workers (AHW) (Australia); Elders (including visiting Elders) (O'Driscoll et al. 2011); inter-generational family support (Ruiz et al. 2012); care coordinators (Bar-Zeev et al. 2012); and outreach medical professionals (Josif et al. 2014).

In considering the governance and structural enablers of effective care for this level of service, significant opportunity exists to improve services. The physical layout of hospital birthing rooms/wards is not resonant with the values of many First Nations communities (Birch et al. 2009) and the expectation to evacuate for birth assumes a model of travel (alone, to private accommodations) that is known to be stressful and alienating (Chamberlain and Barclay 2000; Ireland et al. 2011; Kornelsen et al. 2011; Kornelsen and Gryzbowski 2005a; Kornelsen and Gryzbowski 2005b). Suggestions from the international literature on policy directions to better support parturient women from these communities includes (1)

supporting partners and/or family in travel; (2) better nutrition while away, and (3) more appropriate accommodation at the referral community (O'Driscoll et al. 2011). Additionally, health care givers may consider referrals to primary care communities (as opposed to the standard referral to higher levels of service) if the care is deemed more suitable by the expecting mother (Couchie and Sanderson 2007; Epoo and Van Wagner 2005; O'Driscoll et al. 2011; Van Wagner et al. 2007). Further, investment in different infrastructure might include apartments near the referral hospital available and maintained in part by the local community (Ruiz et al. 2012), and/or referral hospital rooms/suites that allow for family, advocates, and traditional birth attendants to be present, eat, cleanse, and celebrate the birth as befits the cultural traditions of the woman giving birth (Gabrysch et al. 2009).

CONSEQUENCES OF CURRENT MODELS OF PRENATAL CARE

Based on their study of Aboriginal birthing services in Australia, which shares many similarities with the Canadian context, Bar-Zeev (et al. 2013) noted that “few women from [prenatal care] communities had social supports or a known social support person during labour and birth” (p178) and argue this is related to the relatively high rate of antenatal hospital admission, mostly for preterm labour. The distance to care, the nature of the referral unit, and the mode of referral and transport are variable and, although considered in models of care, are external to system planning. Support for evacuation, how, where and by whom women are received in the referral community, and models of pre-natal care within communities, however, can all be included in service planning. We discuss the system enablers for prenatal care only communities below.

Health Human Resource Enablers

TEAMLET MEMBERS

International literature includes a wide variety of health human resource solutions to meet the needs of rural and remote First Nations maternity care services. Rural health centres in Australia can include child health nurses, midwives, aboriginal health workers, direct medical officers, remote area nurses, and administrators (Bar-Zeev et al. 2012), as well as a combination of new Maternal and Infant Health (MIH) workers, such as Aboriginal Infant Care Worker, Strong Woman Worker, and Aboriginal MIH workers (Kildea and Van Wagner 2012). At the same time, reduced pre-natal/antepartum visits, poor coordination of discharge, and poor continuity of care between communities without birth services and their referral hospital have led to calls for significant changes, including the creation of a care coordinator position (Bar-Zeev et al. 2012), traveling doulas to accompany and advocate for women evacuating for birth (O'Driscoll et al. 2011), and visiting elders for psycho-social support and guidance (O'Driscoll et al. 2011).

Indigenous health workers have a highly variable role in a care teamlet and their duties are often defined by context. These might include: clinical functions; liaison and cultural brokerage; health promotion; environmental health; community care; administration; management and controls; policy development; and program planning (Mills et al. 2010).

As well, there is research on the role of traditional birth attendants within a medicalized health system. Jurisdictional considerations were more lenient in collecting this literature, as most examples of collaboration between ethno-medical practitioners and bio-medical practitioners have come from non-Western nations. These exist within the context of World Health Organization pressure to reduce maternal mortality in developing nations through training ethno-medical practitioners in bio-medical skills during the 1990's and 2000's.

In Guatemala, for example, training programs for indigenous, lay midwives began as early as 1955 and more recently, a license for lay midwifery is granted to those providers who consistently attend Continued Medical Education activities (Chary et al. 2013). Mandatory sessions from the Ministry of Health in exclusively Spanish are less well regarded among the primarily Kaqchikel-speaking midwives, but licensure and concomitant CME expectations have resulted in a burgeoning professional identity that allows lay midwives to self-regulate attendance at CME events and support each other through language or understanding barriers.

Evidence on the effectiveness of training ethno-medical midwives in bio-medical intrapartum care is mixed, however, with Chary's (et al. 2013) study of these practitioners finding a high degree of knowledge regarding pharmaceutical treatments and reliance on bio-medical knowledge, but decision modeling by Anderson (et al. 2004) finding that practice patterns were unchanged after training among Mayan *parteras* in Mexico. Integration of the social and cultural knowledge of an indigenous community with clinical best practice knowledge was identified as a success factor in effective maternity services by Kildea and Van Wagner (2012).

Most importantly for the BC context, contact with traditional providers may be a determinant of contact with a Western-trained medical provider, indicating that the traditional midwife acts as both a type of care coordinator and advocate for the women (Chary et al. 2013). This is disputed in a review of 16 studies on the effect of training on referral patterns by Sibley, Sipe and Koblinsky (2004), concluding that the decision to refer women to medical providers was much more complex than medicalized training could address. In fact, another systematic review by Kruske and Barclay (2004) found that most training for traditional birth

attendants between 1970 and 2003 was medicalized, didactic, and power-laden, reinforcing a strongly held ideological divide between 'skilled' medical attendants and 'unskilled' traditional attendants. The consequence of attempting to train ethno-medical providers to see birth through the eyes of a risk-based medical system was a broad failure of the programs to achieve their stated goal of greater referral and reduced mortality.

Noting that examples exist of nurse-midwives and traditional birth attendants working together, Kruske and Barclay (2004) write that a "successful model is based on collaboration and true partnership in which there is mutual and genuine respect for each other's skills and practices" (p309-310). This is echoed in the Bolivian model, where collaborative training between ethno-medical and bio-medical professionals is intended to build trust and respect between the groups to improve collaboration and shared decision making (Bastien 1994).

In BC communities too small to support a bio-medical birth attendant, collaborative practice might exist differently than in a joint practice. Chary (et al. 2013) describe a potential model of care in which indigenous midwives are paid to travel with women when they birth out of the community and act to reduce barriers to care. Such a position might be more recognizable in the BC context under the title of doula or advocate. Formalization of the role and remuneration for the work would serve to legitimize the importance of the position and add to recruitment and retention efforts. Involvement of traditional midwives as birth attendants is considered in the section on primary care.

Clearly, the Teamlet will include participation of the primary care provider in the referral community, optimally through an integrated and networked model of care. The value of this continuity was identified by Kildea and Van Wagner (2012) when they noted that for those women who are traveling to care in the referral community, the eventual birthing professional (midwife or physician) should be included as early as possible. The FROGS (Far Northern Region Obstetrics and Gynaecology Service) program of visiting OB specialist support (Cameron and Cameron 2001), as well as outreach group midwifery (Josif et al. 2014) offer examples of how to include continuity of care in models of care for rural and remote women in communities without local birthing services and are considered below.

HEALTH PROVIDER AND SUPPORT STAFF COMPETENCIES AND ATTITUDES

Bar-Zeev (et al. 2013) found that while remote Aboriginal women were often attending a standard number of pre-natal visits, health outcomes in pregnancy (including preterm birth) remained very high relative to population numbers. In a follow-up study into the factors of high-quality antenatal care, Bar-Zeev

(et al. 2014) revealed that the attitudes of providers often dictated the quality of antenatal care received, including avoiding offering routine care because practitioners perceived a lack of interest or care on the part of patients. Paternalistic attitudes and accidental racism led to inadequate antenatal care (Bar-Zeev et al. 2014, p293).

Kruske, Kildea and Barclay (2006) argue that nurses and midwives receive inadequate cultural safety and awareness training in Australia. The lack of understanding is said to contribute to 'hostile' hospital clinics where historical and social processes are individualized, and the holistic well-being of the women (spiritual, emotional, social, and cultural included) is not considered. In addition, the authors note that there is limited leadership in this area, writing, "[i]t is difficult to find guidelines or policies covering cultural safety in maternity care for Aboriginal and Torres Strait Islander women and there are limited numbers of Aboriginal and Torres Strait Islander Australians working in hospitals" (Kruske, Kildea, and Barclay 2006, p75). The proposed solution is that maternity care should be run through Aboriginal or Torres Strait Islander controlled organizations to replace hospital clinics.

A further solution comes from Bolivia, where collaborative training between ethno-medical and bio-medical professionals is intended to create mutual understanding (Bastien 1994). Practice overlaps were intentionally developed, and collaborative workshops were designed to share knowledge about the biological, cultural and social aspects of health and wellness. Bastien (1994) has a series of recommendations for collaboration between providers of different backgrounds:

1. **Recognition:** Ethno-medical practitioners should be included in healthcare planning as well as service provision. An example comes from Nunavik, where local Inuit midwives are involved in both care and the inter-professional Perinatal Committee that jointly develops care plans (Van Wagner et al. 2007)
2. **Respect:** Equality is promoted through professional autonomy
3. **Reward:** Both bio-medical and ethno-medical providers should be incentivized and rewarded for participating in collaboration with remuneration and professional recognition (including certificates, diplomas, etc. where appropriate)
4. **Shared Health Records:** Much of the ethno-medical literature focuses on the provider being present for care, including as an advocate during care by bio-medical providers. In this case, the two providers are collaborating as a healthcare team.

RECRUITMENT AND RETENTION

Remote health centres often have high turnover of practitioners leading to fragmented care (Barclay et al. 2014). The vulnerability of rural services due to staff shortage is widely known (Iglesias, Iglesias and Arnold 2010; *Optimal Perinatal Surgical Services for Rural Women: A Realist Review* 2014). However, the recruitment and retention of professionals who play a supportive role in primary maternity care, ensure cultural safety, or otherwise provide non-clinical services is not a broadly discussed topic in the literature. Most of the positions discussed in the expanded Teamlet model of care are new (Kildea and Van Wagner 2012) and exist in response to changing perspectives on birth in developed nations (Devane, Murphy-Lawless, and Begley 2007; SOGC 2010). Due to this recency, there is an absence of critical, evaluative and descriptive literature, particularly in a Canadian context.

In Australia, Aboriginal Health Workers are a key part of primary care for Aboriginal and especially rural Aboriginal people. Qualification for the position involves completion of an Indigenous Primary Health Care certificate (currently minimum requirement is a Certificate III in Aboriginal Health Work - Clinical or Certificate IV in Aboriginal and/or Torres Strait Islander Primary Health Care - Practice), a thriving program with a high completion rate (Felton-Busch et al. 2009). With recognition of the shortage of rural-prepared, culturally trained primary care providers, supports were created for AHWs to pursue other medical careers. However, efforts to recruit from this pool of health workers for advanced health education have faced problems and the rate of transfer into higher education is low (Felton-Busch et al. 2009).

Successful recruitment and retention of providers in Aboriginal communities typically focuses on engaging and training the community (Couchie and Sanderson 2007; Epoo and Van Wagner 2012; Minore and Boone 2002). In Alaska, Community Health Aides/Practitioners (CHAPs), indigenous community members with basic medical training, provide emergency care and transfer support in 178 remote communities (Landon et al. 2004). CHAPs must have a high school diploma and receive 16 weeks of specialized medical training during a 2-3 year period. The training is focused on recognizing and treating minor illness and injury, administering medication under the direction of a physician, handling emergency medical situations, and recognizing when to make appropriate referral and transfers to a physician in a hub community. These non-physician, primary care providers are existing community members with lasting ties to the area and the people, indigenous themselves and often fluent in the local language(s) (Landon et al. 2004). Still, retention remains a challenge with attrition rates as high as 20%.

Landon (et al. 2004) found that five discrete support factors were required for effective retention. These were:

1. *Clinical support* including having physicians available that clearly understand the role of a CHAP and are willing to engage with collegiality;
2. *Tribal health organization support* including supervisors that are a source of support, training benefits (i.e. tuition compensation for training), sufficient time off and appreciation from Tribal health organization;
3. *Village support*: CHAPs were more likely to stay when they felt appreciated by patients and community;
4. *Family support* as an enabler of sustainability (lack of this support was one of the most common reasons for resignation)
5. *Emotional support* of co-workers and clinical staff.

These support factors likely apply broadly to providers in this service level, where medical services are not necessarily available in the community and the clinical role of community providers is intimately linked to their social role.

Similar findings emerged from Northwestern Ontario, where locally recruited allied professionals (including community health representatives, mental health workers, and National Native Alcohol and Addiction Program or NNADAP workers) were required to support primary health care across a low-population-density area but felt disrespected by other care professionals (Minore and Boone 2002). Being treated as minor parts of the care system has led to considerable retention challenges in allied professional jobs despite local social connections to the community among those recruited (Minore and Boone 2002).

Northwestern Ontario – like many rural and remote areas in Canada – has struggled with retention of health care professionals. Minore and Boone (2004) examined nurse recruitment and retention to these same communities, ranging in size from 100 to 1,600 and scattered across a large geographic area. One studied community had 42 different nurses in a single year. The authors suggest a variety of solutions, including rotating work schedules, short-term contracts and/or trial periods, and involving First Nations communities in the recruitment process (Minore and Bonne 2004).

In a national survey of nurses in rural and remote Canada, recruiting and training First Nations nurses was found to be an effective and sustainable plan for rural health care as nurses tended to return to their home community after training (Kulig et al. 2006). First Nations nurses were more likely to find satisfaction working in rural, remote, and First Nations communities that have typically been underserved in part because of difficulty with recruitment and attrition in those areas. Still, of the 3,933 nurses surveyed using stratified random sampling, only 210 (5%) self-identified as being of aboriginal/Metis ancestry (Kulig et al. 2006), limiting the predictive power of the study. The authors estimate that just 1,200 First Nations RNs work in Canada currently, highlighting the need for greater opportunities for training, more accessible

targeted continuing education programming and policies that recognize the unique challenges of balancing family, employment, and community demands for nurses returning to work in their home communities (Kulig et al. 2006).

PROFESSIONAL DEVELOPMENT

The professional development of maternity providers in an environment without birth services is almost entirely unstudied. The literature on professional development of rural and remote skills for physician and midwife providers is greater, as is the literature on the development of culturally safe care – again, mostly focused on primary care providers.

Closure of rural maternity services in BC has been rapid, with over 20 closures since the year 2000. A similar pattern of centralization has occurred in Australia where many health centres no longer offer birth services for lack of appropriate infrastructure, staff, or even insurance (Kildea 2006). As discussed, the distance to care can be considerable for many rural First Nations people in BC. To include allied health professionals in a maternity care teamlet and ask them to work in an environment without immediate birth services requires that they be emergency prepared.

Kildea, Kruske and Bowell (2006) argue the need for short course training on obstetrics and obstetrical emergencies for all remote area health staff without existing qualifications. This supports the need of rural and remote nurses to both work to their full scope of practice (McLeod et al. 2008) and maintain relevant competencies in a fast-paced, diverse practice environment (Misener et al. 2008).

A case study of developing such a short course followed from findings that providers felt ill-prepared working with pregnant women in remote environments due to fear of obstetrical emergencies for which they had not been trained (Kildea, Kruske and Bowell 2006). The Maternity Emergency Care (MEC) course consists of a self-directed learning package and a 2-½ day workshop covering cultural safety in maternity care, abdominal palpation, bleeding and hypertension in pregnancy, normal birth and care of the newborn. Evaluation of the course showed improved confidence and reduced fear, though no evaluation of outcomes was attempted. These findings were echoed in a study of 114 nurses who attended a different Maternity Emergency Care course. Belton (et al. 2010) found a large majority indicated a greater level of preparedness and lower levels of anxiety at the prospect of facing an obstetrical emergency.

A need exists for education grounded in the realities of culturally appropriate care (Kildea, Kruske, and Barclay 2006), and rural expectations of practicing to a broad spectrum of primary care services (Misener et al. 2008). This includes teaching the personal qualities necessary for success in the position, including

strong self-awareness, listening skills, and independence and resourcefulness (Harris et al. 2011; Misener et al. 2008) as well as some unique skills such as teamwork over long-distances, working in low-resource environments, and engaging the community (McLeod et al. 2008).

According to one institutional ethnography of nursing practice in the interior region of British Columbia, nurses also desire specific OB training, including access to programs such as ACoRN (Acute Care of at-Risk Newborns), MORE^{OB}, and ALARM (Advanced Labour And Risk Management) (MacKinnon 2010). Nurses reported that maternity care is not a focus of formal education programs and the stress of learning 'on the job' in under-staffed rural environments can be excessive (MacKinnon 2010). Perinatal Services of BC ran thirteen ACoRN workshops in 2013 (Fort St. John – 2, Prince Rupert – 1, BC Women's – 2, UBC School of Midwifery – 1, Victoria – 2, Dawson Creek – 1) (*Perispective*, January 6, 2014).

