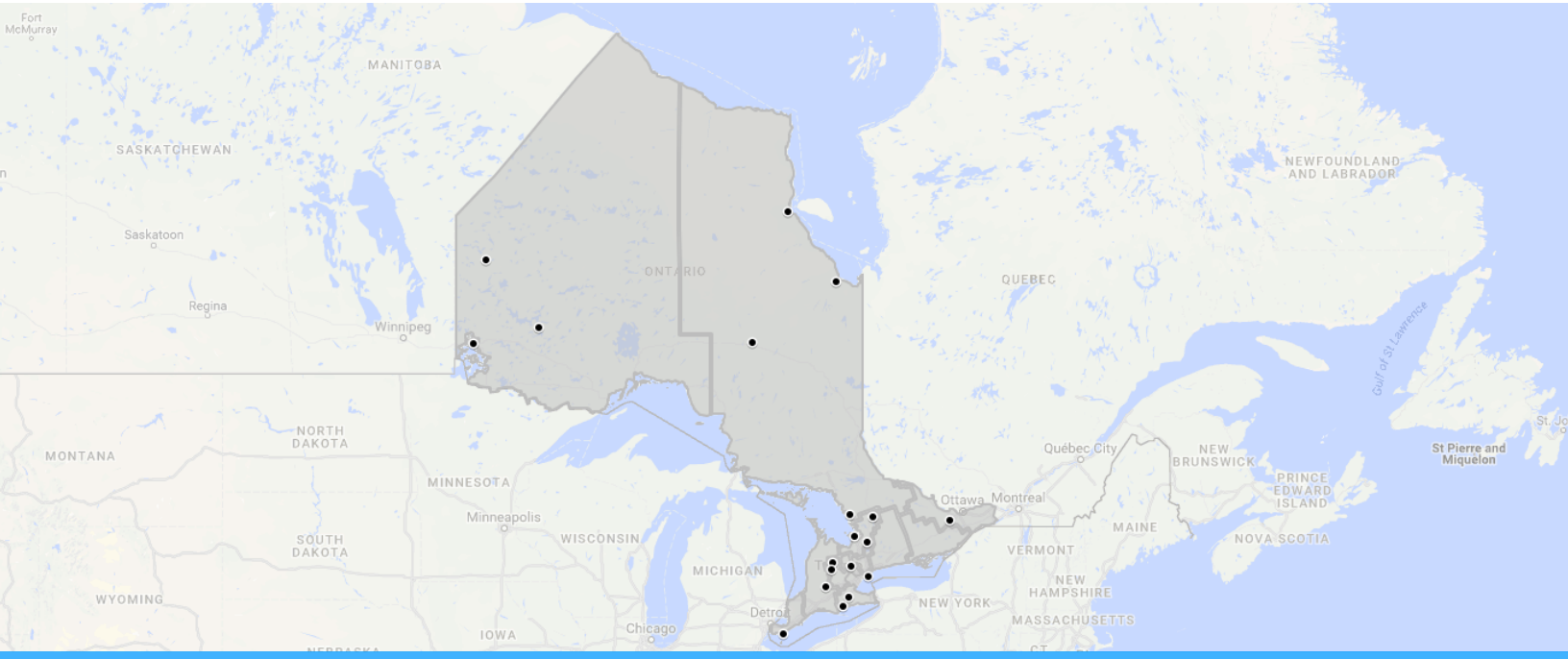
The Provincial Council for Maternal and Child Health

Maternal-Newborn Gap Analysis

A review of low volume, rural, and remote intrapartum services in Ontario.

August, 2018



Provincial Council *for* Maternal *and* Child Health

building a brighter future

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About the Provincial Council for Maternal and Child Health

The mandate of the Provincial Council for Maternal and Child Health (PCMCH) is to provide evidence-based and strategic leadership on maternal, newborn, child and youth health care services in Ontario. This includes addressing and supporting provincial coordination of planning, innovation, monitoring and knowledge management for maternal, newborn, child and youth health care services and/or standards across both community and hospital settings. The overall goal of PCMCH is to support the development of a system of care that provides timely, equitable, accessible, high quality, evidence-based, family-centred care in an efficient and effective manner.

Vision

Healthy pregnancies, babies, children and families for lifelong health in Ontario.

Mission

Be the provincial forum in which families, caregivers, clinical and administrative leaders in maternal, child and youth health can identify patterns, issues of importance and improvement opportunities in health and health care delivery.

Enhance the delivery and experience of maternal, child and youth health care services by engaging individuals, families and their care providers in building provincial consensus regarding standards of care, leading practices and priorities for system improvement, and monitoring of the performance of Ontario's maternal and child health care system.

Be a trusted leader and voice to Ontario's maternal, child and youth health care providers, planners and stewards in order to improve the care experience and overall health care system performance.

Facilitate knowledge to action that will support individuals, caregivers, health care providers and planners in improving the health and wellbeing of children, youth, and families.

Executive Summary

The Provincial Council for Maternal and Child Health (PCMCH) is embarking on an initiative to support *Better Maternal-Neonatal Birth Outcomes* in the province. To underpin this work, a gap analysis was undertaken focused on local access to safe, high-quality intrapartum care services in low volume centres (defined as those sites with less than 500 births per year, or as a Level 1a or Level 1b hospital, or birth centre).

This analysis used a mixed-methods approach that included interviews with care providers at 16 geographically diverse low volume rural and remote intrapartum care settings, as well as quantitative data provided by the Better Outcomes Registry & Network (BORN) Ontario and the Institute for Clinical Evaluative Sciences. In addition, to further understand access to care, a distance map is being developed by BORN Ontario to understand duration of time to the nearest hospital facility offering intrapartum care services.

According to BORN Ontario, during fiscal years 2013-2014, 11.4% of births occurred in Level 1a/b hospitals and 43 of the province's 100 hospitals providing maternity care had birth volumes less than 500 per year [1]. Key themes highlighted by the findings of this gap analysis include the impacts of geography on access to, and quality of care; variations in models of care, staffing models and human resources strategy; and knowledge and involvement of regional maternal-child networks.

From this work a series of recommendations were developed to better support and further develop the provincial capacity for low risk intrapartum care services. They are as follows:

Geography and Access to Care

1) Ongoing provincial monitoring of access to care issues, including maternity service closures, would be prudent.
2) A systematic approach to increasing options for intrapartum care services where it is safe and sustainable is recommended.
3) Health care workers and community members from communities without access to intrapartum care should be included in further work on access to care in rural remote and Indigenous communities.