LEADERSHIP COMPETENCIES

A key factor in the creation and sustainability of aboriginal health services is ownership and control by the community (Kildea and Van Wagner 2012). As John Wilson (2001) notes, however, “[c]ommunity control need not imply that local indigenous communities can solve complex social problems in the absence of a political and funded commitment to community infrastructure” (140). Rather, considerable evidence shows that women carefully weigh competing concepts of risk in making decisions about their pregnancies (Ireland et al. 2011; Kornelsen and Gryzbowski 2012; O’Driscoll et al. 2011), and that the structure of authority has a considerable impact on that process (Kildea 2006). Typically, the care Teamlet model is specific to clinical, patient-adjacent team members. Importantly, personnel specific to managing health services also have an important role in cultural safety and appropriate care. The literature on the specific manager roles is very limited, though an accepted foundation of effective health services for First Nations people is First Nations ownership and control (First Nations Centre 2007; Herceg 2005; Kildea and Van Wagner 2012; Kruske, Kildea and Barclay 2006). As well, risk must be considered holistically by health service planners in order to provide a choice framework for parturient women, their families and their communities (Moffitt and Robinson-Vollman 2006).

No literature exists specific to health leadership in areas without at least primary services. In designing a system to provide basic care to rural and remote areas, however, it is clear that sustainability will rest on effective models of clinical and social governance. Conceptually, these might involve including responsibility for pre-natal/post-natal care under the umbrella of existing community governance, under the umbrella of health services at the referral community, or having a distinct leadership.

Structural and Governance Enablers

Benchmarks for service level targets for rural communities in Canada are rare. Among the Canadian Inuit, only communities of more than 1,000 people have a Health and Social Services Clinic (Simonet et al. 2009). This is likely in response to natural laws of health service planning and estimates of cut-offs for recruiting and retaining health care professionals, as opposed to an evidence-based threshold. Despite this, standard structural and governance enablers include: infrastructure and equipment; resources (including social assets); policy directives; system incentives and legal considerations. Each enabler is discussed below.

INFRASTRUCTURE AND EQUIPMENT

In the 1970's, hospital birth became dramatically more common for Aboriginal peoples owing to a then burgeoning federal government practice of evacuation for birth. Despite the motivation for this practice – poor maternal and infant health outcomes – Hancock (2007) prudently reminds us that the racialized gap in maternal and infant health outcomes in Canada has not decreased as a result of evacuating for birth despite the considerable increase in hospital-based birth consequent of that practice. Chamberlain (et al. 2001) note that adverse outcomes in pregnancy and birth are not simply physiological, and so physiological-oriented practices have not substantially improved the statistics. This brings into focus the question of where women from Aboriginal communities should optimally give birth.

Birch (et al. 2009) note that hospitals are built to meet the needs of a particular culture of health, one that may not match with Aboriginal expectations for birth. An understanding of cultural practices leads to an uncomfortable juxtaposition between these practices and a standard hospital-based context. For example, the burning of sage, tobacco, sweetgrass, or cedar in the birth room, as well as having extended family involved in the intrapartum decisions and the postpartum care may not be supported through standard hospital practices (Birch et al. 2009).

One response to this dissonance came from rural Peru, where recognition that hospital sites were culturally inappropriate led to an overhaul of the physical hospital infrastructure (Gabrysch et al. 2009). Peru faced a unique challenge, with just 6% of births from rural villages in the study catchment taking place in a health centre and 37% with a bio-medical health professional in 1999. Changes were made to the health centre, including providing quarters to lodge family, which included a functional kitchen, welcoming traditional medicines and traditional providers and attending women in their native language (Quechua). After those changes, referral from traditional attendants increased and 83% of births from the catchment

occurred in the health centre, with 95% attended by a bio-medical birth attendant in 2007 (Gabrysch et al. 2009).

Elsewhere in Latin America, maternal waiting homes (MWH) have been developed since the WHO recommended them in 1996 as a way to enable referral from remote and distance communities (Ruiz et al. 2012). Ruiz (et al. 2012) studied two such referral homes in Guatemala. Though funding and usage challenges undermined some of the intentions of those particular homes, the premise is applicable to rural British Columbia. Rather than staying in a hotel (Canada) or hostel (Australia) upon referral, these apartment-like homes are specifically designed for expectant mothers and include space for family, a cook, a nurse, activities (such as crafting), and workshops (on healthy diets for babies and children, for example). Rather than a lonely, isolating experience of boredom and intimidation, these homes hold a sense of community (as many expectant mothers and their families may be there at any one time), include an opportunity for healthy food and can be designed to fit the cultural expectations and needs appropriate to the catchment they serve.

In Guatemala, these homes were intended to be supported in part by women in the community, both financially through the sale of handicrafts, and through efforts to receive and welcome visiting women, cook, clean, maintain and decorate (Ruiz et al. 2012). A lack of meaningful remuneration for these activities, and a lack of official support and recognition undermined this intention. Still, the opportunity exists to build community and pan-indigenous solidarity through engaging people from the referral community to work in these waiting homes with appropriate compensation and respect.

RESOURCES (INCLUDING SOCIAL ASSETS)

Currently, many of the social resources available to parturient First Nations women in their home communities are actually removed or undermined when they leave to give birth. The inclusion of family is a key resource that can be marshalled by the health system for improved experience and outcomes through differently organizing referral and transfer (Kilde and Van Wagner 2012; Herceg 2005; Bar-Zeev et al. 2013). One study showed that women were uncomfortable with telehealth solutions to visiting with their family at a distance (O'Driscoll et al. 2011). In Australia, women have expressed a desire to be able to take their children with them, and to have an escort with whom they are comfortable because loneliness is common while spending time in a referral community (Kruske, Kildea and Barclay 2006). In this way, increased system or structural resources may be less effective than a change in escort policies that effectively marshals existing social resources present in women's lives.

The financial resources required for evacuation is badly understudied. One case study done by Kornelsen, Kotaska and Cooper (2007) on the change in services in Bella Bella, British Columbia showed considerable additional costs for women traveling to intrapartum care. Bella Bella lost local maternity services in 2000, at which point women began leaving the community for prenatal diagnostics and ultrasound as well as intrapartum care. Band council records revealed women and families from Bella Bella spent an average of 29 days out of the community in referral centres. Each day cost an average of \$108.07 for a total average of \$3732 per individual for the duration of their stay outside of the community (Kornelsen, Kotaska and Cooper 2007).

These costs do not capture any of the actual costs of care but reflect the additional financial costs of travelling for care.

A costing study on group midwifery for Aboriginal mothers traveling for care in the Northern Territory of Australia showed cost savings for the system, but also a re-allocation of funds that led to fewer catastrophic events and complications intrapartum (Gao et al. 2014). In this case, the group midwifery practice was associated with the referral hospital at Darwin, and women from seven communities still had to travel for some antenatal and intrapartum care. Though midwives were introduced to women at their local health centres through pictures, continuity of care in the referral community only began with evacuation at ~38 weeks and the authors contend that some of the clinical benefits of midwifery found in other literature (eg. lower rates of C-section as seen in Hatem et al. 2013) were not realized because of the referral reality.

However, when comparing the group midwifery practice to the standard course of maternity care previously existing at the same referral site, midwifery clients had shorter length of stay for special care nursery visits (11.7 days on average vs 17.8 days), and more postnatal visits than baseline (2.7 vs 0.6). Moreover, increased costs in antenatal care (avg. \$272 per client), postnatal care in Darwin (\$277), infant readmission costs (\$476) and travel (\$115) were more than offset by savings in birthing costs (-\$411) and special care nursery costs (-\$1767) for a total average savings per maternity client of \$703.

Gao (et al. 2014) also enumerated the total costs of the group midwifery program in 2010/11.

- \$1,543,524 Total costs for 2010/11 fiscal year
 - Operational costs: \$230,000
 - Personnel costs: \$1,313,524
 - Six midwives (6.0 FTE)
 - One coordinator (1.0 FTE)

- Two Aboriginal health workers (1.7 FTE)
- One Senior Woman (1.0 FTE) living at the referral hostel
- One Administration Officer and two midwifery holiday relievers (0.5 FTE)

The average cost of an hour of care for a midwife, aboriginal health worker, and senior woman were \$108.50, \$51.60, and \$25.00 respectively.

In this case study, group midwifery was introduced specifically for remote dwelling Aboriginal women traveling for birth, and the authors note considerable trepidation that services would be duplicated (Gao et al. 2014). Instead, cost savings and improved outcomes were found even though women continued to deliver at the same hospital with the same emergency capacity.

POLICY

Policy has a role to in determining the scope of practice of the various members of a care teamlet. Studying remote environments in Australia, Mills (et al. 2010) found the success of interprofessional relationships were highly variable, and conflict often arose from unclear role definition. Mills (et al. 2010) argued that policy should be developed stating the roles and responsibilities of Indigenous Health Workers and other allied professionals, as well as registering these allied professionals for both effective regulation and improved credibility.

Policy has also been a significant factor in the historical development and challenges in developing indigenous health services in Canada. In a study of the implementation of an elective birthing program in one remote First Nations community in Manitoba, Olsen and Couchie (2013) revealed that evacuation for birth is not an official policy at any level of government. Instead, it is a clinical practice that has taken on population level proportions, with estimates that 1,100 pregnant women evacuate for birth from First Nations communities in Manitoba each year.

The overlapping policy jurisdiction in First Nations health care between Federal responsibilities thereto and provincially managed services has caused considerable barriers in changing this practice. At the outset of midwifery led community birth in Norway House, Manitoba, First Nations and Inuit Health Branch (Health Canada) intervened to prohibit in-community birth (Olsen and Couchie 2013). FNIHB's legal responsibility for the clinical health outcomes of the women and babies and lack of direct connection to the care environments led to a conservative policy approach based on the presumed greater safety of high-resource, urban hospital environments.

SYSTEM INCENTIVES

No data was found on system incentives for maternity care without access to local birthing services. However, some costing data regarding continuity of care was found and is reviewed under Primary Care Services: Midwifery below.

LEGAL REQUIREMENTS

Many of the health care professionals discussed in this section are not currently regulated positions in British Columbia. As allied care professionals, health coaches, and primary care supports in other jurisdictions, the legal responsibilities of these providers (e.g. emergency preparedness) are unreported in the literature. An exploration of the appropriate and/or necessary skill requirements for antenatal care givers, escorts in referral transport, and traditional healers and health workers is necessary, in addition to careful consideration for their scope of practice and potential integration into care teamlets.

MODELS OF CARE

According to community preference and planning constraints, various models of care should be considered for providing services to communities that can sustain this level of services. Conceptually, example models of care (discussed below) are organized by the team of health professionals, allied health providers, and community and/or familial supports involved in providing care.

EXAMPLE MODEL A: OUTREACH MODEL

Description: In communities too small to have a local health centre with a primary maternity care provider, outreach is common. Physicians or midwives will often hold a clinic day intermittently to see patients in underserved communities. In a survey of outreach specialists in the United States, Drew (et al. 2006) found that personal ethic and remuneration were principle factors in sustaining this model despite lower rates of satisfaction with rural satellite practice than urban practice.

Funding: Typically outreach has occurred under a Fee-for-service model of funding, and outreach may be sensitive to remunerative incentives. Drew (et al. 2006) found that supplementing income was the primary motivating factor in starting outreach work (28%), though was reported by fewer physicians as a reason to continue outreach (20%), behind 'opportunity to deliver care to underserved patients' (27%).

Example: A strong example from Australia involves a Group Midwifery practice located in the referral hospital community providing outreach to the more remote Aboriginal communities in that hospital's catchment (Josif et al. 2014). In this model, GPs and specialists also perform outreach 3-4 times per year, holding a clinic day in more remote communities to see parturient women, but it is the midwives who are

responsible for continuity of care from prenatal to post-discharge as well as advocacy within the referral hospital where birth takes place.

This final point is the most critical, as women still had to evacuate for birth to the referral hospital but were attended by the outreach midwife who had been involved in her prenatal care. Hospital staff and midwives reported early tensions in role definition, but over time the value of the midwives became clear. Within 12 months, the group midwifery practice had changed the culture of the birth unit at the referral hospital, as midwives were able to provide greater insight into the circumstances and preferences of the birthing women. Women articulated a positive difference in how they were treated, transfer of information was improved, and cultural safety improved as well (Josif et al. 2014).

EXAMPLE MODEL B: ACCOMPANIED TRAVEL

Description: In this model of care, funding would be provided for women to travel with family and/or a traveling doula, advocate, or elder when desired. Currently, financial and emotional costs of health care are externalized from the health care system and downloaded to the rural, Aboriginal women seeking care and their families. Women who have to evacuate for birth typically do so alone. The Non-Insured Health Benefits program (previously federally managed) does not pay for accompanied travel for care, except in cases where the woman is a minor or has special needs. This program, now called First Nations Health Benefits, has been taken over by the FNHA in BC and is currently undergoing review. Considerable evidence that exists that this experience is emotionally and physically stressful (Kornelsen and Gryzbowski 2005; Kornelsen et al. 2010; Chamberlain and Barclay 2000) and linked to worsened outcomes (Gryzbowski, Stoll, and Kornlesen 2011; *Optimal Perinatal Surgical Services for Rural Women: A Realist Review* 2014).

Bar-Zeev (et al. 2013) noted that very few women who had traveled to birth had a social support person present at their labour and birth, arguing that it may be causally linked to worsened outcomes. The premise of this model is to alleviate some of the hardship documented in the experience of evacuating for birth.

Funding: Funding this model takes the form of direct-to-patient stipends and reimbursements. Increased financing for travel would include increased per-diems for food, increased direct travel expenses eligible for reimbursement, and appropriate accommodations. However, these are just part of the costs associated with travel for care. Time away from paid work and child care can be large barriers to women seeking the safest clinical care, leaving their community for care, and/or experiencing care positively.

These, too, have to be addressed in funding travel for care to reduce barriers to care as well as meaningfully meet the needs of patients and families.

Example: There are no compelling examples of this currently existing in the literature. Practical and personalized problems of who would be an eligible travel companion and how many travel companions are appropriate are likely reasons the jurisdictions considered in this review have not implemented this model of care. Hypothetically, a paid traveling advocate might ameliorate the policy challenges mentioned. This person might function in the community as a care coordinator or community health worker, while acting as an advocate and doula in the referral hospital environment. Of course, such a position would be subject to community approval and would face interpersonal, subjective challenges in evincing its effectiveness.

In O'Driscoll et al.'s (2011) study of the experience of birthing away from home for First Nations women from northwestern Ontario, the lack of accompanied travel was problematic. First Nations doulas at the Meno Ya Win Health Centre and visiting elders in the referral hospital were discussed positively by the women, but telehealth solutions to connect women with their family were considered uncomfortable and being away from family considered an isolating, lonely, and stressful experience.

EXAMPLE MODEL C: CARE COORDINATION

Description: A community-based care coordinator would engage with pregnant women to ensure they received adequate prenatal care and post-discharge care by helping to schedule appointments and follow-up on missed opportunities for care. As well, a care coordinator would support the creation of a plan for evacuation and return and advocate for women from the community by connecting with regional centre staff to humanize the transfer and ensure care was well explained and comfortable. This position would not be a clinical position, but instead a community support intended to have a broad perspective on the course of care for each woman from the community. The care coordinator position would exist to reduce barriers to pre-natal care and help women with possible social or health disadvantages, including stigma, feelings of cultural isolation, low patient activation, or complex health challenges access appropriate services with confidence. At the same time, the care coordinator would likely be an advocate in many cases, acting to ensure the social and individual needs of the women from the community are known to their care providers.

Funding: The cost of this model is in the creation of a new professional position in various communities around BC. Potential cost-savings exist in reduced time spent by clinicians doing care coordination work, as well as in reduced morbidity for those women who are better able to access high quality prenatal and postpartum care.

Example: This model is most functional given a pre-existing primary health clinic available to women from the community, but a service too small to manage birth. This is the case in Bar-Zeev (et al. 2012), where remote health centre staff complained vociferously that poor discharge procedures from the referral hospital was endangering women. While a care-coordinator could exist independently of local health services, the example provided by Bar-Zeev (et al. 2012) is one in which considerable clinical time is saved by staff at the community health centre who must contact the referral centre for discharge details, women receive appropriate and timely care, and improved case management leads to less frequent accidental out-of-hospital birth.

In the case of a community without an existing health centre, coordination of outreach professionals and coordination of travel for care are still potentially valuable additions to health service provision. Currently, these are not actively managed parts of care, but instead left to the discretion of the actors involved.

MAIN POINTS – ENABLERS FOR COMMUNITIES WITH PRE- POST-NATAL CARE ONLY

- require high-quality pre-natal care;
- alternative modes for travel to care for birth including funded accompanied travel (family) and family-inclusive arrangements for lodging in the referral community;
- Effective coordination of discharge and follow-up care;
- Interprofessional models including a range of members based on assumptions of true partnership based on mutual and genuine mutual respect for skills and practices;
- Community members should be included in service planning as well as in service delivery;
- There is an absence of critical, evaluative and descriptive literature regarding the recruitment, retention and performance of providers who play a supportive role in primary maternity care;
- Successful recruitment and retention of providers in Aboriginal communities typically focuses on engaging and training the community;
- There is scant information on the professional development of maternity providers in an environment without birth services;
- A key factor in the creation and sustainability of aboriginal health services is ownership and control by the community;
- The practice of evacuation for birth has not resulted in improved maternal-infant health outcomes for Aboriginal communities;
- Appropriate skill requirements for community Teamlet members is necessary;
- Models of care at this level of service include outreach models (providers from referral communities), accompanied travel (through funding for a doula, advocate or elder) and care coordination from the local community.

Level Two: Primary Maternity Services with No C-Section

INTRODUCTION AND OVERVIEW

Primary maternity care is defined as care for women not experiencing complications in their course of pregnancy, birth, and postpartum period. It is delivered by midwives and General Practitioners with the support of an obstetric specialist as needed. Where complications develop, referral to secondary or tertiary care is expected.

This level of service is organized in a variety of ways internationally to include midwifery-led models, physician-led models, and collaborative models. In addition, the FNHA has begun work supporting a 'Teamlet' model that includes health human resources necessary for a culturally recognizable and personally acceptable birth experience for First Nations women in BC.

The level of local services available is directly related to the proportion of women who can deliver in their home community. With primary services alone, less than 33% of women are typically able remain in the community due to incompatible risk status (~33%) and desire to leave (~33%), with the large majority leaving or being evacuated several weeks prior to expected delivery. The proportion of women who can remain locally rises to over 70% where local C-section backup exists (Humber and Dickinson 2010; Igelsias et al. 2005; Kornelsen et al. 2013; Tucker et al. 2010). However, these numbers reflect current physician-supported models of care, mostly within a fee-for-service environment and encouraging numbers from Indigenous services in Nunavut suggest the proportion of women who successfully birthed locally (without C-section) was as high as 92% (Van Wagner et al. 2007). Preliminary data in British Columbia suggest that up to 50% of women in midwifery-led primary services can remain in the community for birth (Kornelsen and Stoll, forthcoming).

There has been growing recognition of the importance of thinking expansively about who can contribute to primary care. Generally, the core maternity care team includes midwives, GP's, nurses and doulas but also may involve obstetricians, anaesthetists, pediatricians, neonatal pathologists and other specialists providing primary care functions or supporting specialized needs of the primary care team. The team may also involve ultrasonographers, social workers, psychologists, physiotherapists among other allied health professionals (NSW Department of Health 2008). Ethno-medical professionals, health coaches, and culturally appropriate additions to the primary care team for Aboriginal women might include any of those listed above (doula, elder/strong woman, care coordinator, community health worker, postnatal worker, Aboriginal MIH worker) as well as Aboriginal midwives (Epoo and Van Wagner 2012).

Recruitment of primary care providers and allied professionals to rural First Nations communities has been approached a number of ways, including communities selecting and supporting aspiring midwives to leave the community for university training and then return to be a local provider (Couchie et al. 2007), midwifery students working as Aboriginal Health Workers (Josif et al. 2014), using overseas-trained doctors (Arkles, Hill, and Pulver 2007), incentivizing work in rural areas, improving funding for rural students to attend medical school, early rural exposure programs and collaboration with local community groups, elders, and individuals (Anderson and Lavallee 2007). **The pressing question for health care planners is *how big does a community have to be to support primary services offered in community?***

At a systems level, that question exists within a number of constraints including fee-for-service funding models, professional college and provincial regulatory standards for skill currency, and the inability of providers to bill for advocacy, continuity, and cultural safety work. Some of these challenges are addressed by existing models of midwifery, including examples of Australian caseload midwifery in which midwives have flexibility in work practices and can be remunerated for well-woman and well-baby care (Brown and Dietsch 2013; Tracy et al. 2005) and outreach group midwifery practice that provides continuity of care to rural women including attending the birth at the regional hospital if necessary as a skilled birth attendant and advocate (Josif et al. 2014). The interdisciplinary midwifery care at the Inuulitsivik maternity center is the current international gold standard, combining traditional and modern approaches to midwifery that are grounded in and driven by the community itself (Douglas 2010; Van Wagner et al. 2007; Van Wagner et al. 2012). Additionally, Indigenous specific maternity centres have been emerged in various jurisdictions (Benoit and Carroll 2001; Olsen and Couchie 2013) and 10 currently exist in Canada. **Although birth centers do not currently exist in BC, the current policy climate favors introducing culturally-responsive and community-articulated models of care.**

Though considerable overlap exists for the creation and support of different models of primary maternity care, midwifery-led, physician-led and mixed models are considered separately below.

Midwifery Led Models of Primary Maternity Care

Health Human Resource Enablers

Inside this section, a variety of midwifery structures will be considered. Each of these is defined in the Terminology section above, and includes many of the same team members in different combinations.

These include:

- university trained midwives
- community trained and/or apprenticeship trained midwives
- care or care coordinators / administrators
- health coaches
- health service managers / managerial administrators

Most maternity service literature focuses on the birth provider, thus midwives are the focus of this section. However, allied staff can be critical within a midwifery service. In one northern example, an Inuit Health Worker was found to be vital to the quality of the service. “She enabled women to reveal factors such as sexual abuse, which Inuit women do not usually reveal. She spent a great deal of time on counseling abused women even though this had not initially been part of her role” (Chamberlain et al. 2001, p84).

The care teamlet described by the FNHA includes two midwives or one midwife and one physician, along with one health coach as discussed above. Findings from one birth centre in Australia show some of the other positions associated with caseload midwifery services. Chamberlain (et al. 2001) discuss a service with two midwives, a midwife coordinator, a maternity worker, and a part-time interpreter for rural Aboriginal maternity care. Additionally, a perinatal committee is involved in risk screening for local birth and that committee includes the midwives and maternity worker, nurses, as well as an outreach physician who rotates through several health centres and participates at each one (Chamberlain et 2001).

Traditional midwifery has existed since time immemorial in all First Nations, but the impact of colonialism has been dramatic, with few traditional midwives left to pass on the profession (Benoit and Carroll 2001). In returning birth to aboriginal communities, a blending of modern and traditional forms of the profession is taking place, and provincial-level oversight of the legal aspects of birth in Canada has created a variety of models by which that process is taking place (Benoit and Carroll 2001). To date, however, federal jurisdiction for the health of First Nations people has made access to culturally appropriate birthing service problematic (Olson and Couchie 2013).

Importantly, the processes of integrating bio-medical knowledge with traditional knowledge and creating care models that are indigenous owned, driven by indigenous needs, and serve indigenous communities are conscious and on-going. One Inuit midwife was quoted as saying, “[d]on’t give us your theories, your philosophy: we don’t need them. We don’t need your culture, we need the facts. We get our information from other sources as well, from the elders, from other men and women” (Douglas et al. 2010, p115). Academic literature and health services grey literature have historically privileged university-trained providers who are legally credentialed to deliver babies. Central to this review is the understanding that this structural privileging within the literature is not indicative of best practice necessarily, but reflects a current reality of cultural negotiation over health and wellness under colonial conditions of knowledge production (Varcoe et al. 2013).

Incorporating Aboriginal midwives into local care plans is somewhat understudied, despite recognition that appropriate respect – both formal in the way of remuneration and practice entitlements and informal by way of collaboration and consideration – is garnered. Lalonde, Butt and Bucio (2009) argue these providers can be incorporated as accepted maternity care providers in rural and aboriginal contexts through a combination of government funding, accreditation, active support of Aboriginal community defined preferences, support from other health care professionals, and integrated systems of monitoring and evaluation of service outcomes.

The SOGC stresses the need for a Multidisciplinary Collaborative Primary Maternity Care model that involves traditional providers as well as midwives and health advocates to solve both cultural challenges as well as health human resource challenges (Lalonde, Butt and Bucio 2009). This will require a collaborative approach and cross-cultural teamwork skills among providers.

HEALTH PROVIDER AND SUPPORT STAFF COMPETENCIES AND ATTITUDES

Across the literature, the most prominent attitude and competency problem in primary maternity care for indigenous people is that of racism, both structural and interpersonal. Structural racism is present in the colonial structure of health care (Varcoe et al. 2013), though progress continues with greater ownership of health services being won back by First Nations and their governing bodies in recent years. Interpersonal racism is often articulated in the literature as ‘accidental racism’ – that is, based on misunderstanding, a lack of cultural perspective, and/or limited awareness of on-going process of colonialism among health care providers.

Cultural awareness training is a frequently considered solution, with an entire body of literature devoted to the various models of this training (Shen 2004). Varcoe (et al. 2013) take this a step beyond sensitivity

and acceptance, calling for all health care providers and employees to undergo mandatory anti-racism and decolonizing training, as well indigenous orientation. This consciousness raising effort would ideally help health providers situate themselves, their collaborators and their patients socially so as to see cultural boundaries about health as overlapping and in negotiation, rather than discreet and in competition.

A study in Australia found Group midwifery to reduce accidental racism in maternity care by leveraging midwives and Aboriginal health workers to perform relationship-based advocacy on behalf of the Aboriginal and Torres Strait Islander women in their care (Barclay et al. 2014). The establishment of group midwifery at a regional centre, with designated full-time midwife at remote communities in the catchment led to considerable change, specifically: better maternal record keeping; improved antenatal care (fewer women had non ANC and more had >5 visits); increased antenatal screening tests; reduced fetal distress in labor and a higher proportion of women received postnatal contraception advice (Barclay et al. 2014).

That rural midwifery practice is considerably different from urban practice is an important point of awareness. In Scotland, increasing centralization of birth has challenged some rural midwives to maintain currency in their skills, even while they work at a greater scope of practice than their urban counterparts. Workshops with both rural and urban midwives were suggested by Harris (et al. 2011) as a way to bridge the experience gap and build awareness for differences in practice and skills. These would take place alongside continued medical education programs to maintain skill currency, such as Advanced Life Support in Obstetrics (ALSO) and the Neonatal Advanced life Support (NALS) courses currently existing in Scotland.

RECRUITMENT AND RETENTION

Representation of Aboriginal people in health careers is a noted problem in various jurisdictions. Just 1% of the Australian nursing population are Aboriginal (Clark 2013), and estimates suggest that just 0.25% of doctors in Canada are First Nations, Inuit, or Metis (Anderson and Lavalée 2007), and 7.5% of practicing midwives (Kildea and Van Wagner 2012). Greater representation is expected to result in improved cultural safety and competency through both direct interactions with patients and through influence within the workplace culture of hospitals and clinics.

This takes on particular relevance in the context of local recruitment within an apprenticeship model of training. In exploring the success factors of the Inuulitsicik Midwifery Education Program, Epoo and Van Wagner (2012) found that recruiting local women to become midwives through apprenticeship was the key to sustainability of the practice. At the same time, the expanded scope of practice – to include population,

caseload birthing services, care pathway planning, and teaching / mentoring new midwives – contributed to recruiting midwives from outside of Nunavik.

One of the challenges of the literature on the outstanding Nunavik model is that it traces the history of community birth services to the establishment of midwifery services at Puvurnituk in 1986. This history gives us a false sense of the program as emerging spontaneously. In fact, prior to the centre opening, Inuit midwives had an informal tradition of helping with births at the nursing stations and hospitals constructed by the federal government beginning in the 1960's as part of the colonial effort to force the Inuit into permanent settlements (Douglas et al. 2010). When Puvurnituk rejected the James Bay and Northern Quebec hydro-electric development project in the 1980's, activism regarding community development coincided with activism by the Pauktuutit (Inuit Women's Society), resulting in a traditional birthing centre with funding to attract midwives from the south, employ community members, and begin the community midwife training program. At the same time, traditional and western ways of considering birth had already been synthesized into a single practice by the traditional midwives who had spent decades working in nursing stations and hospitals.

Interestingly, a birth centre opened in Rankin Inlet, Nunavut (west across the Hudson's Bay from Nunavik) in 1996 with a job posting for a traditional midwife (James et al. 2010). That posting remained unfilled because the traditional midwives of the area had not practiced in decades, and felt they were being pursued as consultants rather than skilled providers (James et al. 2010). The centre also opened with an apprenticeship training model intended, but recruitment was difficult and the midwives from the south were differently prepared for this expanded role. Simply recruiting midwives from the south was understood to be unsustainable, as it is for many rural and remote settings and so a mixture of southern midwives, Inuit midwives, and students was sought. However, finding qualified midwives who could provide culturally adapted, safe and evidence-based care – who had internalized both western and traditional knowledge of birth – and could teach it proved to be difficult. The responsibility of training was moved to Nunavut Arctic College. NAC offers a layered maternity program with three possible exit points: a maternity care worker certificate; a midwifery diploma; or a Bachelor of Health Science in Midwifery (James et al. 2010). The program offers Inuit health training through NAC, and bio-medical training by distance education through a partnership with Laurentian University.

For the BC context, the struggles of the Rankin Inlet service to imitate the success of the Nunavik model are instructive. Of the seven existing midwifery education programs in Canada, just two programs have a focus on traditional midwifery and returning birth to communities. Recruiting university trained, evidence-

based practitioners with the necessary cultural skills and teaching skills to train First Nations community midwives in an apprenticeship model may not be realistic. Instead, allied health professionals, members of the community, elders, and the women themselves may play a key role in furnishing a sustainable midwife led primary care service model for First Nations communities.

LEADERSHIP COMPETENCIES

Sue Kildea (2006) identified a number of levels of leadership required to return birth to indigenous communities, spanning a variety of levels of governance. These include:

- Political commitment
- Local leadership and control
- Collaboration between practitioners
- Consumer involvement
- Ongoing management (administrative) commitment
- Appropriate resources

Once returned, the clinical leadership of a functional model of indigenous maternity care looks quite different. Unsurprisingly, Nunavik blazed a trail now accepted by the SOGC (2010) as necessary for effective indigenous maternity care – that of multidisciplinary care planning that includes both physical and biological concepts of risk as well as social, cultural and personal.

In Inuit birthing centres, governance is managed through non-hierarchical, consensus-based decision-making. Birth committees, comprised of midwives, medical professionals, and community members make decisions about birth plans for women with attention paid to both clinical risk factors and social risk factors (Douglas et al. 2010; Epoo and Van Wagner 2012; Van Wagner et al. 2007; Van Wagner et al. 2012). Thus, consensus building is argued to be a more meaningful and relevant form of leadership in a primary care for Aboriginal communities context than is typical managerial or administrative leadership (Douglas et al. 2010).

Structural and Governance Enablers

INFRASTRUCTURE AND EQUIPMENT

There is little research on the comparative clinical effectiveness of birth location. The highest level of evidence found is a 2012 Cochrane review (Hodnett et al.) comparing home-like and alternative birth locations to conventional institutional ones. The review includes nine adequately randomized trials and over 10,000 women, but the reviewers did not find any high-quality studies of free standing birth centres or alternative labour room designs. Instead, all studies found by Hodnett (et al. 2012) studied bedroom-like settings with conventional institutional labour wards. As well, different models of care within those settings rendered the findings somewhat incomplete, as the causal mechanism of effective care is uncertain. Finally, though 10,000 women were enrolled in these trials, a necessarily smaller proportion were assigned to the home-like birth location, and many fewer were actually able to deliver in that setting due to antenatal and intrapartum transfer to higher levels of care. Consequently, the statistical power of claims about bedroom-like settings is diluted.

Despite the limitations to these findings, the aggregate findings indicate an extremely positive impact of non-conventional institutional birth setting. “When compared to conventional institutional settings, alternative settings were associated with reduced likelihood of medical interventions, increased likelihood of spontaneous vaginal birth, increased maternal satisfaction, and greater likelihood of continued breastfeeding at one to two months postpartum, with no apparent risks to mother or baby.” (Hodnett et al. 2012, 2).

Moreover, the comparative cultural safety of birth centres is prominent in the literature. In Nunavut, just three community birth centres exist for a vast territory larger than the state of California with just over 12,000 people spread across many permanent and seasonal communities. Women from these smaller villages still travel to care, but shorter distances. Women averaged 14.8 days away from their home community in 1987, down from an average of 52 days away in 1983 (Epoo and Van Wagner 2005). Further, care is in their native language with attention paid to social and cultural realities.