Models of Care

4) Support for interprofessional models of care may increase sustainability, contribute to quality and relieve recruitment and retention pressures. These models need to take into account different staffing compositions for different communities.
5) Family physician and midwifery services supported through strong referral relationships can increase access in communities without local intrapartum services and should be supported.
6) Support should be provided for access to surgical services in Level 1a/b centres whenever possible including support for family medicine, anesthesia and surgery programs.
7) Support should be provided for development of safe intrapartum services without access to surgery where appropriate.

Human Resources Strategy

8) Small centres require support for recruitment and retention of staff.
9) Small centres require support for maintenance of intrapartum skills/competencies, ongoing certifications and the implementation of quality improvement programs.

Regional Maternal-Child Networks

10) Complete provincial coverage is required, being mindful of the informal networks, relationships and referral patterns that already exist.
11) Small centres should be involved in the development of the networks.
12) Ensure understanding of the benefits, challenges and supports required to provide local access to intrapartum services.
13) Ensure understanding of local social and cultural issues and the need for culturally safe care for the local population.
14) Respond to the recommendations of the Truth and Reconciliation Commission and the Society of Obstetricians and Gynaecologists of Canada regarding the education and retention of Indigenous health professionals and the return of birth to rural, remote and Indigenous communities.

Provincial and Regional Network Quality Metrics

15) Variables related to distance and access to care should be taken into account when reviewing regional or provincial quality metrics.
16) An analysis of maternal and neonatal transfer data as well as risk screening practices would further inform planning an expansion of intrapartum services closer to home.
17) Inclusion of medical evacuation flight times into distance mapping is important to give a full picture of transport from remote regions.

Introduction

The Provincial Council for Maternal and Child Health (PCMCH) is embarking on an initiative to support *Better Maternal-Neonatal Birth Outcomes* in the province. To underpin this work, a gap analysis was undertaken focused on local access to safe, high-quality intrapartum care services in low volume centres (defined as those sites with less than 500 births per year, or as a Level 1a or Level 1b hospital, or birth centre). The intent of this gap analysis is to build on the work of the Ontario Maternity Care Expert Panel (2006) [2] and the PCMCH Low Risk Strategy (2016) [3]. Our purpose was to:

- Gain a current understanding of the distribution of intrapartum care services across the province;
- Determine regions that do not currently have local access to low risk intrapartum care within their community;
- Determine barriers to establishing/re-establishing or maintaining local intrapartum care services;
- Look at existing models that support local intrapartum care services (learnings and solutions); and
- Inform how Regional Networks may support local access to birth across the province.

This gap analysis includes:

- An environmental scan of the existing literature, professional statements and expert reviews of specific rural sites to provide background to our work;
- Findings from interviews with select low volume sites to understand gaps, challenges and best practices in delivering safe high-quality intrapartum care close to home; and
- A distance map that provides an overview of the duration of time a pregnant person travels in order to reach intrapartum care services.

A further goal of this work was to utilize administrative and clinical data to determine how hospitals and regions compare with one another regarding clinical and quality outcomes. However, due to extenuating factors that impacted the timeliness of receiving these data, the findings of this gap analysis will draw primarily from the qualitative interviews. The interview findings will, however, be complemented by data from the Better Outcomes Registry and Network (BORN) Ontario and Institute for Clinical Evaluative Sciences (ICES). The project team recommends continued work to determine quality indicators for Level 1a/b hospital services and continue to evaluate access to care in rural and remote communities.

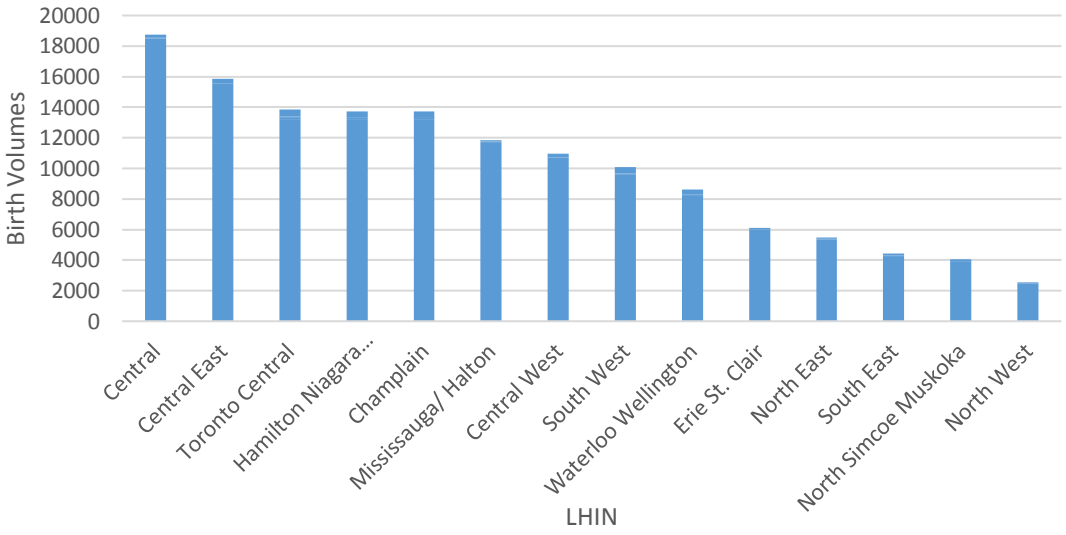
It is intended that the findings of this gap analysis will be used by PCMCH to inform the planning, design, and implementation of quality improvements to the provision of low risk intrapartum care across the province.

Background

Births and Birth Outcomes in Ontario

Based on data from BORN Ontario, in 2015/16 there were 140,896 births in Ontario, a volume that has remained stable over the past 3 years. Data by LHIN demonstrates that the majority of the births occur in central and southwestern Ontario. See Figure 1.

Figure 1: FY 2015/16 Birth Volumes by LHIN of Residence



Source: BORN Ontario

Additionally, according to a BORN report, in 2013-2014 11.4% of Ontario births occurred in Level 1 hospitals, and 43 of the province's 100 hospitals providing maternity care had volumes less than 500 births per year [1].

Maternal and neonatal morbidity and mortality in Ontario is relatively low. Provincially, the neonatal death rate for Ontario is 3.5/1,000 live births, under the Northern American average rate of 3.7/1,000 live births [4] [5]. Likewise, ICES data shows that maternal mortality rate in Ontario for 2014/15-2016/17 was 6.22 deaths per 100,000 live births, slightly under the national rate of 7 deaths per 100,000 live births and well under the American rate of 14 per 100,000 live births [6]. While these statistics are low on a provincial level, observing the variation by region is recommended. For the purpose of this report regional level data were not provided due to privacy considerations. LHIN level data was available, however, for maternal admission to ICU and maternal blood transfusions. The rate of maternal admission to the ICU for 2014/15-2016/17 was 0.2% (range of 0.1% in LHINs 11 and 14 to 0.4% in LHIN 4), and the provincial average for maternal blood transfusions in 2016/17 was 1.0% (range of 0.6% in

LHIN 6 and 12 to 2.7% in LHIN 14).

Current Provincial Context

Concern about local access to intrapartum care and the challenges faced by low volume centres in maintaining maternity care is well documented in many sources such as: Canadian and international research, professional statements about rural and remote maternity care and other reports which focus on returning birth to Indigenous communities. Intrapartum service closures [7] and the hardships experienced by Indigenous communities, including having to leave one's home community to access intrapartum care, have generated public protest and media attention. A 2017 article in the Globe and Mail states that "Some parts of the country have seen significantly more maternity wards shut down than others in the past 10 years…In Alberta, for example, 14 have closed. At least 10 have closed in Ontario, six in British Columbia and five in Manitoba. Quebec, meanwhile, said it has not shut a single maternity ward in the last decade" [8]. Table 1 lists the number of intrapartum service closures in Ontario since 2009.

The project team has reviewed summaries of the literature regarding hospital closures including recent reports from Ontario hospitals experiencing challenges in maintaining care, relevant government reports and professional statements of organizations representing maternity care providers (family physicians, obstetricians, midwives and nurses). These documents focus on issues such as the closure of small maternity units across Ontario and Canada, the safety of small maternity units, and the impacts of closure on patient populations and local communities, including cultural and socio-economic impacts. This review indicates that national professional associations, provincial and local expert panels and research reviews are in agreement that those who live in rural and remote communities in Canada would benefit from access to intrapartum care as close to home as possible.

Table 1: Intrapartum Care Service Closures since 2009*

LHIN	Hospital Name	'No Obstetrical Service' (NOS) Date
North West	Atikokan General Hospital	2009-03-31
South West	St. Joseph's Health Care, London	2011-06-05
North East	Chapleau Health Services/Services De Sante De Chapleau	2012-03-31
North East	Kirkland and District Hospital	2012-03-31
North West	Manitouwadge General Hospital	2012-03-31
South East	Quinte Health Care - Prince Edward County Memorial Hospital	2013-08-31
Champlain	Renfrew Victoria Hospital	2014-06-30
Hamilton Niagara Haldimand Brant	Niagara Health System - Greater Niagara General	2014-03-31
Hamilton Niagara Haldimand Brant	Niagara Health System - Welland Hospital	2014-03-31
North East	Lady Minto Hospital	2014-03-31

North West	Geraldton District Hospital	2014-02-28
Central	Humber River Hospital - Church Street Site**	2015-10-18
Central	Humber River Hospital - Finch Street Site**	2015-10-18
South West	Huron Perth Healthcare Alliance - Clinton Public Hospital	2015
North East	Weeneebayko Area Health Authority***	2018

*Dates of *no obstetrical services (NOS)* are from BORN, with the exception of Clinton Public Hospital which was reported from Stratford General Hospital.
**Humber River Hospital had merged the Church and Finch sites into one hospital offering obstetrical services, which remains geographically close to the pre-existing sites.
***While open during the development of this report, at the time of publication Weenebayko Area Health Authority had temporarily closed their Labour and Delivery services. A date for reinstating services is unknown.

The Joint Position Paper on Rural Maternity Care, co-authored by representatives from all pertinent professions and adopted by all relevant national organizations, identifies improved outcomes for those who do not have to travel from their communities, versus the potential harms from financial, social and psychological consequences faced when leaving their home communities to give birth [9]. The paper also concludes that there is no evidence for minimum volume requirements for either providers or hospitals to ensure safety. It highlights interprofessional models of care as having the potential to contribute to the sustainability of maternal services in small communities. The Provincial Council for Maternal and Child Health (PCMCH) *Low Risk Strategy Expert Panel* recommended interprofessional models to meet the needs of rural communities and documented some of the barriers that need to be addressed to support the development of innovative models [3].

Furthermore, *The Joint Position Paper on Rural Maternity Care* notes the importance of culturally sensitive care which remains person and family-centred, and emphasizes the social and economic costs borne by families when care is not provided close to home. In 2017, the Society of Obstetricians and Gynaecologists of Canada (SOGC) affirmed its 2010 statement on *Returning Birth to Aboriginal, Rural and Remote Communities*, endorsed by Indigenous physician and midwifery organizations and the Canadian Association of Midwives [10]. It states that those in remote communities with low-risk pregnancies should have the option of giving birth in their own communities. It provides evidence of the social and medical risks of routine evacuation and of the safety of birth in communities without access to surgery through vigilant risk screening and continuous monitoring and evaluation of outcome and safety. The statement links local maternity care with cultural safety and community health for Indigenous peoples. The removal of Indigenous peoples from their communities to give birth has been compared to the trauma of the removal of children when taken to residential schools [11]. The statement highlights the importance of the training and retention of Indigenous health professions, a recommendation in keeping with the *Calls to Action of the Truth and Reconciliation Commission* [12].

Two recent reports from British Columbia are highly relevant to this analysis. *Patients at the Centre* (2016) [13] documents the importance of creating sustainable models for access to high quality surgical services as an enabler to sustaining not only rural maternity care but rural access to surgery more generally. A 2015 review *The Safety of Rural Maternity Services Without Local Access to Caesarean*

Section documents that even where surgical services are not practical the evidence supports local access to birth services [14]. These reports provide context and further understanding about why centres have struggled to keep intrapartum services open (for example, Georgian Bay, Leamington, and Stevenson) and provide strong evidence for both horizontal and vertical networks to support sustainability and quality.

Mapping of intrapartum services was done for the Ontario Maternity Care Expert Panel (OMCEP) report in 2006 and an update was planned as part of the Low Risk Expert Panel but not completed. In 2017 the Primary Health Care Branch of the Ontario Ministry of Health and Long-Term Care (MOHLTC), as part of an analysis of midwifery services in Ontario, undertook a mapping of Ontario hospitals providing and not providing intrapartum care, as well as the distribution of care providers providing intrapartum services [15]. Relevant to the focus on rural and remote maternity care, these maps reveal there are large, often sparsely populated areas of the province without local access to primary care providers of any type. The report concludes that "There are also areas, concentrated around Oxford, Essex, York and Renfrew where there are fewer providers, but more births…". Additionally, there are three counties identified without any midwives, obstetricians/gynecologists, or family doctors delivering babies. Two are in South East LHIN (Lennox & Addington and Prince Edward), and one is in North East LHIN (Sudbury area; this is the large area surrounding the city of Sudbury). Overall, this analysis suggests that there are areas in need of additional services, where expanding low-risk birth options would improve people's access to intrapartum care services.