There are currently 10 birth centres in Canada (Olson and Couchie 2013). The primary jurisdictional conflict that marred the opening of a birth centre in Norway House, Manitoba (see Olson and Couchie 2013) has already been avoided with the creation of the First Nations Health Authority. However, the continued emergence of self-governed nations within BC through treaty negotiation, the geographic spread of First Nations communities throughout the five regional health authorities in BC, and the provincial Ministry of Health oversight over accreditation still present considerable legal challenges in developing birth

centres in BC. The jurisdictional conflicts in Manitoba were resolved through memoranda of understanding between the federal facility and provincial employer.

As noted in the limitations, there is very little literature that provides enough detail to consider the equipment necessary for primary care in remote communities. However, one study by Homer (et al. 2001) on an outreach midwifery model using community clinics for prenatal and postnatal care included a list of some required supplies. These included: portable examination beds; automated urine-testing machines; small cases to transport records; hand-held fetal heart rate 'doppler' machines; and, long range 'pagers' for the midwives. The total cost in Australian dollars was \$9,130 per clinic. Of course, these supplies may or may not need to be substituted or supplemented for any given remote clinic setting.

RESOURCES (INCLUDING SOCIAL ASSETS)

Beyond examining simply the equipment necessary for rural midwifery care, Homer (et al. 2001) performed a unique cost analysis for community-based continuity of care midwifery, relative to standard Australian hospital care by using a randomized study design. Women in the study catchment who presented to their first antenatal visit <24 weeks were randomly assigned to either standard care (n=539) or to the St George Outreach Maternity Project (STOMP) model (n=550). Cost comparisons were made for salaries and wages, goods and services, and infrastructural costs across all facets of service, including antenatal clinic, antenatal admission, day assessment unit, labour and birth, hospital-based postnatal care, home postnatal care and admission of neonates to special care.

Staffing differences were noted. The hospital-based clinic included five midwives, one midwife resident, registrar, consultant physician, an enrolled nurse, a nurse manager and an appointments clerk. Fifty women were typically seen during a typical clinic day, with the midwives, nurse, clerk and manager attending clinic for four hours each, while the resident and registrar attended for three hours, and an obstetrician attended for two hours. For both models, day assessment units included the opportunity to see a physician and have cardiotocograph and blood tests without admission to hospital.

In the STOMP model, two-teams of 6 midwives traveled to provide antenatal care to women in their communities, and also attended labour and provided postnatal care. Physician involvement included two hours of obstetrician support at clinic days, in addition to access to day assessment units and hospital admission. This continuity model included a greater average number of antenatal visits per client (8.3 vs 7.4 in control) despite a capacity to see fewer women per clinic day (30 x 2 teams = 60 women per week), but still saw cost savings at \$2,579 per client relative to standard care at \$3,483. Control group infants were

found to have much higher resource use than STOMP model infants (control: \$683,220; STOMP: \$325,680) primarily because of higher rates of admission to special care nurseries. When this factor was excluded from the cost analysis, STOMP model women still required fewer financial resources at a mean cost savings of \$139 per client. Women also reported greater satisfaction with the STOMP model (Homer et al. 2002).

In addition to the potential financial savings of a distributed model of care, returning birth to Aboriginal communities holds the opportunity to use existing community and social resources to address the on-going health disparity found among First Nations people.

In a discussion of how Australia might begin to return birth to Aboriginal and Torres Strait Islander communities, Kildea (2006) looked to the example of the Inuit.

Returning birth to the remote setting where Aboriginal communities can begin to address the social, emotional and cultural risks affecting the birthing experience may have far reaching effects for the health and wellbeing of Aboriginal communities as it did for the Canadian Inuit. Programs that acknowledge both Aboriginal and 'Western' knowledge and comprehensively address the year before, and the year after birth, would need to be included in this initiative; as would local Aboriginal governance and increasing community capacity through onsite midwifery education. (Kildea 2006, p393)

POLICY

Routine evacuation practices in Canada's North was contested through a series of factors that improved Inuit control over health services for their own communities, according to Kildea (2006):

- Self-Determination land rights
- Local activism and political pressure
- Regaining control of health funding
- Open dialogue around the construction of risk
- Alliances with academics and other non-indigenous people
- Positive media reports

In the development of remote, northern, and Aboriginal community midwifery in Manitoba, midwifery practices in the province were given the mandate to work toward having 50% of their clients come from priority populations such as single women, adolescent women, immigrants, Aboriginal women, those socially or financially isolated (Kreiner 2009). In doing, the province hoped to leverage a growing profession of midwives to improve prenatal attendance, continuity of care, and ultimately birth outcomes among those women most often disadvantaged in the physician-based health system.

LEGAL REQUIREMENTS

A variety of models have been attempted across Canada to govern Aboriginal midwifery with differing results. Midwifery is legislated and publically funded in BC, as well as in Ontario, Quebec and Manitoba and Saskatchewan. Midwifery is legal in Alberta, but not publically funded despite concerns that this structural disincentive impedes choice and prevents culturally competent care (Benoit and Carroll 2001). Still, even among the various provinces, significant differences exist.

The inclusion of traditional midwives in primary intrapartum care requires accreditation of some sort within the BC health care context. Lalonde, Butt and Bucio (2009) cite the need to validate the clinical role of traditional providers as based on wellness and medical competencies and skills. The support of professional organizations, including the SOGC and the Canadian Association of Midwives are key factors in addressing issues of recognition, regulation and funding of both education and practice among aboriginal midwives (Lalonde, Butt and Bucio 2009).

The Inuulitsivik health centre in Nunavik offers an example of integrating traditional midwives into a caseload midwifery practice. Nunavik is a traditional Inuit territory covering the northern-third of the province of Quebec. With a young population and a birth rate roughly twice the Canadian average, approximately 200 births occur per year between three health centres in the three largest villages (Epoo and Van Wagner 2005). Services began in Puvurnituk in 1986 amid a groundswell of activist support for returning birth, predating legislated midwifery in Quebec by 13 years (Epoo and Van Wagner 2012). Five community midwives worked and trained at the centre when midwifery was legally recognized by Quebec in 1999, and these midwives were adopted into the Quebec Order of Midwives (Benoit and Carroll 2001). A further eight midwives have graduated from the training program since 1999, but until 2008 were granted a Nunavik-specific license entitling the midwife graduates to attend births for Inuit women from Nunavik exclusively. In 2008, Quebec's midwifery regulatory body formally recognized Inuulitsivik's apprenticeship-based education program by granting graduates full license to practice in Quebec (Epoo and Van Wagner 2012).

Guidelines for apprenticeship training of community midwives do not yet exist in other jurisdictions, including in BC. Even more broadly, accreditation procedures of alternative, non-hospital birth settings are yet to be developed. Each is a major legal barrier in establishing sustainable, culturally safer, midwifery-led primary maternity care.

MAIN POINTS – MIDWIFERY-LED MODEL ENABLERS

- Midwifery-led models of maternity care are highly desired by Aboriginal communities;
- Aboriginal midwives are under-represented among practicing midwives in Canada: effective recruitment practices involve apprenticeship of local women;
- Allied staff play a critical role in Aboriginally-focused midwifery models;
- The potential for an expanded scope of practice may contribute to recruiting midwives from outside the local community;
- Effective models of governance include non-hierarchical, consensus-based decision-making. Birth committees, comprised of midwives, medical professionals, and community members make decisions about birth plans for women with attention paid to both clinical risk factors and social risk factors;
- There is strong evidence to support the safety of non-traditional locations for birth.

Physician-Led Models of Primary Maternity Care

The literature on culturally competent primary care focuses on integrating physicians into teams with ethno-medical professionals, midwives, health coaches, and advocates changing the social position and power historically associated with doctors. This is acknowledged throughout the report as a critical finding from the literature.

Some literature expands on this to provide insight into the clinical implications as well as the policy requirements of high-quality physician-led primary maternity care for Indigenous women. Although this is not the normative model of care represented in the literature, there are some descriptive studies that can provide the service targets that may honor cultural safety within a physician-led model. This body of data is subsumed within a very large body of literature regarding physicians in rural areas more generally. Some of that literature has been considered at length in the report by the Applied Policy Research Unity (2014) entitled “Optimal Perinatal Surgical Services for Rural Women: A Realist Review.” This section will not attempt a broad synthesis of the issues facing rural physicians in primary care, many of whom serve indigenous women as patients. Instead, it will attempt to focus on the small part of the literature regarding appropriate models of physician-led care for Aboriginal women.

Health Human Resource Enablers

TEAMLET MODELS

There is relatively little variety in the existing models of physician-led distributed primary maternity care for indigenous women. With regard to teamlet construction, little attention is paid in the literature to the allied staff required for generalist physician-led, non-surgical birthing. We can accept FNHA’s proposed maternity care teamlet discussed above as an appropriate conceptual model for future planning.

Australia, much like BC and Canada, relies heavily on overseas trained doctors (OTDs) to fill positions in rural areas. Between 1995 and 2004, Australia experienced an 8.8% increase in Australian trained GPs working in rural and remote areas alongside an 80% increase in OTDs. (Arkles, Hill and Pulver 2007). Rural and remote primary care for Aboriginal and Torres Islanders is, in fact, functionally dependent on the recruitment and retention of OTDs, with conservative estimates suggesting that 38% of rural doctors in Australia are OTDs (Gillies, Wakerman and Durey 2008). An estimated 60% of BC’s General Practitioners with Enhanced Surgical Skills are foreign trained (Humber and Frecker 2008), with unknown totals for

primary care physicians without enhanced surgical training. At the same time as culturally competent care has become an increasingly important part of physician training in Australia, New Zealand and Canada, those same jurisdictions are increasingly reliant on OTDs trained in settings where indigenous cultural competency is not a priority. Demands on these physicians include negotiating 'cultural domains' as well as working with Aboriginal Health Workers and other allied professionals (Arkles, Hill and Pulver 2007), and overcoming 'culture shock' (Muecke, Lenthall, and Lindeman 2011). OTDs themselves indicate the need for more detailed training in Indigenous health (Alexander and Fraser 2007).

One model from the Zuni-Rama Hospital in New Mexico (which serves people from both the Zuni and Navajo nations) is staffed by family physicians and a part-time nurse-midwife (Leeman and Leeman 2002). A very low intervention rate (7%) and strong outcomes are argued by the authors to rest in part on integrated services with an OB/GYN staffed referral hospital 53 km (33 miles) away, and a tertiary hospital with perinatology and neonatology care available by air transport (Leeman and Leeman 2003). At the primary-only, non-surgical Zuni-Rama hospital, intrapartum care is offered to low- and moderate-risk women. Criteria mandating referral or transfer include prior C-section, malpresentation, multiple gestation, intrauterine growth restriction, severe preeclampsia, placenta previa, significant vaginal bleeding, major fetal anomalies, anticipated preterm delivery (<36 weeks), nonreassuring fetal heart tones (NRFHTs), and need for labour induction or augmentation with oxytocin.¹

Integration with higher-level services provides these primary care physicians the confidence to expand their risk criteria. However, no attention is paid in that study to serving populations with high social and cultural barriers to comfortable care.

In a study of the existing services and local needs at the northern end of Vancouver Island, BC, one respondent indicated that for women with a history of sexual abuse, seeing and being touched by a male physician was out of the question. The availability of female care providers, as well as ethnically and culturally indigenous care providers, may be a necessary part of access for some complex populations (Centre for Rural Health Research 2007).

¹ Unlike the SOGC, the American College of Obstetricians and Gynecologists guidelines do not allow for oxytocin use without surgical backup, despite a lack of evidence to support or refute the clinical safety of this (Leeman and Leeman 2002). Leeman and Leeman (2002; 2003) address this by advocating for its use under well-defined clinical guidelines.

RECRUITMENT AND RETENTION

Estimates suggest that just 100-150 doctors in Canada are First Nations, Inuit, or Metis (Anderson and Lavallee 2007), making meaningful representation of First Nations among doctors in BC a strategy requiring a generation-long commitment. Some of the ground work has begun in Canada and BC, including: the Aboriginal Health Human Resources Initiative (2004) pledging \$100M to increase the number of Aboriginal people in health care careers; the establishment of a Aboriginal Health Task Force of the Association of Faculties of Medicine of Canada (2004) to advise on increasing Aboriginal enrollment and success at medical school; the Kelowna Accord (2005) to double the number of Aboriginal Physicians in Canada by 2015; and the Indigenous Physicians Association of Canada agreement with the Association of Faculties of Medicine of Canada to lead Aboriginal health initiatives at medical schools (2006) (Anderson and Lavalee 2007).

For services in crisis, immediate recruitment is required. In a study from Trail, BC, Kornelsen (July 2008) provides an example of how funding models can be temporarily re-organized to encourage GPs to provider maternity care.

In Kornelsen's (July 2008) study of Trail, primary maternity care was provided through the Family Obstetrical Clinic call group (FOBC). This call group began at Kootenay Boundary Regional Hospital in March 2002 because of 'orphaned' patients from the closure of services in Castlegar in February 2002 and the consequent increase in on-call duties. Gradual attrition from the group left just four physicians providing call for maternity services in Trail and the outlying communities. This precipitated threat of closure due to the strenuous on-call schedule.

In January 2008, a temporary solution championed to use funding incentives that eventually recruited seven additional physicians from the Kootenay Boundary Health Service Area to provide OB care with the FOBC. These incentives included:

- "MC for BC" (Maternity Care for BC) provided rural education assistance funds and stipend for GPs (and their mentors) who begin or re-enter maternity care.
- Application of reverted CME funds to an on-call stipend (\$6000/mo for one year)
- Contributions In Kind: Interior Health contributed clinic space and supplies to FOBC since 2002, starting in 2008 under this new plan, IH also assumed responsibility for admin and accounting (billing) costs.

Though these mechanisms prevented closure, participants in the study indicated that it would not be a permanent solution for long-term sustainability (Kornelsen, July 2008), and a mixed-model was sought by stakeholders (see below).

An associated challenge for existing services is the retention of existing rural physicians. Maldistribution is a known problem and increasing centralization has concentrated primary care services in fewer and fewer communities in all jurisdictions of this review (see Applied Policy Research Unit 2014). Thus, overseas trained doctors continue to play a significant role in rural health services. Retention of OTDs in indigenous communities similar to that of other rural doctors (see Applied Policy Research Unit 2014), however Australian research underscores the specific challenges faced by OTDs in Aboriginal Health Services (AHS).

OTDs in Australia (and Canada) face considerable practice restrictions in first arriving, gaining unconditional registration with the College (licensure) only after practicing in underserved areas of the country (Arkles, Hill and Pulver 2007). In interviews with 18 OTDs, Gillies, Wakerman and Durey (2008) found that just five had specifically chosen to work in an Aboriginal health setting, and just one of those five intended to remain with ACCHS upon full registration. Much of the highly anticipated attrition was argued to stem from culture shock and a lack of awareness of orientation to the health setting. Fourteen of the 18 OTDs interviewed by Gillies, Wakerman and Durey (2008) had received an orientation to the position, which was described as minimal.

Gillies, Wakerman and Durey (2008) identified further challenges. OTDs are recruited to specific rural towns, with no mechanism for matching personal needs such as religious affiliation, spousal employment or children's education. Physicians identified despair, lack of self-care, and lack of compliance among patients as major barriers to providing care, which in turn led to attitudes of accidental racism (Gillies, Wakerman and Durey 2008). Despite a case-mix of high complexity, high social need cases, remuneration for OTDs working in AHS is below the market GP rate. Retention of these providers, then, and an end to the high turnover that erodes community trust, rests on better community-matching, effective orientation and on-going professional support, and remuneration that supports preventative and community health care approaches.

HEALTH PROVIDER AND SUPPORT STAFF COMPETENCIES AND ATTITUDES

In Australia once physicians are recruited, the Aboriginal Community Controlled Health Services (ACCHS) places overseas trained physicians into multidisciplinary teams in which they are not socially positioned as a leading or dominant professional, but just one voice among many (Gillies, Wakerman, and Durey 2008). In this way, physicians are asked to engage with a new culture of sickness and health, and a new social conception of the role of the doctor that can clash with the internalized expectations of the individual doctors recruited.

The bio-medical model of birth reflects a particular culture of medicine that is inherent to the training provided to primary care physicians. Overcoming the assumptions of this bio-medical culture of health is one step toward being able to use western medical knowledge within a culture of health acceptable to indigenous peoples (Douglas et al. 2010). Some cultural changes might include accepting alternative concepts of risk (Couchie and Sanderson 2007; Kildea 2006) and accepting a natural process of birth (Diestch and Mulimbalimba-Masururu 2011). Within a physician-led model, changing clinical practice to reflect new values begins with making physicians responsible to other professionals in collective decision making.

At the Zuni-Rama hospital in New Mexico, intervention in birth requires a mandatory consultation between two physicians, which Leeman and Leeman (2003) argue has decreased the rate of non-emergent C-section for dystocia and NRFHT. The C-section rate for women from this hospital's catchment is 7%, roughly one third of the national average at the time of the study. Leeman and Leeman (2003) found that 46% of this difference was attributable to the decreased use of C-section for dystocia. Simply waiting in many cases has reduced intervention and the required transfer out of the community for surgical care.