The Ministry of Health and Long-Term Care recently announced the establishment of 6 Indigenous midwifery programs, three of which serve rural communities: K'Tigaaning Midwives serving Nipissing First Nation, Kenhte:ke Midwives serving the Tyendinaga Mohawk Territory and Onkwehon:we Midwives serving the Akwesasne First Nation. Additional programs at the Dilco Health Centre in Thunder Bay, the Shkagamik-Kwe Health Centre in Sudbury and the Southwest Ontario Aboriginal Health Access Centre, London will serve both urban and non-urban Indigenous clients. These programs integrate Indigenous midwives working under the exemption clause of the Regulated Health Professions Act and those working under the Midwifery Act and build on the model established in 1994 Tsi Non:we Ionnakeratstha Ona:grahsta Six Nations Maternal and Child Centre in Oshweken, Ontario.

The government linked this initiative to its commitment to implementing the recommendations of the Truth and Reconciliation Commission [12]. Development grants to explore future sites for Aboriginal Midwifery services have been offered to organizations in the following communities: Cornwall, Cutler, Fort Frances, Keewatin, Kenora, Nestor Falls, Oshawa, Thamesville and Thunder Bay [16].

Regional Maternal-Child Networks

Ontario currently has seven regional maternal-child networks or communities of practice (CoP) in various stages of development (see Table 2). As described in the *Maternal-Child Regional Networks Consensus Statement*, these networks and CoPs, while having developed independently of one another over the past three decades, share an underlying goal of strengthening linkages amongst regional maternal-child care providers and aim to work collaboratively to improve access and quality for maternal and child health services in their geographic catchment areas. Their proposed goals include

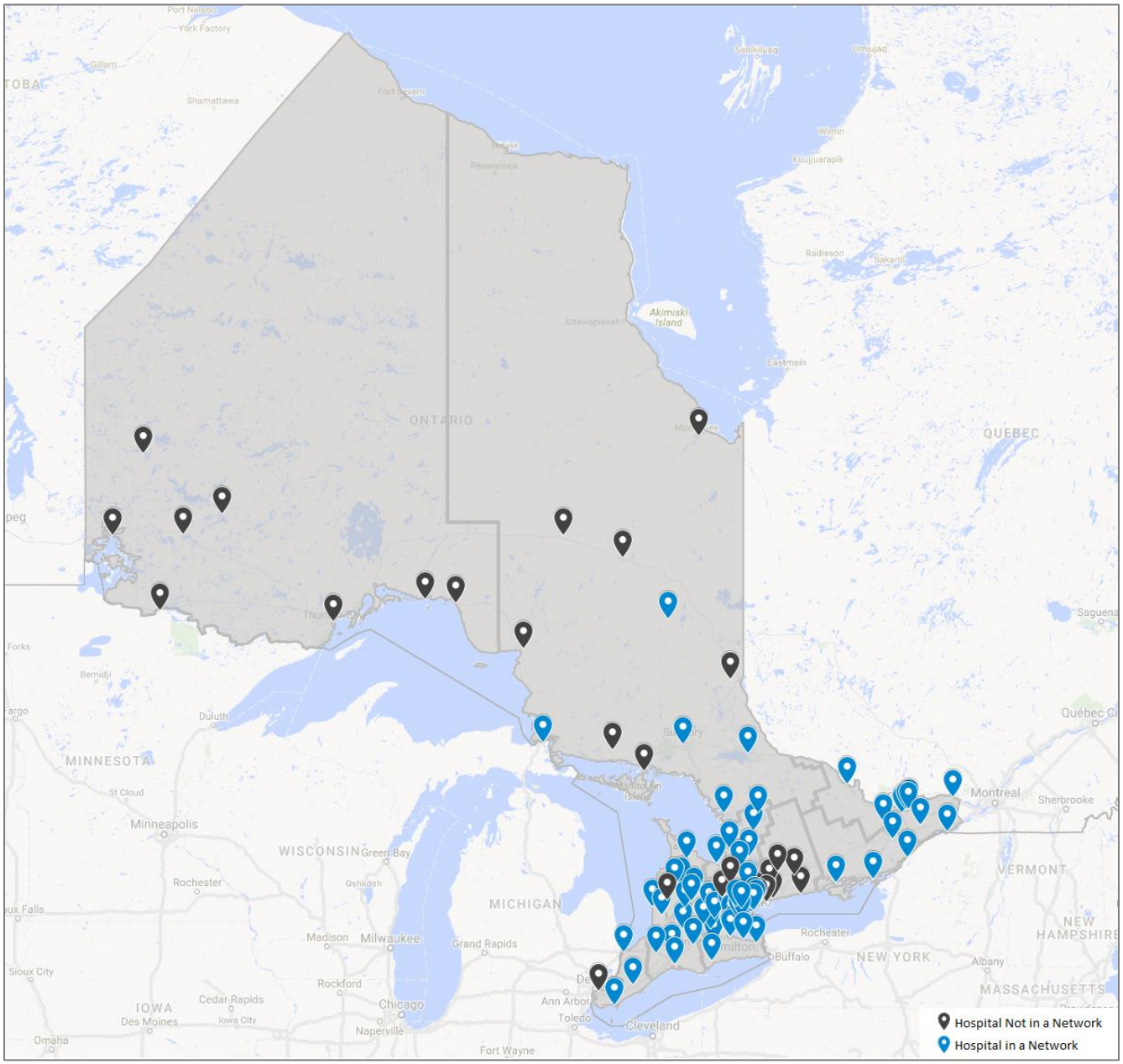
developing capacity to respond to system pressures and issues such as fragmentation of services, lack of a systems approach to planning and development of services, and inconsistent care standards.

Table 2: Regional Maternal-Child Networks or Communities of Practice

Current Regional Maternal-Child Networks and Communities of Practice In Ontario
Champlain Maternal Newborn Regional Program (CMNRP)
North East Maternal Child Health Committee (NEMCHC)
Southwestern Maternal Newborn Child & Youth Network (MNCYN)
Southern Ontario Maternal Child Network (SOMCN)
Southern Ontario Obstetrics Network (SOON)
North Simcoe Muskoka Women and Children Community of Practice Committee (WCCPC)

These networks aim to add value to the development of the maternal and child health system in their regions across the province. Some key strengths of these groups include the facilitation of a coordinated and integrated system of planning and delivery of care, as well as developing stronger linkages between tertiary centres, regional centres, community hospitals, and community services. Yet, network coverage across the province is currently incomplete both geographically (see Figure 2) and interprofessionally. PCMCH is currently working to strengthen the Maternal-Child Network system with the aim of having all relevant health care providing sites be included.

Figure 2: Regional Maternal-Child Network Coverage



Blue Pins = Birthing hospitals currently part of a Maternal-Child Network

Black Pins = Birthing hospitals not currently part of a Maternal-Child Network

Methods

A mixed-methods approach was undertaken for this gap analysis. This included qualitative interviews with intrapartum care service providers, as well as a quantitative analysis of data from Better Outcomes Registry & Network (BORN) Ontario and the Institute for Clinical Evaluative Sciences (ICES) data. To further understand access to care, a distance map is being developed to understand duration of time to the nearest hospital facility offering intrapartum care services.

Qualitative Interviews

Interviews were completed to gather information on the provision of care and the sustainability of maternal-newborn care in low volume centres in rural and remote communities. The project team selected a provincially representative sample of 24 sites that provided such services. This project defined low volume birth centres as those with less than 500 births annually. An attempt was made to ensure representation from each of the 14 Local Health Integration Networks (LHIN), and to include a number of clinical/administrative structures, i.e. diverse models of services, independent facilities, those part of a corporation, and/or those included and not included in a Regional Maternal-Child Network.

A series of interview questions were developed to gather information on the following:

1) The intrapartum services and structures currently available to the community
2) Notable characteristics of the community
3) Challenges for maternal/newborn care in the community
4) Staffing models and maintenance of competencies
5) Other needs to maintain/grow intrapartum are services in their community
6) Community, Regional and LHIN engagement

For a complete list of the interview questions, refer to Appendix A.

The interviews have been limited to input from health care providers and from those within existing health care services. The absence of the voices of community members and from those communities that have no access to local service is particularly important to note when considering that the analysis looks at services for those who are required to leave home for weeks or months to give birth far from family, culture and home. As noted in the background section, the experience of routine evacuation from northern Indigenous communities for intrapartum care is associated in the literature with social and emotional distress and increased social and medical risk. Further work is needed to fully understand those communities that were not included in our analysis.

Data

Data were obtained from BORN and ICES to provide quantitative context to the qualitative analysis. Much of the data provided were compared at the LHIN and LHIN Sub-Region levels, as well as by *low risk births*, defined as Robson Classification 1-4. For more information about the LHIN Sub-Regions see

Appendix B.

Mapping

Given the geography and topography of the province, in order to best understand access to care, it is important to understand how far pregnant people in Ontario must travel to receive intrapartum care services (both by land and by air). The project team is currently working with BORN Ontario to complete a distance map that includes drive time for urban and rural areas, as well as non-urgent air travel times for those in remote areas, specifically in the north. Drive times will be estimated through commonly accessed road routes and air travel times will be determined by flight times as approximations provided by the chartered airlines that typically fly these routes.

Medical evacuation times for the remote communities were not determined and it is recommend this be part of a more in depth analysis of access to care in northern Ontario.

To-date, a map of this nature has not been developed for the province of Ontario, and is vitally necessary in order to understand access to care and the impacts on health.

Findings

Interview Sites

Of the 24 intrapartum care sites contacted, a total of 16 contributed data to the Gap Analysis. Fourteen provided data via interview, and two contributed their response via written email. For a description of each site see Appendix C.

Table 3: Participating Intrapartum Care Sites

Total Participating Intrapartum Care Sites N=16 (Interviews N=14, Email N=2)			
Hospitals			
LHIN	**Organization**	**Level of Maternity Care**	**Number of Births/Year[1]**
1	Erie Shores Health Care – Leamington District Memorial Hospital	1b	251-500
2	Huron Perth Healthcare Alliance: Stratford General Hospital Site*	 2a	 1001-2400
3	North Wellington Health Care: Louise Marshall Hospital – Mount Forest, and Palmerston District Hospital	 1a 1a	 ≤100 101-250
4	Norfolk General Hospital – Simcoe	1b	251-500
5	Headwaters Health Care Centre – Orangeville Site	1b	501-1000
11	Almonte General Hospital	1b	251-500
12	Georgian Bay General Hospital – Midland *in partnership with* Orillia Soldiers' Memorial Hospital - Orillia	1b (2c)	251-500 (501-1000)
12	Muskoka Algonquin Healthcare – Huntsville	1b	101-250
13	Weeneebayko Area Health Authority – Moose Factory	1a	101-250
13	Notre Dame Hospital – Hearst	1a	≤100
13	West Parry Sound Health Centre	1b	101-250
14	Sioux Lookout Meno Ya Win Health Centre	1b	251-500
14	Lake-Of-The-Woods District Hospital – Kenora	1b	201-250
Birth Centres or Other			
LHIN	**Organization**	**Level of Maternity Care**	**Number of Births/Year[2]**
7	Toronto Birth Centre	N/A	525 admissions
4	Tsi Non:we Ionnakeratstha Ona:grahsta Six Nations Maternal and Child Centre - Oshweken, Ontario	N/A	100 births
13	Neepeeshowan Midwives, Attawapiskat (part of Weeneebayko Area Health Authority)	N/A	60 Pregnancies, 12 births
*An interview with Clinton Public Hospital (1a, ≤100 births) was intended, however, once the interview began interviewers were informed that intrapartum services at Clinton had closed.			

[1] Source: BORN Ontario

[2] As per interview.

Figure 3: Geographic Distribution of Contributing Sites

Population Characteristics

The sites interviewed were asked if there were notable characteristics of the populations they served. All of the sites identified a number of characteristics that shaped the care provided to their populations. These included populations of low socioeconomic status; Amish, Francophone, Indigenous, Mennonite, and refugee communities; communities with a high proportion of drug addiction; low maternal age; populations without access to public transit or transportation; and those who need to travel long distances to access care.

Interview Themes

Geography, Demographics and Access to Care

Distance to Birth

Among the Level 1 centres we interviewed, travel time of up to an hour was common in southern Ontario. In northern Ontario, even when travel is possible by road, distances are longer and can often exceed an hour, even without considering winter weather and driving conditions. Those interviewed from Weeneebayko and Meno Ya Win Health Centres noted that except for the residents of their local town, most patients had to fly out of their communities and leave their homes and families to give birth.

Socio-economic status and lack of access to personal transportation can have a significant impact on those in rural and remote areas without access to public transit. For those with local services, getting to the hospital in labour might be challenging due to lack of funds to hire a taxi or the ability to find an escort to take them to the hospital. Lack of access to transit can impact access to prenatal and postpartum/newborn care as well as intrapartum care. More information about travel times and distances will be provided in the *Distance to Intrapartum Services Map*.