Still, the competencies required for rural maternity care by physicians are unknown or under-reported in the academic literature. Ireland (et al. 2007) reviewed literature on the competencies necessary for rural and remote training, with the Scottish context in mind. A review of 114 articles by the authors revealed that there is no description of physician clinical competencies for safe, sustainable services specific to maternity care in the rural context in the academic literature (Ireland et al. 2007). Consequently, meaningful evaluation of programs for rural physicians, planning for effective service, or auditing to demonstrate on-going clinical competence are not possible.

This finding is important for considering service planning for rural First Nations populations and gives rise to the need to consider the following questions:

- What are the requisite clinical competencies necessary for effective maternity care in that service environment?
- Which professional group is best suited to meet those clinical competencies, and
- What training and support is necessary?

In a small focus group study in three Aboriginal communities in BC, Buxton (et al. 2007) found similarly that rural communities have not addressed the roles and skills necessary for physicians to effectively address the health of the community as a whole. It is argued that physicians need public health training in order to better serve First Nations communities where social health needs can be prominent. Participants in Buxton et al.'s (2007) study articulated the following skills necessary for rural, aboriginal-focused physicians:

- Having a broad perspective on issues related to health
- Competencies in research, epidemiology and grant writing
- Being sensitive to issues relating to culture and community
- Ability to appreciate and build partnerships/relationships
- Potential to empower patients to adopt healthy behaviours

Strong interpersonal skills, long-term commitment, and willingness to spend time in the community were all factors associated with a successful physician (Buxton et al. 2007), something echoed by Arkles, Hill and Pulver (2007) regarding OTDs in Australian Aboriginal communities.

PROFESSIONAL DEVELOPMENT

There is a considerable body of research regarding professional development for physicians, including specifically those practicing in rural environments. Some of this literature was discussed by the Applied Policy Research Unit (2014) in their report on General Practitioners with Enhanced Surgical Skills. Notable barriers exist for rural physicians to access continuing medical education (CME), including lack of locum support, geographic barriers to participation, lack of time off, and lack of CME specific to rural care environments (Baker 2006; Curran, Fleet, and Kirby 2006; Delva et al. 2002) However, no literature was found regarding the professional development of physicians in rural areas delivering care to First Nations people and communities. Though the findings from previous work are likely applicable to the context of this report, we have not examined potential transferability.

LEADERSHIP COMPETENCIES

Similarly, there exists a large body of healthcare leadership literature specific to physician-led models of primary care. As well, there is an important body of grey literature on Indigenous leadership and ownership over services that is accepted in this review as a critical part of effective health service

governance for First Nations health care (see Kildea and Van Wagner 2012). However, reviewers did not find overlap in these areas and no insights were found in the literature regarding healthcare leadership in physician-led models of primary maternity care for Indigenous communities.

Structural and Governance Enablers

INFRASTRUCTURE AND EQUIPMENT

Although the literature reviewed assumed hospital as the location of care for physician-led models, there was no discussion of optimizing organization of the hospital setting or the comparative effects of hospital management, organization or structure on outcomes. The culturally safer facilities reviewed under Section One (see Ruiz et al. 2012; Gabrysch et al. 2009; and Birch et al. 2009) are relevant here. However, each of these articles is discussed from the perspective of allied professionals, birthing women and their families. Physician perspectives and the impact of these settings on physician care are not discussed.

RESOURCES (INCLUDING SOCIAL ASSETS)

Buxton (et al. 2007) discuss the role of on-going community supports and programs in building community health, of which maternity is just one part. One physician respondent noted,

"The reason that we can do what we do is because the infrastructure is there... You can come in with all your wonderful ideas, but if you don't have the home care nurse, the band council, the addiction treatment facility, the childcare workers, you need that. We have a 24 [hour] suicide prevention team, 24 hour child protection, 24 [hour] access to them, safe house for women and kids, an elder centre... This is my fourth year here, and in that time, we have only had one completed suicide. Now, that is not because of the doctors, it is because of the infrastructure" (Quoted in Buxton et al. 2007, p86).

These social assets (discussed in the quote as health infrastructure) enabled a preventative, holistic, and community-based approach to health care. Well-woman and well-baby care are critical components of effective maternity services, and much of the health of women and babies will take place outside the doctor's office. Buxton (et al. 2007) found that strong community supports and health programming enables doctors to perform clinical duties effectively and with greater positive effect.

POLICY

In her study of maternity services in Trail, BC, Kornelsen (July 2008) found that GPs felt disrespected because obstetrics call work is not remunerated, while other call services are (through MOCAP).

Respondents noted the likelihood of attrition after the special funding period (detailed above) ended, based on how much on-call work interrupts their lives and how other specialties (for example Emergency Medicine) paid more than on-call time. Funding was seen as a proxy for respect as well as a necessary part of ensuring their professional viability (Kornelsen, July 2008).

Buxton (et al. 2009) suggests compensation for physicians trained in public health to work a dual role as a community-health support worker in research, program development, or community health services. "Physicians should be paid for health prevention work as well as interventions," commented one respondent (Quoted in Buxton et al. 2007, p86). This could involve the inclusion of public health training as standard in family practice residency programs, with upgraded skills for rural-specific programs.

Salary was also seen as a necessary incentive to convince physicians to work with ethno-medical practitioners in Bolivia (Bastien 1994). Paid collaborative workshops were one part of remunerating this change in practice. As well, incentive funding was used to encourage both sides to integrate their practice, though this was not detailed by Bastien (1994).

Extrinsic motivation is often considered necessary to incentivize practice change among physicians, raising a number of concerns regarding physician behavior when considering a shift away from free-for-service billing. Green and Van Iersel (2007) examined the Weeneebayko Health Ahtuskaywin (WHA) - an Aboriginal health authority that administers health in a large remote area on the west coast of Canada's James Bay - to consider the response of physicians in a non-fee-for-service environment when physician shortage caused an increase in patient load. Their study found that physicians increased their personal workload to meet the needs of the community. The increase in number and rate of patients seen was also an indicator for burnout, demonstrating the continued need for recruitment and retention efforts. Still, the non-FFS system maintained flexibility in the case of increases in demand.

SYSTEM INCENTIVES

A key concern for physician-based primary care for underserved groups in Canada is the lack of connection between academic institutions training health professionals and the public health care system that uses and manages them. The Advisory Committee on Health Delivery and Human Resources (2007) argues that specialization continues to grow in part due to academic issues such as budget allocations and efficiency of scale, while generalism remains necessary for primary care rural health providers. Already Universities are involved in changing this pattern, with two medical schools in Canada offering rural specific programs and third in development. However, greater incentives to Universities produce rural generalists

with cultural competencies is recognized as potentially effective in shaping the mixture of graduating physicians, as are greater personal incentives to new physicians to explore rural and indigenous care.

LEGAL REQUIREMENTS

The legal requirements of physician-based primary care are not broadly discussed in the literature in ways that are meaningful to the BC context. Private versus public insurance differences are discussed from Australia (Cameron and Cameron 2001). Legal responsibility issues are discussed under Mixed Models in the section below. It is likely that the legal requirements for physician led care are considered settled and unproblematic in the literature.

MODELS OF CARE

There is very little in the literature regarding different models of physician led primary maternity care, especially when narrowed to serving indigenous communities. Many of the models of care under study in the literature reviewed above are immediately recognizable in the Canadian context as commonly existing models of primary care. These models overlap heavily and share a similar historical root.

The lack of variety is not meant to undercut the value of a physician-based model of care. Though physician-led primary care has a history in Canada's and BC's medical past that is parallel to and in some ways implicated in the structural dispossession and cultural damage of colonialism, there still exists a potential for a model in which the family physician that provides prenatal care, attends the birth, and provides post-natal care is also involved in caring for the child through her/his adolescent and even adult life. Representation of First Nations as physicians and greater cultural safety practices could lead to a community physician model in which continuity of carer is multi-generational and exists for a variety of health and wellness experiences.

PHYSICIAN PRIMARY CARE WITHIN NETWORKS OF SUPPORT

Description: In response to the often precipitous change from a low-risk to high-risk, status optimal care for women by a generalist physician takes place with access to higher levels of care in the forms of both consultation and referral/transfer (APRU 2014). This model of care is known to work best with integrated services for smooth transfer, geographically proximate secondary and tertiary services, and productive inter-professional relationships. This model of care has not been meaningfully studied with the addition of community care workers, health coaches, or advocates. Typically, in the examples from the literature, the decision for referral and transfer is made by the physician alone and is wholly clinical. Some examples of this model of care show lower than average transfer and intervention rates and there is some

suggestion that the closer the proximity to higher levels of care, the greater the risk accepted by primary care physicians.

Funding: A networked model exists within fee-for-service funding at the point of primary care entry. However infrastructure, human resources and equipment for emergency transfer exist as additional costs. Further, remuneration and/or incentives for inter-professional collaboration, relationship building, and consultation, as well as costs for continuing medical education, including locum support for rural physicians to leave the community for upgrading, compensation for ad hoc mentors or funding for formal training, may be necessary to create an optimally functioning system.

Example: As reported by Leeman and Leeman (2002; 2003) and discussed above, the close proximity of secondary and tertiary services, the existence of air ambulance support, and the relatively safe roads year-round in New Mexico have allowed primary care physicians to accept both low and moderate risk women for birth without local C-section support. A 7% C-section rate and strong birth outcomes are argued to be linked to these geographic and service planning factors, as well as to mandatory consultation between physicians over intervention decisions.

A further example comes from the far North of Queensland, Australia. One hospital with GPs with enhanced surgical skills cites the involvement of the FROGS (Far Northern Region Obstetrics and Gynaecology Service) program as an important factor in their strong outcomes, and notes the importance of helicopter transport to Cairns regional centre (Cameron and Cameron 2001). FROGS offers OB/GYN specialists four to six visits per year, lasting one to two days each time, in order to build skills and relationships among local providers.

ALTERNATIVE PAYMENT PLANS

Description: One of the primary challenges of having physicians involved in maternity care in small-volume rural areas is financial. Fee-for-service models are based on sufficient volume for remuneration not only for labor and delivery but also for the attendant stress of maternity on-call and potential emergencies. Additionally, providers in areas of high social need often discuss the lack of remuneration for preventative, community, and social health work that could benefit their patients more than clinical visits.

Funding: The premise of this model is to provide a set salary for physicians that could reduce expectations of greater volume, allow for greater scope of practice to include more preventative and community health, and potentially incentivize physicians to provide care needed in low-volume

communities. Currently, there are several Alternative Payment Plan sites for physicians in rural British Columbia including Alert Bay, Hazelton/New Hazelton.

Example: In Trail, physicians complained that obstetrical on-call was not remunerated the same way as other on-call groups (Kornelsen, July 2008). As well, with enough physicians to cover the on-call schedule sustainably, the number of births per physician was too low to make the service financially viable for providers (Kornelsen, July 2008). In this case, the creation of stipends for maternity work improved recruitment and retention.

MAIN POINTS:

- There is an under-representation of Aboriginal physicians in Canada despite educational and incentive programs to increase recruitment;
- Overseas trained doctors are often recruited to rural and isolated communities to meet Canadian practice requirements but are not prepared in settings where cultural competence is a priority;
- There is a lack of description of physician-based clinical competencies necessary for safe sustainable services;
- Evidence suggests that physicians would benefit from public health training to better serve First Nations communities where social health needs are prominent;
- Evidence suggests that community supports and health programming enables doctors to perform clinical duties effectively;
- Salary is a potential incentive for collaborative practices between physicians and community practitioners;
- Models of physician-led rural maternity care that may be conducive to Aboriginal settings include Networked models and Alternative Payment Plans.

Collaborative Physician and Midwifery Models of Primary Maternity Care

This section focuses on research that is specific to mixed models. Despite growing respect for mixed models in every jurisdiction, few examples exist in the literature, and fewer still have been evaluated for quality and sustainability.

Noted benefits of interprofessional collaboration are consistently reported and include horizontal learning among professionals, improved satisfaction among women, and the opportunity to repatriate mothers from the community who would otherwise travel for care. Interprofessional care also affords the opportunity for shared decision making, a hallmark of the Puvirnituk model. Ideally, a mixed model includes clear role identification to avoid overlapping scope of practice and to allow everyone to work to their greatest capacity (Kornelsen, July 2008), though the ideal scope of each provider is not detailed in the literature.

Nevertheless, stakeholders in BC communities have shown an interest in mixed model services. In a study intended to consider the potential for local birth services at the north end of Vancouver Island, BC, the Centre for Rural Health Research (2009) uncovered a variety of themes applicable to returning birth to First Nations communities around BC. Through 18 interviews and 19 focus groups with a total of 115 participants about maternity care on the North Island, the authors found nine primary themes:

- Desire for local maternity care services;
- Desire for more culturally appropriate care;
- Poor experiences with existing services;
- Policy/planning imperative to consider community need according to population characteristics;
- Desire for increased support to evacuate for birth
- Desire for midwifery services;
- Need for community-engaged, trustworthy midwife(wives);
- Need for C-section back-up;
- Need for an Aboriginal Doula program.

Health Human Resource Enablers

PROVIDER TYPE / TEAMLET CONSTRUCTION

The ideal combination of providers and allocation of skills in a mixed model of maternity care is not known. While some examples exist of interprofessional care teams that include both physicians and midwives (eg. South Community Birth program is an urban example), BC maternity service regulation has historically offered women the choice of either provider and not both. As well, provider maldistribution has

affected both physician and midwifery services, with the majority of BC's midwives working in the capital (Victoria) or the largest city (Vancouver) (MABC 2013).

In Trail, BC, a GP-led service with rotating on-call was thought to be losing sustainability in part because of women choosing to travel to Nelson for midwifery care. A mixed model was sought by the community to address a series of interrelated challenges in the struggling physician-led model. These challenges were articulated by Kornelsen (July 2008) as:

- Lack of trust in / confidence about local services;
- Health human resources problems;
- Limited resources;
- Unsustainable health services planning leading to intermittent services.

The example of a Teamlet discussed above includes a single physician and single midwife, along with a health coach as an option, recognizing that Teamlets would be built and customized to local need and context. No evidence was found to support or discourage this mix. The inclusion of a traditional midwife with a scope of practice beyond that of a coach / advocate (including delivering babies) is also somewhat unclear in the literature. Examples exist of registered and traditional midwives working together, but none were found that included a physician and traditional midwife in collaborative, shared practice.

HEALTH PROVIDER AND SUPPORT STAFF COMPETENCIES AND ATTITUDES

These findings are reviewed in the sections above, specific to each type of provider. There are some possible tensions in an interprofessional model, however, the most significant being home birth. Although currently within not only midwives scope of practice but also required competencies, physicians in BC have only been permitted to attend births at home since 2012. This creates challenges in sharing call, for example, as the physician provider available for the birth may not want to attend a woman at home. Although there are currently models based on collaborative arrangements, to date there have not been any physician-assisted home births.

Couchie and Sanderson (2007) argue for a number of culturally sensitive clinical changes in birth, including the use of traditional herbal remedies in place of oxytocin for augmentation and induction. That suggestion comes from a case study in which a community midwife was the lead in intrapartum care, backed up by a registered midwife. The role of a physician in this scenario is unclear, particularly with regard to shared indemnity and best practice guidelines for physician prescribing.

The need to build cultural competencies among providers is clear. However, the clinical implications of shared care between providers of different types are somewhat unclear. Interprofessional trust will need to be developed through shared training and CME, as well as interpersonal competencies of resolving conflict in a non-hierarchical environment. Finally, governance level changes will be required to change the legal barriers to that trust.

RECRUITMENT AND RETENTION

Representation of Aboriginal people in health careers is a noted problem in various jurisdictions. Just 1% of the Australian nursing population are Aboriginal (Clark 2013), and estimates suggest that just 0.25% of doctors in Canada are First Nations, Inuit, or Metis (Anderson and Lavallee 2007), and 7.5% of practicing midwives (Kildea and Van Wagner 2012). Greater representation is expected to result in improved cultural safety and competency through both direct interaction with patients and through influence with the workplace culture of hospitals and clinics.

Findings with regard to retaining rural practitioners in indigenous care are consistent with literature on rural care more generally. Namely, early career exposure, expanded locum support, local and team-based upskilling/CME, and mentoring are all significant contributors to retention (Bryant 2009).

PROFESSIONAL DEVELOPMENT

The shared workshops attended by traditional birth attendants and bio-medical attendants in the Bolivian model (Bastien 1994) discussed in Section One lends support to the idea of shared professional development as a necessary part of mutual trust and understanding in interprofessional care. However, no literature was found regarding CME models specific to mixed model primary maternity care in rural and/or Indigenous communities.