Accommodation of Geographically Distant Patients

Recognizing that distance may be a barrier to accessing care, most hospitals offered options to keep clients close to the hospital. While larger hospitals tend to have triage units and early labour areas, smaller centres often use their labour units for triage, early labour or for those who need repeat assessments and who live far from the hospital. They may also suggest ambulation within the hospital or community for women who were not yet in established labor and who lived at a distance. Other hospitals indicated that they had negotiated with local hotels in the area for a discounted rate to support those who need shelter when home was too far away. Another resource mentioned by many hospitals was use of the Northern Health Travel Grants (NHTG) from the MOHLTC. This grant funds travel and accommodations allowance for those who meet eligibility criteria. At centres where routine evacuation means that pregnant people have to leave home for weeks prior to their due date, hospitals had “hostels” within, or attached to the institution, to accommodate those who needed to stay for delivery.

Desire to Stay in the Community

Despite the variety of options provided for clients at some facilities, it was noted that it could still be difficult for families to leave their communities during pregnancy. Some would seek out midwifery care and out of hospital birth where available to avoid traveling long distances. The Tsi Non:we Ionnakeratstha Ona:grahsta Six Nations Maternal and Child Centre in Oshweken, Ontario staffed by Aboriginal midwives was established in 1994 to address the local need as well as culturally safe care. However, for some communities, midwifery services seem to be limited or unavailable, leaving many without a choice. Despite the NHTG which can assist those facing financial barriers, there are stringent criteria and it can be limited. For example, it is restricted to trips greater than 100km and 41cents a kilometer [17]. Additionally, although a travel companion would be considered for travel reimbursement if support is indicated, there is no accommodation allowance for them. The most northern service provider interviewed was a midwife in Attawapiskat who provides care for about 60 pregnancies and attends about 12 births per year in the remote fly-in community. The informant indicated that there is a need for more perinatal services to be available in the area as there is an increased demand from women who want to give birth in James Bay communities. This could include the recruitment of registered midwives and/or the training of more Aboriginal or Indigenous midwives.

Distance to Travel to Reach Intrapartum Services: Impact on Care

It is important to consider that in many rural and remote communities there are geographical limitations that can impact a care provider's clinical decision making. A patient's travel distance to give birth can influence a care provider's plan of care, including interventions such as induction of labor and repeat caesarean section. For instance, one site had a catchment area that included travel of over one hour to reach the closest hospital. They noted that inductions were sometimes booked in advance to accommodate far distances in travel. For convenience, some sites noted that women may plan a repeat elective caesarean section rather than having to travel to a centre that offers vaginal birth after caesarean (VBAC). Conversely, several centres mentioned that they were aware that some people may travel farther and by-pass a hospital with a higher level of care to access a smaller centre. They noted that the reasons might include a perception that the smaller centre is more intimate or family friendly, or to access options not available at a closer centre such as midwifery care or VBAC.

The Table 4 demonstrate variance in rates for inductions in low risk births by geographic location.

Table 4: Variance in Induction Rates in Low Risk Women by LHIN Sub-Region of Residence (2013-16)

LHIN Sub-Regions with HIGHEST Induction Rates in Low Risk Women	LHIN Sub-Regions with LOWEST Induction Rates in Low Risk Women
Cochrane – 41%	Scarborough North – 19%
James and Hudson Bay Coast – 40%	Eastern York Region – 20%
Lambton – 39%	District of Rainy River – 22%
Rural Hasting – 39%	North York Central – 24%
Quinte – 38%	Brant – 25%
Source: BORN Ontario Low Risk Women defined as Robson Classification 1-4	

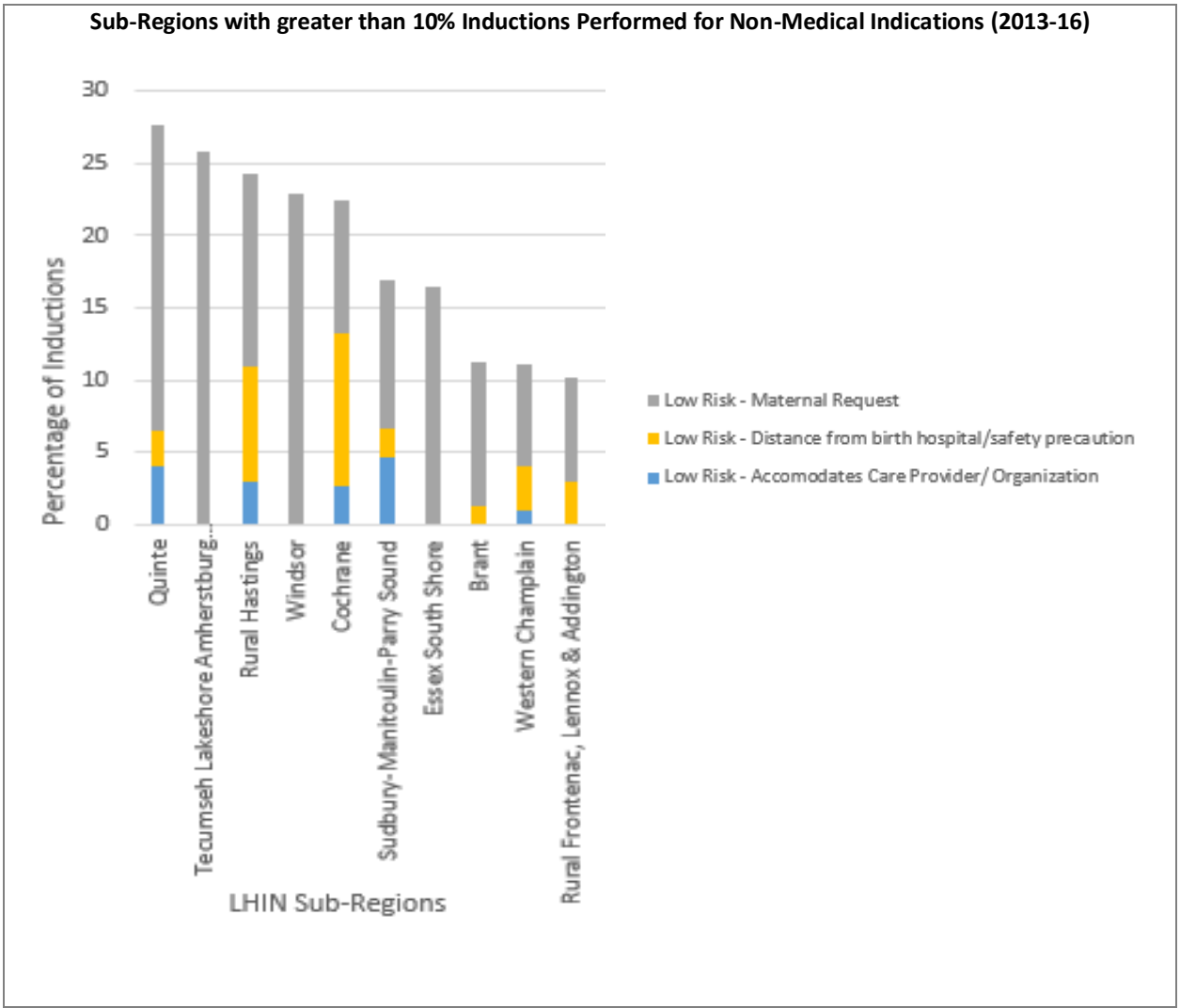
According to a BORN Ontario report, the average rate of induction in the province in low risk pregnancy is 24.6% [18]. Analysis of BORN Ontario data (Table 4) shows that rates of induction in low risk women (as defined as Robson Classification 1-4) tend to be higher in rural and remote LHIN Sub-Regions, which confirms the interview findings that rates of induction may be related to distance to care. This data shows that rates of induction range from 19% in the Scarborough North LHIN Sub-Region up to 40% in the Cochrane and James Bay Sub-Regions. All of the LHIN Sub-Regions with rates above 35% serve rural and remote populations. One exception of a rural and remote Sub-Region with a low induction rate is Rainy River. Further investigation into this region and any other rural and remote regions with low induction rates was not undertaken but may be desired.

Figure 4 details the variation of non-medical reasons for induction in the LHIN Sub-Regions with greater than 10% non-medically indicated inductions. For comparison of all LHIN Sub-Regions see Appendix D. Reasons for non-medically indicated inductions are maternal request, distance from birth hospital/safety precaution and accommodates care provider/organization, and are *specified by the health care provider*. The LHIN Sub-Regions represented in figure 4 are primarily rural/remote and demonstrate a higher percentage of inductions done due to maternal request, versus for reasons of distance or accommodation of provider/organization.

Regarding caesarean sections, as reported by BORN Ontario [18], in 2014-2016 the highest rate of caesarean section for their definition low risk birth was in the North East LHIN (23% 2014/15 and 21% 2015/16).

Throughout the interviews intrapartum care providers suggested that quality metrics for rates of intervention need to take into account the context of rural and remote settings.

Figure 4: Variance in Non-Medically Indicated Induction Rates in Low Risk Women by LHIN Sub-Region of Residence (2013-16)



Source: BORN Ontario.
Low Risk Women defined as Robson Classification 1-4

Transfers

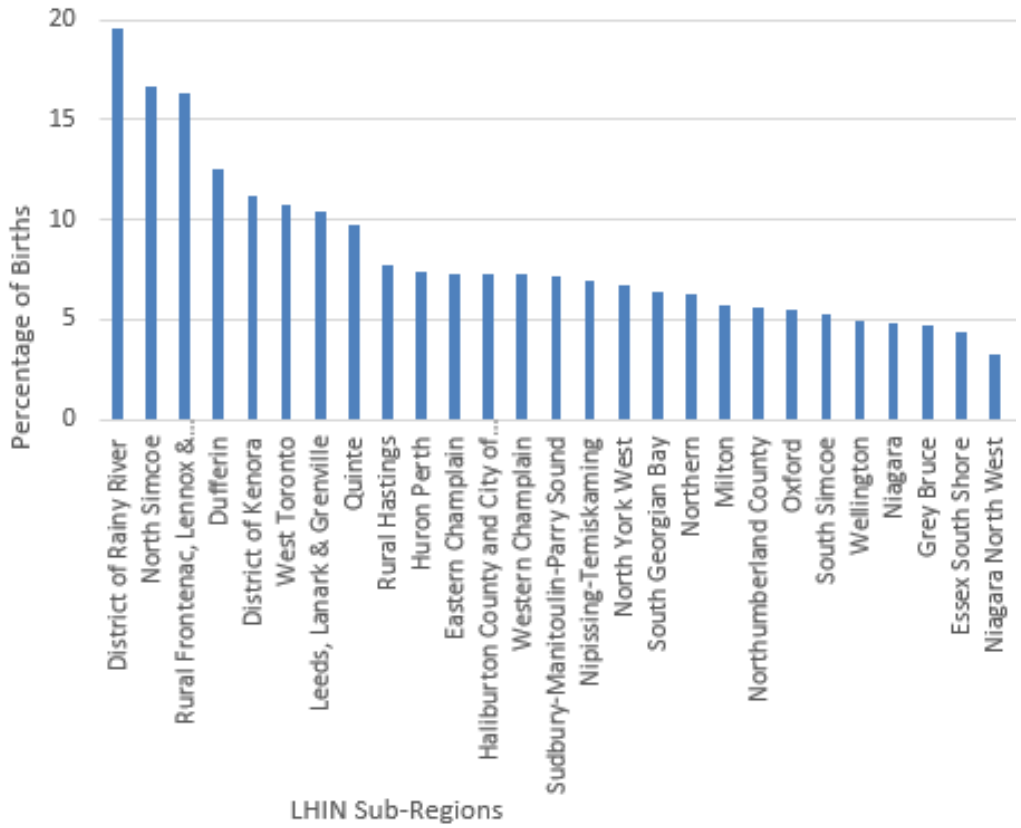
The Level 1a/b and low volume centres interviewed indicated that when a transfer to a higher level of care is required they use either CritiCall Ontario and/or had informal relationships with higher level centers to facilitate transfers. They reported inefficiencies in either transfer process that resulted in delay of transfer and care. CritiCall data was not included in this analysis and the extent in which these hospitals engaged with CritiCall was not explored.

Respondents noted a number of barriers to the transfer of patients. For rural and remote communities, harsh weather posed a major problem for both ground and air travel. The lack of available staff to accompany the patient was also mentioned. A major barrier to timely transfer was the fact that a

referring centre may be required to call several hospitals, with the concomitant time delay, before finding a centre that would agree to accept the transfer. The establishment of Regional Networks could potentially assist with this by creating formal relationships and responsibilities between hospitals within a region.

Provincial data provided by BORN Ontario, demonstrates that most babies less than 36 completed weeks are born in Level 2 or higher hospitals. This suggests that antepartum risk screening and intrapartum transfers from Level 1a/b centres are largely successful in ensuring that babies at risk for preterm birth do give birth at the appropriate level of hospital. However, it is noteworthy that the rate of delivery of babies less than 36 weeks, as a proportion of total deliveries in rural and remote centres is 2-4 times that of urban centres (19.5% in Rainy River versus an average of about 5% across the province). Figure 5 shows the areas in the province where preterm babies are being delivered at Level 1a/b hospitals.