LEADERSHIP COMPETENCIES

The leading example of effective clinical leadership in the field comes from the midwifery led services in Nunavik discussed under the Midwifery section of this review. In that model, midwives, allied health professionals, elders, and community members take part in care planning based on both clinical and psycho-social risk factors with a strong emphasis on keeping women in the community as much as possible (Van Wagner et al. 2007; Van Wagner et al. 2012). The midwifery-led services serve seven Inuit communities in the western portion of Nunavik, on the eastern coast of Hudson Bay. In the period of 1989 to 2000, 73% of births from those seven communities were attended by midwives (Simonet et al. 2009). The model also includes a physician on-call to attend births or arrange fly-out transfer of emergency cases

to Montreal (Simonet et al. 2009).

For the seven communities along the western shore of the Ungava Bay in Nunavik, 95% of local births are attended by physicians in either English or French at the Tulattavik Hospital (at Kuujuaq). This service was found to have much higher rates of referral and transfer to higher levels of service outside of Nunavik despite no identified population differences (Simonet et al. 2009).

The model of care is important in this case, but so is the leadership of community-based elders, women, and midwives in planning care paths and assessing the psycho-social risk of referral and transfer. Physicians are included in clinical decision making and valued for their training and knowledge in the Hudson Bay communities, but an interprofessional model of decision making has improved the numbers of women birthing locally without a statistically different rate of perinatal mortality² (Simonet et al. 2009).

Structural and Governance Enablers

INFRASTRUCTURE AND EQUIPMENT

There was no evidence found regarding specific infrastructure or equipment for mixed models. Hospital, home-birth, and maternity centre birthing are all conceptually possible and are discussed in the appropriate sections above.

POLICY

Despite few evaluated examples of mixed models of care currently in the literature, some grey literature offers insights into the design of these services, including the design and implementation in First Nations communities in BC specifically.

Using the RBI score of each of Port McNeill and Port Hardy on the north end of Vancouver Island, BC there is an identified need for primary care in each community. However, the aggregated need of the north island calls for a mixed-model of care. The report's recommendations included a three-phase approach to developing that mixed-model.

Phase 1: Introduce two community-based midwives and build capacity for local birth. This phase would focus on cultural and community orientation and relationship building, as well as enhancing the skills of existing nursing and GP staff around maternity (pre-natal through post-natal).

² Simonet et al. 2009 found a non-significant rise in the odds of perinatal mortality among the midwife led services. However, when extreme preterm labours were removed from the numbers, the odds of mortality were actually lower in the midwife led service.

*This timeline is congruent with the 2008 report from Australia, “Midwifery Models of Care: An Implementation Guide,” which calls for a period no shorter than 3 months to allow new midwives to begin establishing a presence and building relationships while also rostering women for birth. The Australian example is premised on a caseload model, in which bridge funding would be necessary in that interim period. Such an arrangement would have to be made for midwives going to the North Island for that interim period (Phase 1) as well, unless those midwives were paid on annualized salary instead of per patient.

Phase 2: Foster an active midwifery-led birthing service. This phase focuses on beginning clinical midwifery, but also beginning to work the relationships with surgical and consultative back-up and practice the clinical governance model developed.

Phase 3: Introduce local C-section, subject to feasibility. Phase three requires 3 GP’s to be recruited or trained (1 GPESS; 1 GPA; 1 GPESS/GPA), and further 4 nurses to be recruited/trained to work in the OR. Midwives might also be accredited to assist with C-sections. In this case, an OR would also have to be established, which would in-turn allow further procedures to be performed, including by itinerant surgeons from the south.

Broader recommendations include providing a birth emergency course to existing staff along with perinatal skills updating, creating an Aboriginal Doula program that may be integrated with the midwifery service, and having outreach midwifery for those women and groups of women who are equally underserved and have low patient activation.

SYSTEM INCENTIVES

In a synthesis of health service research in the Northern Territory of Australia, Barclay (et al. 2014) remind us that billable services under Medicare limit the functional capacity of health care providers. Funding is challenging in the mixed private/public system of Australia as there is very little that the NT government can claim through Medicare for providing advocacy, continuity, and cultural safety services. Those same challenges are downloaded to providers themselves in BC, where patient-engaged health activities outside scheduled visits of set duration are limited by the Medical Services Plan. While other funding arrangements are required to remunerate work already being done in those areas (Barclay et al. 2014), there also exists the opportunity to influence health service activities through creating billable activities.

Finally, the example set by the Inuit midwifery service in Nunavik rests on the advocacy work of local activists. Evidence from BC shows a community level preference for mixed models of care where possible, but also a competitive funding environment. A system incentive in this context may include funding for

community-based 'local birth' advocacy groups to work in clarifying community needs and desires and communicating those needs to policy and planning bodies in ways congruent with community ownership

LEGAL REQUIREMENTS

BC's current legislation regarding primary maternity health provider stipulates that women may choose their provider, and that said provider may be a physician or a midwife. Tensions and challenges exist to overcoming this that are at once legal in nature and have developed into practice tensions over time.

The legal structure of indemnity is one such example. Though a legal matter with important implications that must be resolved to proceed with mixed models of care, indemnity also creates a particular challenge in interprofessional trust. In the event of a lawsuit, all parties involved in the course of care are named defendants, asking each provider to place trust in her or his collaborators.

This can be especially challenging between physicians and midwives. Respondents in Trail, BC indicated that the difference in course of care and approach to birth might create friction in decision making if a mixed model were pursued (Kornelsen, July 2008). As well, one respondent in Trail noted that it might be more challenging in rural care environments where providers are used to being without support and working independently (Kornelsen, July 2008).

MODELS OF CARE

A report on maternity services in Trail, BC by Kornelsen (July 2008) offered 5 detailed models of care that are relevant for considering collaborative midwifery and physician primary care without C-section. Each model has advantages and limitations discussed in detail in the original report. Below, each model focuses on the bio-medical birth attendant staffing features, with less attention to associated personnel (eg. midwife coordinator) or those health coaches accepted as required for culturally appropriate care and addressed above and in the FNHA Teamlet Discussion Paper (2014).

MODEL A: INTEGRATED PHYSICIAN CALL GROUP AND MIDWIFERY

Description: Share call between physicians involved in the catchment's obstetrical call group and 1 or 2 midwives, including prenatal, labour and delivery, and postpartum - all done at the physician-based health clinic. Women assigned to provider based on rotation. No independent midwifery.

Funding: 1) Pooled Fee for service; or 2) Physician fee-for-service and midwifery contracts

The primary benefit of this model is to improve sustainability by increasing call coverage. The pooling of health human resources reduces the on-call burden of maternity services and has the potential

to improve retention as a consequence. Home birth is excluded, as is home visit pre-natal visitation typical of a group midwifery practice. There is a lack of choice for women in this model to some extent.

MODEL B: COLLABORATIVE CALL AND COMMUNITY MIDWIFERY PRACTICE

Description: The addition of community midwifery requires at least 2 midwives. Collaborative postpartum care includes PHNs, lactation consultant, midwives and physicians. Maternity nurses may be potential second in delivery as greater independence for midwives may expand scope of practice.

Funding: Same as model A with the addition of: Partial pooled fee for service, plus service contract payment for additional non-billable services performed by midwives.

This model also holds the advantage of increased call coverage, but allows for some choice for women. As well, home birth and home pre-natal visitation possible. However, continuity is still limited by having shared call.

MODEL C: COLLABORATIVE CALL AND OUTREACH MIDWIFERY

Description: In addition to all the services and requirement of Model B, this model includes outreach midwifery from the health clinic to the outlying catchment for prenatal and postpartum care.

Funding: Same as Model B.

Outreach to smaller communities is the primary advantage of this model, with the noted challenge of increased time away from the community practice for midwives. As well, the increasing complexity of practice implies a growing need for a coordinator position. That coordinator may be an administrative position for the practice, coordinating call schedules and midwife travel. Or a care coordinator might interact with women in the community to ensure appropriate prenatal attendance, manage continuity and travel to the health centre for labour and birth.

MODEL D: INDEPENDENT PHYSICIAN AND MIDWIFERY PRACTICE (PARALLEL PRACTICE)

Description: Call is staffed exclusively by physicians in this case, but exists alongside a full-scope midwifery practice of at least 2 midwives. Women are assigned through choice alone.

Funding: 1) Fee-for-service; Or 2) Alternative payment

Enhanced continuity for midwifery clients and choice for women are the highlights of this model. At the same time, challenges including appropriate coverage for the call group, rationalizing volume between providers to ensure that health human resources are maximized but not overwhelmed, and establishing a

midwifery practice that cannot bill in a fee-for-service environment for the first few months. As well, the interaction of health coaches with birth providers is complicated by the existence of two separate practices. Would these health coaches be employed in either service directly? Or would they be independent contractors of some sort?

MODEL E: ONE-TO-ONE CARE AND COMMUNITY MIDWIFERY PRACTICE

Description: Physicians working on a one-to-one model of care in which a GP manages his/her own patients through a continuum of care. A full scope midwifery practice would exist alongside this practice, providing home birth, home prenatal, and possibly outreach work.

Funding: Same of Model D

Continuity of Care and continuity of carer are optimized under this model, but at the same time, communication and collaboration are potentially lacking when considering a 5 C's approach. This type of practice is most vulnerable to health human resource vagaries that historically undermine sustainability of rural practice. CME, holidays, locum support all become problematic as they are in many rural health service environments. Providers reported to Kornelsen (2008) a high degree of satisfaction with being involved with a women through the process of pregnancy and birth, and overwhelming research discussed above shows the value of continuity of care(r) for parturient women and their babies.

MAIN POINTS

- Despite noted benefits of interprofessional collaboration (including horizontal learning among professionals and improved satisfaction among women), there are a lack of process and summative evaluation of such models;
- Although there are examples of registered and traditional midwives working together, there are no examples of physicians and traditional midwives in such relationships;
- A significant tension in interprofessional models of care may be a woman's choice of birth place setting (hospital, home or birth centre); other tensions may exists regarding the use of traditional herbal remedies.

CONCLUSION

There are known limitations to the research informing how to enable distributed maternity care for Aboriginal women in BC, including a generally low quality of research design, a lack of rich context description, and a persistent gap between health service evaluation traditions and health service planning needs. This report has attempted to use the existing research to advance the conceptual discussion system enablers for appropriate maternity services for rural First Nations communities and is intended to offer an extensive review of international evidence on a wide variety of policy and planning options known to the reviewers to be potentially viable in British Columbia.

Cultural safety is a known and required component of successful health services for First Nations (and other distinct communities). However, the notion of cultural safety is itself cultural within health service delivery. To date, efforts at cultural safety have often been concessionary, attempting to bring First Nations people into medicalized health care more comfortably. The importance of geography, place, setting, holistic ideas of community, and even practiced rituals that do not suit a western hospital (such as smudging) are rarely considered ahead of financial or efficiency concerns.

BC has an opportunity for radically new models of care that follow international best practice for integrating western medical knowledge with community-held historical, cultural, and personal knowledge. As part of that, the importance of home cannot be understated. Commitments to training Indigenous health care providers must exist across generations to ensure effectiveness, and the shaping and control of services for First Nations by First Nations must be considered part of cultural safety. As one Inuit midwife said, “Don’t give us your theories, your philosophy: we don’t need them. We don’t need your culture, we need the facts” (quoted in Douglas et al. 2010, p115).

Literature on the effectiveness of rural, low-volume maternity care within a contextual framework of meeting the needs of Aboriginal communities is lacking. There is growing evidence on key cultural components of effective models and emerging evidence around health human resource configurations, skills and competencies required. Through continuous engagement and evaluation occurring across regions and health organizations, more evidence is expected to emerge to inform models of care. It is intended that in partnership and with planning and evaluation work, an understanding can be developed about the precise size of a community able to sustain local maternity care and the most effective settings for coordinated care amongst Indigenous, bio-medical and inter-sectoral team members.

Based on the literature results overviewed in this report and summarized above, the following recommendations have been developed by the Applied Research Policy Unit for the consideration of FNHA and its many partners to inform plans to maintain, grow and continuously improve supports for birth in rural and remote settings. It is hoped that these recommendations can function as a helpful starting point for discussion, the identification of priorities for organizational work and joint action planning. These recommendations have been framed as action statements and have been divided into overarching recommendations, recommendations for contexts with no primary maternity care and recommendations for contexts with primary maternity care.

OVER-ARCHING RECOMMENDATIONS

- 1. Develop and implement a system of population-based monitoring and evaluation work for continuous quality improvement in maternity care.**
- 2. Plan for and gather data alongside the implementation of any new rural Aboriginal maternity care health service model, to capture the impact of this work and celebrate success.**
- 3. Develop an approach to determine relative care needs of communities based on population, isolation and vulnerability measures matched with the capacity of communities to sustain services. (eg. Rural birth index)**
- 4. Explore the utility of Birth Centres as locations for labor and delivery in rural communities.**

(Context: Although British Columbia does not officially recognize Birth Centres as locations for birth, growing evidence from other jurisdictions in Canada and internationally suggests them as appropriate locations for care. They hold particular advantage in rural setting where existing physical infrastructure may be lacking and in Aboriginal settings where there may discrete cultural needs that cannot be or are not accommodated in hospital settings.)

Recommendations in Contexts with No Local Primary Maternity Care

The following evidence-based recommendations are specific to the models of care reviewed previously. It is understood that change in both health policy and service environments require collaboration across sectors and between institutions.

- 5. Build on existing care models that successfully respond to the needs of the community and effectively use local resources while maintaining a commitment to seeking additional staff and promoting interdisciplinary team growth where needed and possible.**
- 6. Increase community and health system awareness about the value of doulas and/or birth advocates, and approaches to their sustainable compensation and recruitment and retention in rural settings to aid patient care.**
- 7. Generate a culture of acceptance and appreciation to support integrated and collaborative work of all members of a health team through intentional practice overlaps, joint continuing education, and a protocol for holding shared health records.**
- 8. Explore opportunities for short course training and other community-based modules on obstetrics and obstetrical emergencies to be available for all remote area health staff without prerequisites.**
- 9. Increase access to a wide range of education opportunities grounded in culturally appropriate care and practice standards and expectations for rural settings. Recommended training includes and is not limited to knowledge and skill building in: Self-awareness, listening, independent and resourceful practice, working in low-resource environments, community engagement approaches and teamwork (inclusive of teamwork via phone and tele-health).**
- 10. Develop commonly understood and used standards and processes for effective clinical and**

non-clinical care decision making in rural and isolated community contexts. If there are not existing local primary care services, this decision making may fit under the umbrella of other community governance structures (eg. Under the governance of health services in the referral community or through establishing a distinct mechanism of local health leadership).

11. Consider the model of Maternal Waiting Homes (MWH) to mitigate the social challenges and impacts of loneliness and isolation when waiting to give birth in a referral centre. These homes can provide the infrastructure for educational, social and health-related activities in the late pre-natal period.
12. Build and support social resources (family and community) for birthing women in her home community and in particular when women may need to travel or evacuate to give birth. This entails escort policies that acknowledge the importance of and fund accompaniment to and in the referral community.

Recommendations in Contexts with Local Primary Maternity Care

13. Base local primary care provision on an interdisciplinary team model, inclusive of local providers and members from a variety of backgrounds (in the health field and beyond).
14. Identify and support both individuals and teams in their unique and shared career and professional development goals and planning.
15. Consider and coordinate both local and external staff recruitment and retention models for greatest collective impact.
16. Integrate both bio-medical knowledge and traditional knowledge into care models that are driven by Aboriginal needs, and serve Aboriginal communities.
17. Explore ways to establish cultural safety and anti-racism training and ongoing practice support as valued, expected and mandatory.

- 18. Identify and encourage leadership priorities and qualities valued by individual communities as a condition for practice. These may include political commitment, local leadership and control, collaboration between practitioners, consumer involvement, or ongoing monitoring and sharing of information and results.**
- 19. Explore ways to support the management of clinical decision making through non-hierarchical, consensus-based processes between bio-medical care providers, traditional-medical care providers, and advocates.**
- 20. Consider Birthing Centres as an alternative place for birth either in the presence or absence of local hospitals within a quality assurance and outcomes monitoring framework.**
- 21. Promote the availability of female physicians (in care models that are physician-led) in support of increasing access to and continuity of care.**

BIBLIOGRAPHY

1. Abelson J, Lomas J, Eyles J, Birch S, Veenstra G: **Does the community want devolved authority? Results of deliberative polling in Ontario.** *CMAJ*. 1995; **153(4)**:403–12.
2. Adelson N: **The embodiment of inequity: Health disparities in Aboriginal Canada.** *Can J Public Health*, **96(2)**:45-61.
3. Alexander C, Fraser JD: **Education, training and support needs of Australian trained doctors and international medical graduates in rural Australia: a case of special needs?** *Rural Remote Health*. 2007; **7(2)**:681.
4. Anderson BA, Anderson EN, Franklin T, Dzib-Xihum de Cen A: **Pathways of decision making among Yucatan Mayan traditional birth attendants.** *J Midwifery Womens Health* . 2014; **49(4)**:312–9.
5. Anderson M, Lavallee B: **The development of the First Nations, Inuit and Métis medical workforce.** *Med J Aust*. 2007; **186(10)**:539–40.
6. Arkles RS, Hill PS, Pulver LRJ: **Over-seas trained doctors in Aboriginal and Torres Strait Islander health services: many unanswered questions.** *Med J Aust*. 2007; **186(10)**:528–30.
7. Australian Health Ministers' Advisory Council (AHMAC): *Primary maternity services in Australia: A framework for implementation*. 2008.
8. Baldwin L-M, Grossman DC, Casey S, Hollow W, Sugarman JR, Freeman WL, Hart LG: **Perinatal and infant health among rural and urban American Indians/Alaska Natives.** *Am J Public Health*. 2014; **92(9)**:1491–7.
9. Baldwin L-M, Grossman DC, Murowchick E, Larson EH, Hollow WB, Sugarman JR, Freeman WL, Hart LG: **Trends in perinatal and infant health disparities between rural American Indians and Alaska natives and rural Whites.** *Am J Public Health*. 2009; **99(4)**:638–46.
10. Barclay L, Kruske S, Bar-Zeev S, Steenkamp M, Josif C, Narjic CW, Wardaguga M, Belton S, Gao Y, Dunbar T, Kildea S: **Improving Aboriginal maternal and infant health services in the “Top End” of Australia; synthesis of the findings of a health services research program aimed at engaging stakeholders, developing research capacity and embedding change.** *BMC Health Serv Res*. 2014; **14(1)**:241.
11. Barnett P, Tenbensen T, Cumming J, Clayden C, Ashton T, Pledger M, Burnette M: **Implementing new modes of governance in the New Zealand health system: an empirical study.** *Health Policy*. 2009; **93(2-3)**:118–27.
12. Bar-Zeev SJ, Barclay L, Farrington C, Kildea S: **From hospital to home: the quality and safety of a postnatal discharge system used for remote dwelling Aboriginal mothers and infants in the top end of Australia.** *Midwifery*. 2012; **28(3)**:366–73.
13. Bar-Zeev S, Barclay L, Kruske S, Bar-Zeev N, Gao Y, Kildea S: **Use of maternal health services by remote dwelling Aboriginal women in northern Australia and their disease burden.** *Birth*. 2013; **40(3)**:172–81.
14. Bar-Zeev S, Barclay L, Kruske S, Kildea S: **Factors affecting the quality of antenatal care provided to remote dwelling Aboriginal women in northern Australia.** *Midwifery*. 2014; **30**:289–96.
15. Bastien JW: **Collaboration of doctors and nurses with ethnomedical practitioners.** *World Health Forum*. 2014; **15(2)**:133–7.
16. Bauert PA: **The Royal Darwin Hospital as a centre of excellence for clinical training in Aboriginal health: Still a dream.** *Med J Aust*. 2005; **182(10)**:528–9.
17. Bell M, Macdougall K: **Adapting online learning for Canada’s Northern public health workforce.** *Int J Circumpolar Health*. 2013; **1(c)**:1–7.
18. Belton S, Campbell M, Foxley S, Hamerton B, Gladman J, McGrath S, Piller N, Saunders N, Vaughan F:

Evaluating the long-term effectiveness of the Maternity Emergency Care course in remote Australia. *Women Birth.* 2010; **23(2)**:60–6.

19. Benjamin Y, Walsh D, Taub N: **A comparison of partnership caseload midwifery care with conventional team midwifery care: labour and birth outcomes.** *J Midw.* 2001; **17(3)**:234-240.

20. Benoit C, Carroll D: **Aboriginal midwifery in Canada blending traditional and modern forms.** Canadian Women's Health Network. 2001.

21. Benoit C, Carroll D, Millar A. **But is it good for non-urban women's health? Regionalizing maternity care services in British Columbia.** *Can Reg Sci Assoc.* 2002; **39(4)**:373–94.

22. Birch J, Ruttan L, Muth T, Baydala L. **Culturally competent care for Aboriginal women : a case for culturally competent care for Aboriginal women giving birth in hospital settings.** *J Aborig Heal.* 2009; **4(2)**:24–34.

23. Boland CM: **Continuity of care by a midwife team versus routine care during pregnancy and birth: a randomised trial.** *Med J Aust.* 1996; **165(1)**:61.

24. Bossert T: **Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance.** *Soc Sci Med.* 1998; **47(10)**:1513–27.

25. Brodie P: **Addressing the barriers to midwifery - Australian midwives speaking out.** *Aust Coll Midwives Inc J.* 2002; **15(3)**:5–14.

26. Brown M, Dietsch E: **The feasibility of caseload midwifery in rural Australia: a literature review.** *Women Birth.* 2013; **26(1)**:e1–4.

27. Brown SA, Grimes DE: **A meta-analysis of nurse practitioners and nurse midwives in primary care.** *Nursing research.* 1995; **44(6)**: 332–9.

28. Buchan J, Ball J, O'May F: **Determining Skill mix in the health workforce: guidelines for managers and health professionals.** *Evidence and Information for Policy, World Health Organization.* 2000.

29. Burns K, Luitingh U, Tinney W, Bhatti V, Neufeld A, Kelly L, Hassanali A, Warmenhoven W, Villasenor F: **Teamlet health care concept: new partnership between First Nations Health Authority and Doctors of BC.** *Division Digest.* 2014 June; **8**.

30. Butler DC, Petterson S, Bazemore A, Douglas KA: **Use of measures of socioeconomic deprivation in planning primary health care workforce and defining health care need in Australia.** *Aust J Rural Health.* 2010; **18(5)**:199–204.

31. Buxton JA, Ouellette V, Brazier A, Whiteside C, Mathias R, Dawar M, Mulkins A: **Bridging the gap in population health for rural and Aboriginal communities : a needs assessment of public health training for rural primary care physicians.** *Can J Rural Med.* 2007; **12(2)**:81–8.

32. Campbell S, Brown S: **Maternity care with the Women's Business Service at the Mildura Aboriginal Health Service.** *Aust N Z J Public Health.* 2004; **28(4)**:376-82.

33. Cameron B, Cameron S. **Outcomes in rural obstetrics, Atherton Hospital 1991-2000.** *Aust J Rural Health.* 2001 Dec; **9(Suppl 1)**:S39–42.

34. Castañeda Camey X, García Barrios C, Romero Guerrero X, Nuñez-Urquiza RM, Gonzalez Hernández D, Langer Glass A: **Traditional birth attendants in Mexico: advantages and inadequacies of care for normal deliveries.** *Soc Sci Med.* 1996 Jul; **43(2)**:199–207.

35. Chamberlain M, Barclay K, Kariminia A, Moyer A. **Aboriginal birth: psychosocial or physiological safety.** *Birth Issues .* 2001 Dec; **10(3/4)**:81–5.

36. Chary A, Díaz AK, Henderson B, Rohloff P. **The changing role of indigenous lay midwives in Guatemala: new frameworks for analysis.** *Midwifery.* 2013 Aug; **29(8)**:852–8.

37. Clarke F: **Leadership issues in the workplace for Aboriginal and Torres Strait Islander nurses in Australia.** *Aust Nurs J.* 2013 Feb; **20(7)**:44.
38. Collins C, Fereday J, Pincombe J, Oster C, Turnbull D: **An evaluation of the satisfaction of midwives' working in midwifery group practice.** *J Midw.* 2008; **26(4)**:435-411.
39. Crozier K: **Interprofessional education in maternity care: shared learning for women-centred care.** *Int J Social Soc Policy.* 2003; **23(4/5)**:123-38.
40. Devane D, Murphy-Lawless J, Begley CM: **Childbirth policies and practices in Ireland and the journey towards midwifery-led care.** *Midwifery.* 2007 Mar; **23(1)**:92-101.
41. Dietsch E, Mulimbalimba-Masururu L: **Learning lessons from a traditional midwifery workforce in western Kenya.** *Midwifery.* 2011 Jun; **27(3)**:324-30.
42. Douglas VK: **The Inuulitsivik Maternities: culturally appropriate midwifery and epistemological accommodation.** *Nurs Inq.* 2010; **17(2)**:111-7.
44. Dubois CA, Singh D: **From staff-mix to skill-mix and beyond: towards a systemic approach to health workforce management.** 2009 Jan; **7**:87.
45. Epoo B, Wagner V Van: **Learning midwifery in Nunavik : community-based education for Inuit midwives.** 2012;**10(3)**.
46. Epoo B, Wagner V Van: **Bringing birth back to the community: midwifery in the Inuit villages of Nunavik.** ICM 27th Congress. Brisbane, Australia; 2005.
47. Fahy K: **What makes a midwifery model of care safe?** *Women Birth.* 2012 Mar; **25(1)**:1-3.
48. Felton-Busch CM, Solomon SD, McBain KE, De La Rue S: **Barriers to advanced education for indigenous Australian health workers: an exploratory study.** *Educ Health.* 2009 Aug; **22(2)**:187.
49. Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources (ACHDHR): *A Framework Health Human Resources Planning.* 2007.
50. First Nations Health Authority: *Teamlets discussion paper.* Canada: 2014.
51. First Nations Health Authority: *BC First Nations and Aboriginal maternal, child and family strategic approach.* Canada: 2013
52. First Nations Health Authority: *A path forward: BC First Nations and Aboriginal People's mental wellness and substance use – 10 year plan.* Canada: 2013.
54. Francis K, McLeod M, McIntyre M, Mills J, Miles M, Bradley A: **Australian rural maternity services: creating a future or putting the last nail in the coffin.** *Aust J Rural Health.* 2012 Oct; **20(5)**:281-4.
55. Frankish CJ, Kwan B, Ratner P a, Higgins JW, Larsen C: **Challenges of citizen participation in regional health authorities.** *Soc Sci Med.* 2002 May; **54(10)**:1471-80.
56. Frankish CJ, Kwan B, Ratner P a, Higgins JW, Larsen C: **Social and political factors influencing the functioning of regional health boards in British Columbia (Canada).** *Health Policy.* 2002 Aug; **61(2)**:125-
57. Freeman P: **A culturally oriented curriculum for Aboriginal health workers.** *World Health Forum.* 1993; **14(3)**:262-6.
58. Gabrysch S, Lema C, Bedriñana E, Bautista MA, Malca R, Campbell OMR, et al.. **Cultural adaptation of birthing services in rural Ayacucho, Peru.** *Bull World Health Organ.* 2009 Sep; **87(9)**:724-9.
59. Gao Y, Gold L, Josif C, Bar-Zeev S, Steenkamp M, Barclay L, et al.: **A cost-consequences analysis of a midwifery group practice for Aboriginal mothers and infants in the top end of the Northern Territory, Australia.** *Midwifery.* 2014 Apr; **30(4)**:447-55.

60. Gilles MT, Wakerman J, Durey A: **"If it wasn't for OTDs, there would be no AMS": overseas-trained doctors working in rural and remote Aboriginal health settings.** *Aust Health Rev.* 2008 Nov; **32(4)**
61. Gold ST, Neil JO, Van Wagner V: **Examining midwifery-based options to improve continuity of maternity care services in remote Nunavut communities.** 2005; p. 1–32.
62. Goldman N, Gleit DA: *Evaluation of Midwifery Care : A Case Study of Rural Guatemala.* 2000.
63. Government of Australia: *Improving Maternity Services in Australia: The report of the Maternity Services Review.* 2009; p. 1–74.
64. Green M, Van Iersel R: **Response of rural physicians in a non-fee-for-service environment to acute increases in demand due to physician shortages.** *Can J Rural Med.* 2007; **12(1)**:10–5.
65. Grzybowski SC, S.C. G: **Problems of providing limited obstetrical services to small, isolated, rural populations.** *Can Fam Physician.* 1998; **4**: 230-3.
66. Grzybowski S, Stoll K, Kornelsen J: **Distance matters: a population based study examining access to maternity services for rural women.** *BMC Health Sciences Research.* 2011; **11(147)**: 1-8.
67. Grzybowski S, Kornelsen J, Cooper E: **Rural maternity care services under stress: the experiences of providers.** *Can J Rural Med.* 2007; **12(2)**: 89-94.
68. 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.
69. Haaren M Van, Williams : **Central Australian nurse management model (Can model): a strategic approach to the remot-area nurses.** *Aust J Rural Health.* 2000; **8(1)**:1–5.
70. Hancock H: **Low birth weight in Aboriginal babies—a need for rethinking Aboriginal women's pregnancies and birthing.** *Women Birth.* 2007 Jun; **20(2)**:77–80.
71. Hancock H: **Evidence-based midwifery practice in Australian rural and remote settings an unknown entity.** *Evid Based Midwifery.* 2006; **4(1)**:31–4.
72. Hanlon M, Burstein R, Masters SH, Zhang R: **Exploring the relationship between population density and maternal health coverage.** *BMC Health Serv Res.* 2012 Jan; **12**:416.
73. Harris FM, van Teijlingen E, Hundley V, Farmer J, Bryers H, Caldwell J, et al.: **The buck stops here: midwives and maternity care in rural Scotland.** *Midwifery.* 2011; **27(3)**:301–7.
74. Hartz DL, Foureur M, Tracy SK: **Australian caseload midwifery: the exception or the rule.** *Women Birth.* 2012 Mar; **25(1)**:39–46.
75. Hatem M, Sandall J, Devane D, Soltani H & Gates S: **Midwife-led versus other models of care delivery for childbearing women.** *Cochrane Database Syst Rev.* 2008; **4**.
76. Hendy S: **Improving maternity care for Aboriginal women.** *Aust Nurs J.* 2007 Apr; **14(9)**:25.
77. Hilgert NI, Gil GE: **Reproductive medicine in northwest Argentina: traditional and institutional systems.** *J Ethnobiol Ethnomed.* 2007 Jan; **3**:19.
78. Hodnett ED, Downe S, Edwards N, Walsh D: **Home-like versus conventional institutional settings for birth.** *Cochrane Database Syst Rev.* 2005; **(1)**:151–2.
79. Hodnett E, Downe S, Walsh D, Weston J. **Alternative versus conventional institutional settings for birth (review).** *Cochrane Libr.* 2010; **(9)**.
80. Homer CS, Matha DV, Jordan LG, Wills J, Davis GK: **Community-based continuity of midwifery care versus standard hospital care : a cost analysis.** *Aust Health Rev.* 2001; **24(1)**:85-93

81. Homer CSE, Davis GK, Cooke M, Barclay LM. **Women ' s experiences of continuity of midwifery care in a randomised controlled trial in Australia.** *Midwifery.* 2002; **18(2)**:102-12.
82. Humphreys J, Wakerman J, Pashen D, Buykx P: **Retention strategies and incentives for health workers in rural & remote areas: what works?** *Australian Primary Health Care Research Insti.* 2009; (November).
83. Hunter New England Health Aboriginal and Torres Strait Islander Strategic Leadership Committee: **Closing the gap in a regional health service in NSW: a multi-strategic approach to addressing individual and institutional racism.** *N S W Public Health Bull.* 2012; **23(3-4)**:63-7.
84. Iglesias A, Iglesias S, Arnold D. **Birth in Bella Bella: emergence and demise of a rural family medicine birthing service.** *Can fam phys.* 2010; **56(6)**: e233–40.
85. Ireland J, Bryers H, van Teijlingen E, Hundley V, Farmer J, Harris F, et al.. **Competencies and skills for remote and rural maternity care: a review of the literature.** *J Adv Nurs.* 2007 Apr; **58(2)**:105–15.
86. Ireland S, Wulili Narjic C, Belton S, Kildea S. Niyith NiyithWatmam. **(The quiet story): exploring the experiences of Aboriginal women who give birth in their remote community.** *Midwifery.* 2011 Oct; **27(5)**:634–41.
87. James AM. **Closing rural hospitals in Saskatchewan: on the road to wellness?** *Soc Sci Med.* 1999 Oct; **49(8)**:1021–34.
88. James S, O'Brien B, Bourret K, Kango N, Gafvels K, Paradis-Pastori J: **Meeting the needs of Nunavut families: a community-based midwifery education program.** *Rural Remote Health.* 2014;**10(2)**:1355.
89. Jo B, Cairns B: **Maori maternity in the land of the long white cloud.** *British Journal of Midwifery.*1990; **13(2)**:74-77.
90. Johnson M, Stewart H, Langdon R, Kelly P, Yong L: **Women-centred care and caseload models of midwifery.** *Collegian.* 2003 Jan; **10(1)**:30–4.
91. Josif CM, Barclay L, Kruske S, Kildea S: **“No more strangers”: investigating the experiences of women, midwives and others during the establishment of a new model of maternity care for remote dwelling aboriginal women in northern Australia.** *Midwifery.* 2014; **30**:317–23.
92. Keltner B, Kelley FJ, Smith D: **Leadership to reduce health disparities: a model for nursing leadership in American Indian communities.** *Nurs Adm Q.* 2004; **28(2)**:181–90.
93. Kestler E, Walker D, Bonvecchio A, de Tejada SS, Donner A: **A matched pair cluster randomized implementation trail to measure the effectiveness of an intervention package aiming to decrease perinatal mortality and increase institution-based obstetric care among indigenous women in Guatemala: study protocol.** *BMC Pregnancy Childbirth.* 2013 Jan;**13**:73.
94. Kildea S: **Risky business: contested knowledge over safe birthing services for Aboriginal women.** *Heal Sociol Rev.* 2006 Oct; **15(4)**:387–96.
95. Kildea S, Kruske S, Barclay L, Tracy S: **“Closing the Gap”: how maternity services can contribute to reducing poor maternal infant health outcomes for Aboriginal and Torres Strait Islander women.** *Rural Remote Health.* 2010;**10(3)**:1383.
96. Kildea S, Kruske S, Bowell L: **Maternity emergency care: short course in maternity emergencies for remote area health staff with no midwifery qualifications.** 2006 Jun; **14(3)**:111–5.
97. Kildea S, Wagner V Van: **Birth on country: maternity service delivery models; a review of literature.** *Maternity Services Jurisdictional Committee, Australia.* 2012.
98. Kornelsen J, & Grzybowski S. (2005a). **Safety and community: the maternity care needs of rural parturient women.** *Journal of Obstetrics and Gynaecology Canada,* 27 (6), 554-61.

99. Kornelsen J, & Grzybowski S. (2005b). **The Costs of Separation: The birth experiences of women in isolated and remote communities in British Columbia.** *Canadian Women Studies Journal*, 24 (1), 75-80.
100. Kornelsen, Kotaska and Cooper: *Final report: Bella Bella/Wasaglia: a case study on the implications of the closure of local maternity services.* 2007.
101. Kornelsen J, Kotaska A, Waterfall P, Willie L, Wilson D: **The geography of belonging: the experience of birthing at home for First Nations women.** *Health Place*. 2010 Jul; **16(4)**:638–45.
102. Kornelsen J, Kotaska A, Waterfall P, Willie L, Wilson D. (2011). **Alienation and resilience: The dynamics of birth outside their community for rural First Nations women.** *Journal of Aboriginal Health*, 7 (1), 55-64.
103. Kreiner M: **Delivering diversity: newly regulated midwifery returns to Manitoba, Canada, one community at a time.** *J Midwifery Womens Health*. 2009; **54(1)**:e1–e10.
104. Kruske S, Barclay L: **Effect of shifting policies on traditional birth attendant training.** *J Midwifery Womens Health*. 2004; **49(4)**:306–11.
105. Kruske S, Belton S, Wardaguga M, Narjic C: **Growing up our way: the first year of life in remote Aboriginal Australia.** *Qual Health Res*. 2012 Jun; **22(6)**:777–87.
106. Kruske S, Kildea S, Barclay L: **Cultural safety and maternity care for Aboriginal and Torres Strait Islander Australians.** *Women Birth*. 2006 Sep; **19(3)**:73–7.
107. Kulig JC, Stewart NJ, Morgan D, Andrews ME, MacLeod MLP, Pitblado JR: **Aboriginal Nurses: Insights from a National Study.** *Can Nurse*. 2006 Apr; **102(4)**:16–20.
108. Lalonde AB, Butt C, Bucio A: **Maternal health in Canadian Aboriginal communities: challenges and opportunities.** *J Obstet Gynaecol Can*. 2009 Oct; **31(10)**:956–62.
109. Landon B, Loudon J, Selle M, Doucette S: **Factors influencing the retention and attrition of community health aides/practitioners in Alaska.** *J Rural Health*. 2004 Jan; **20(3)**:221–30.
110. Laufik N: **The physician assistant role in Aboriginal healthcare in Australia.** *JAAPA*. 2014 Jan; **27(1)**:32–5.
111. Leeman L, Leeman R: **A Native American community with a 7% cesarean delivery rate: does case mix, ethnicity, or labor management explain the low rate?** *Ann Fam Med*. 2003; **1(1)**:36–43.
112. Lomas J: **Devolving authority for health care in Canada's provinces: 4. Emerging issues and prospects.** 1997; **156(3)**:817–23.
113. Lomas J, Veenstra G, Woods J: **Devolving authority for health care in Canada's provinces: 2. Backgrounds, resources and activities of board members.** 1997; **156(4)**:513–20.
114. Lomas J, Veenstra G, Woods J: **Devolving authority for health care in Canada's provinces: 3. Motivations, attitudes and approaches of board members.** 1997; **156(5)**:669–76.
115. Lomas J, Woods J, Veenstra G: **Devolving authority for health care in Canada's provinces: 1. An introduction to the issues.** *Can Med Assoc J*. 1997; **156(3)**:371–7.
116. Luo Z-C, Senécal S, Simonet F, Guimond E, Penney C, Wilkins R: **Birth outcomes in the Inuitinhabited areas of Canada.** *CMAJ*. 2010 Feb; **182(3)**:235–42.
117. Luo Z-C, Wilkins R, Heaman M, Martens P, Smylie J, Hart L, et al.: **Birth outcomes and infant mortality by the degree of rural isolation among first nations and non-first nations in Manitoba, Canada.** *J Rural Health*. 2010 Jan; **26(2)**:175–81.
118. Mackinnon K: **Learning Maternity : The Experiences of Rural Nurses.** *Can J Nurs Res*. 2010; **42(1)**:38–55.
119. Macleod MLP, George P, Misener RM: **“ I'm a different kind of nurse ”: advice from nurses in rural and remote Canada.** *Nurs Res*. 2008; **21(3)**:40–53.

120. Mahoney SF, Malcoe LH: **Cesarean delivery in Native American women: are low rates explained by practices common to the Indian health service?** *Birth*. 2005 Sep; **32(3)**:170–8.
121. Manchester A: **Promoting wellness in women and whānau.** *Nurs N Z*. 2014 Mar; **20(2)**:22–3.
122. Martin Misener R, MacLeod MLP, Banks K, Morton a M, Vogt C, Bentham D: **“There’s rural, and then there’s rural”:** **advice from nurses providing primary healthcare in northern remote communities.** *Nurs Leadersh (Tor Ont)*. 2008 Jan; **21(3)**:54–63.
123. McCalman J, Tsey K, Bainbridge R, Rowley K, Percival N, O’Donoghue L, et al.: **The characteristics, implementation and effects of Aboriginal and Torres Strait Islander health promotion tools: a systematic literature search.** *BMC Public Health*. 2014 Jan; **14(1)**:712.
124. Mills JE, Francis K, Birks M, Coyle M, Henderson S, Jones J: **Registered nurses as members of interprofessional primary health care teams in remote or isolated areas of Queensland: collaboration, communication and partnerships in practice.** *J Interprof Care*. 2010 Sep; **24(5)**:587–96.
125. Minore B, Boone M: **Realizing potential: improving interdisciplinary professional/paraprofessional health care teams in Canada’s northern aboriginal communities through education.** *J Interprof Care*. 2002 May; **16(2)**:139–47.
126. Minore B, Boone M, Hill E. **Finding Temporary Relief: Strategy for Nursing Recruitment in Northern Aboriginal Communities.** *Can J Nurs Res*. 2004; **36(2)**:148–63.
127. Miller KJ, Couchie C, Ehman W, Graves L, Grzybowski S, Medves J: **Rural maternity care.** *Journal of Obstetrics and Gynaecology Canada*. 2012; **34(10)**: 984.
128. Moffit PM, Vollman AR: **At what cost to health? Tlcho women’s medical travel for childbirth.** 2006; **22(2)**:228–39.
129. Montgomery-Andersen R, Douglas V, Borup I: **Literature review: the “logics” of birth settings in Arctic Greenland.** *Midwifery*. Elsevier; 2013 Nov; **29(11)**:e79–88.
130. Muecke A, Lenthall S, Lindeman M: **Culture shock and healthcare workers in remote Indigenous communities of Australia: what do we know and how can we measure it?** *Rural Remote Health*. 2011 Jan; **11(2)**:1607.
131. Munro S, Kornelsen J, Grzybowski S: **Models of maternity care in rural environments: Barriers and attributes of interprofessional collaboration with midwives.** *J Midw*. 2012; **29(6)**:646–652.
132. Murdoch JC: **Making it pay and helping us stay: the viability of a rural general practice in New Zealand.** *N Z Med J*. 2006 Jan; **119(1246)**:U2346.
133. Murray RB, Wronski I, Murray RB, Wronski I: **When the tide goes out: health workforce in rural, remote and Indigenous communities.** *Med J Aust*. 2006; **185(1)**:37–8.
134. National Aboriginal Health Organization. *Celebrating Birth: Aboriginal Midwifery in Canada*. 2009; 1–95.
135. Nel P, Pashen D: **Shared antenatal care for indigenous patients in a rural and remote community.** *Aust Fam Physician*. 2003 Mar; **32(3)**:127–31.
136. Nova Scotia Department of Health: *A cultural competence guide for primary health care professionals in Nova Scotia*. Canada: 2005.
137. O’Driscoll T, Kelly L, Payne L, Pierre- NS, Lookout S, Ya M: **Delivering away from home : the perinatal experiences of First Nations women in northwestern Ontario.** 2011; **16(4)**:126–30.
138. Office for Aboriginal and Torres Strait Islander Health: *Improving health in Aboriginal and Torres Strait Islander mothers , babies and young children : a literature review*. 2005.

139. Olson R, Couchie C: *Returning birth: the politics of midwifery implementation on First Nations reserves in Canada*. 2013.
140. Queensland Department of Health: *Midwifery models of care: implementation guide*. 2008.
141. Patterson JA, Foureur M, Skinner JP: **Patterns of transfer in labour and birth in rural New Zealand**. *Rural Remote Health*. 2011 Jan; **11(2)**:1710.
142. 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)**:880–6.
143. Pettersen IJ, Nyland K, Kaarboe K: **Governance and the functions of boards: an empirical study of hospital boards in Norway**. *Health Policy*. 2012 Oct; **107(2-3)**:269–75.
144. Rabinowitz HK, Diamond JJ, Markham FW, Hazelwood CE: **A Program to increase the number of family physicians in rural and underserved areas**. *JAMA*. 1999; **281(3)**:255–60.
145. Couchie C, Sanderson S, Society of Obstetricians and Gynecologists of Canada: **A report on best practices for returning birth to rural and remote aboriginal communities**. 2007 Mar; **29(3)**:250–60.
146. Robinson M, Slaney GM: **Choice or chance! The influence of decentralised training on GP retention in the Bogong region of Victoria and New South Wales**. *Rural Remote Health*. 2013; **13(2)**:2231.
147. Ruiz MJ, van Dijk MG, Berdichevsky K, Munguía A, Burks C, García SG: **Barriers to the use of maternity waiting homes in indigenous regions of Guatemala: a study of users' and community members' perceptions**. *Cult Health Sex*. 2013 Jan; **15(2)**:205–18.
148. Rumbold AR, Cunningham J: **A review of the impact of antenatal care for Australian Indigenous women and attempts to strengthen these services**. *Matern Child Health J*. 2008 Jan ; **12(1)**:83–100.
149. Rural Health Workforce Australia, National Rural Faculty, Rural Doctors Association of Australia, Australian College of Midwives (Inc.), Australian College of Rural and Remote Medicine: *National Consensus Framework for Rural Maternity Services*.
150. Saltman RB, Bankauskaite V, Vrangbaek K: *Decentralization in health care: strategies and outcomes*. Saltman RB, Bankauskaite V, Vrangbaek K, Eds. McGraw-Hill; 2007.
151. Salyers V, Tarlier D, Van Pelt L, Bailles J, Beaveridge JS, Lapadat CM, et al.: **Growing an innovative faculty-driven management team in a distance-delivery NP education program: thinking outside the box to meet the nursing education and health needs of northern British Columbia, Canada**. *J Am Acad Nurse Pract*. 2012 Sep; **24(9)**:528–35.
152. Sayers S, Singh G, Mackerras D, Lawrance M, Gunthorpe W, Jamieson L, et al.: **Australian Aboriginal Birth Cohort study: follow-up processes at 20 years**. *BMC Int Health Hum Rights*. 2009 Jan; **9**:23.
153. Scherman S, Smith J, Davidson M: **The first year of a midwifery-led model of care in far North Queensland**. *Med J Aust*. 2008; **188(2)**: 85–8.
154. Schultz R, Lockey R, Oats JJ: **Birthing in the Barkly: births to Barkly women in 2010**. *Rural Remote Health*. 2013 Jan; **13(3)**:2396.
155. Shen Z: **Cultural competence models in nursing: a selected annotated bibliography**. *J Transcult Nurs*. 2004, **15(4)**: 317-322.
156. Sibley L, Sipe TA, Koblinsky M: **Does traditional birth attendant training improve referral of women with obstetric complications: a review of the evidence**. *Soc Sci Med*. 2004 Oct; **59(8)**:1757–68.
157. Silverman BE, Goodine WM, Ladouceur MG, Quinn J: **Learning needs of nurses working in Canada's First Nations communities and hospitals**. *J Contin Educ Nurs*. 2014 Jun; **32(1)**:38–45.

158. Simmonds DM, West L, Porter J, Davies M, Holland C, Preston-Thomas A, et al.: **The role of support person for Ngaanyatjarra women during pregnancy and birth.** *Women Birth.* 2012 Jun; **25(2)**:79–85.
159. Simonet F, Wilkins R, Labranche E, Smylie J, Heaman M, Martens P, et al.: **Primary birthing attendants and birth outcomes in remote Inuit communities—a natural “experiment” in Nunavik, Canada.** *J Epidemiol Community Health.* 2009 Jul; **63(7)**:546–51.
160. Singer MA: **Community participation in health care decision making: is it feasible?** *CMAJ.* 1995 Aug; **153(4)**:421–4.
161. Society of Obstetricians and Gynecologists of Canada (SOGC), Couchie C, Sanderson S: **A report on best practices for returning birth to rural and remote Aboriginal communities.** *J Obstet Gynaecol Can.* 2007; **29(3)**: 250-254.
162. Stamp G, Champion S, Anderson G, Warren B, Stuart-Butler D, Doolan J, et al.: **Aboriginal maternal and infant care workers: partners in caring for Aboriginal mothers and babies.** *Rural Remote Health.* 2008; **8(3)**:883.
163. Standing Council on Health: *The characteristics of culturally competent maternity care for Aboriginal and Torres Strait Islander women.* Australia: 2011.
164. Society of Obstetricians and Gynaecologists of Canada: **Returning birth to Aboriginal , rural, and remote communities.** *J Obstet Gynaecol Can.* 2010; **32(12)**:1186–8.
165. Steenkamp M, Bar-Zeev S, Rumbold A, Barclay L, Kildea S: **Pragmatic indicators for remote Aboriginal maternal and infant health care: why it matters and where to start.** *Aust N Z J Public Health.* 2010 Jul; **34(Suppl 1)**:S5–8.
166. Steenkamp M, Rumbold AR, Kildea S, Bar-Zeev SJ, Kruske S, Dunbar T, et al.: **Measuring what matters in delivering services to remote-dwelling Indigenous mothers and infants in the Northern Territory, Australia.** *Aust J Rural Health.* 2012 Aug; **20(4)**:228–37.
167. Sutherns R, McPhedran M, Haworth-Brockman M: *Rural, remote and Northern women’s health: policy and research directions.* 2005.
168. Swider SM. **Outcome effectiveness of community health workers: an integrative literature review.** *Public Health Nurs.* **19(1)**:11–20.
169. Tarlier DS, Browne AJ: **Remote nursing certified practice : viewing nursing and nurse practitioner practice through a social justice lens.** *Can J Nurs Res.* 2011; **43(2)**:38–61.
170. Tracy, S. K., Hartz, D., Nicholl, M., McCann, Y., & Latta, D. (2005). An integrated service network in maternity--the implementation of a midwifery-led unit. *Australian Health Review : A Publication of the Australian Hospital Association*, 29(3), 332–9.
171. Van Wagner, V., Epoo, B., Nastapoka, J., & Harney, E. (2007). **Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada.** *Journal of Midwifery & Women’s Health*, 52(4), 384–91
172. Van Wagner, V., Osepchook, C., Harney, E., Crosbie, C., Tulugak, M., & Wagner, V. (2012). **Remote midwifery in Nunavik, Québec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000-2007.** *Birth* (Berkeley, Calif.), 39(3), 230–7.
173. Woelk GB: **Cultural and structural influences in the creation of and participation in community health.** *Soc Sci Med.* 1992; **35(4)**:419-24.