Figure 5: Rates of Pre-Term Birth (<36 weeks) in Low Risk Women in Maternal Level 1a/b Hospitals by LHIN Sub-Region of Residence, 2013-16*

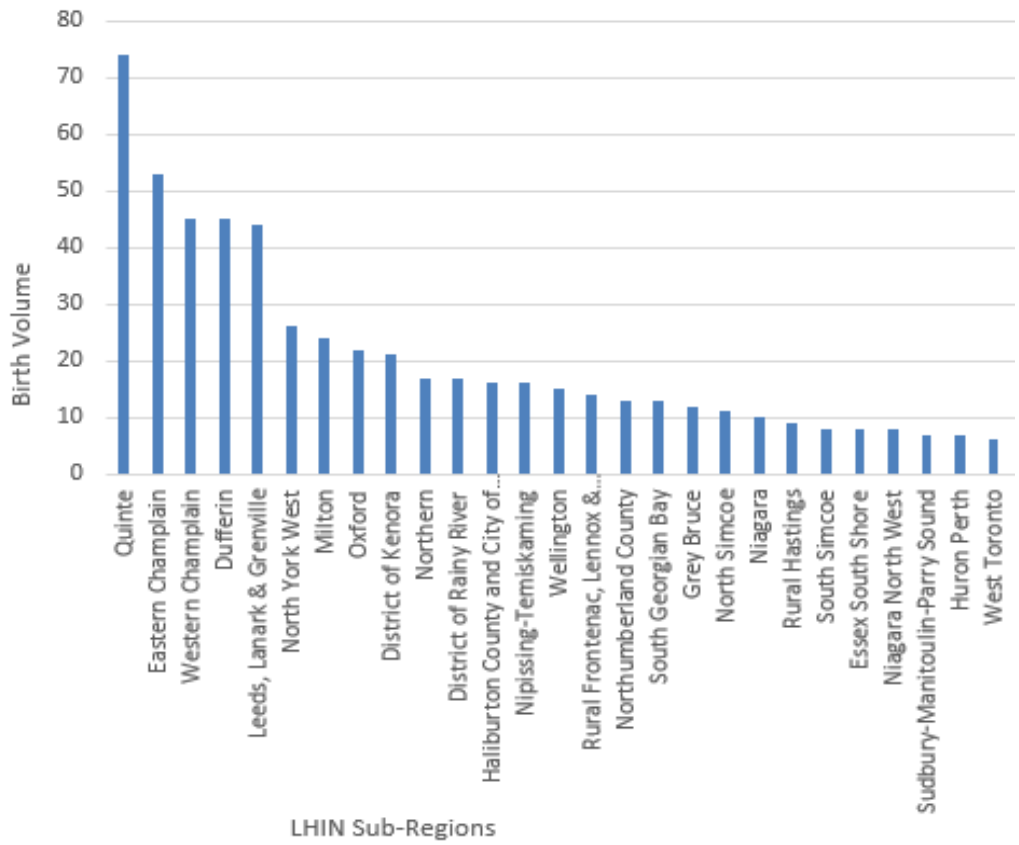


*LHIN Sub-Regions not identified did not have any births <36 weeks gestation

Source: BORN Ontario.
Low Risk Women defined as Robson Classification 1-4

It is also noteworthy that the largest number of babies less than 36 weeks born in a Level 1 hospital occurs in the Quinte Sub-Region, a region that closed its maternity service in 2013 [19]. The residents of Prince Edward County must now travel to Belleville for maternity, see figure 6. This may illustrate what the literature describes as an unexpected effect of closure – preterm babies are born in units without staff prepared for intrapartum or newborn care.

Figure 6: Number of Pre-Term Births (<36 weeks) in Low Risk Women in Maternal Level 1a/b Hospitals by LHIN Sub-Region of Residence, FY 2013-16*



*LHIN Sub-Regions not identified did not have any births <36 weeks gestation

Source: BORN Ontario.
Low Risk Birth Women defined as Robson Classification 1-4

Although the project team did not access maternal or neonatal transfer data, BORN Ontario data on admitting versus delivering health care provider provides some insight regarding intrapartum transfers to an obstetrician for low risk births planned under a primary care provider. Births admitted to hospital under a family physician (11.3% of births in ON) had a 1.3% rate of transfer to an obstetrician during labour. Births planned under midwifery care (12.8%) had a 3% rate of transfer to an obstetrician. Note that these numbers do not include births outside of the hospital under the care of midwives, which represents about 4,500 births per year according to the Association of Ontario Midwives [20].

Evaluation of rates and indications for maternal and neonatal transfers of care to specialists would be valuable as there is increasing consideration to implement interprofessional models of care.

Models of Care

Staffing Models

The models of intrapartum care services across the province are diverse and range from models where maternity care services are provided exclusively by family physicians or midwives, to those centres that had predominantly obstetric specialist coverage, with lesser or no access to midwifery and family physician maternity service. A few sites had limited or no access to midwifery services.

In many instances the models of care and the services provided were highly dependent on the health care providers available to the community. In some cases it could be the availability of certain professions that allowed the site to keep maternity care services available in the community. Some sites described intermittent closures related to provider shortages, models that were sustained through locum obstetricians in a regular rotation, and new models that developed when new types of providers moved to the community.

In most sites on call coverage was within their own provider groups, i.e. a group of family doctors covered family medicine intrapartum call, midwives covered midwifery clients and obstetricians covered each other's caseloads. Other sites operated under a more interprofessional model where midwives and physicians worked together to care for the community, supported by nursing. One centre had a unique model where midwives were part of the rotation that covers call for family medicine patients. Examples of intrapartum care models are described in Table 5.

Nursing practice also varied amongst sites. At many hospitals, registered nurses were cross-trained to work in intrapartum and other units such as medical-surgical or palliative care units. Where nurses did not have additional training to scrub or circulate for caesarean sections, operating room staff would be called and the cross-trained obstetrical nurse would attend for neonatal care. Some centres had respiratory therapists but others did not. Hospitals ensured staff had Neonatal Resuscitation Program Certification when attending births. The cross-training of staff allows hospitals to maintain obstetrical services in low volume centers by ensuring the staff had the flexibility of being able to work on multiple units. However, this model can be less than ideal in situations where patient populations can be very diverse, and when staff are stretched too thin. Some sites reported a decrease in staff morale, and increase in resignations and turnovers with restructuring and cross training to adapt to fiscal pressures. Others reported the difficulty of training new staff to gain intrapartum competencies when they work across units.

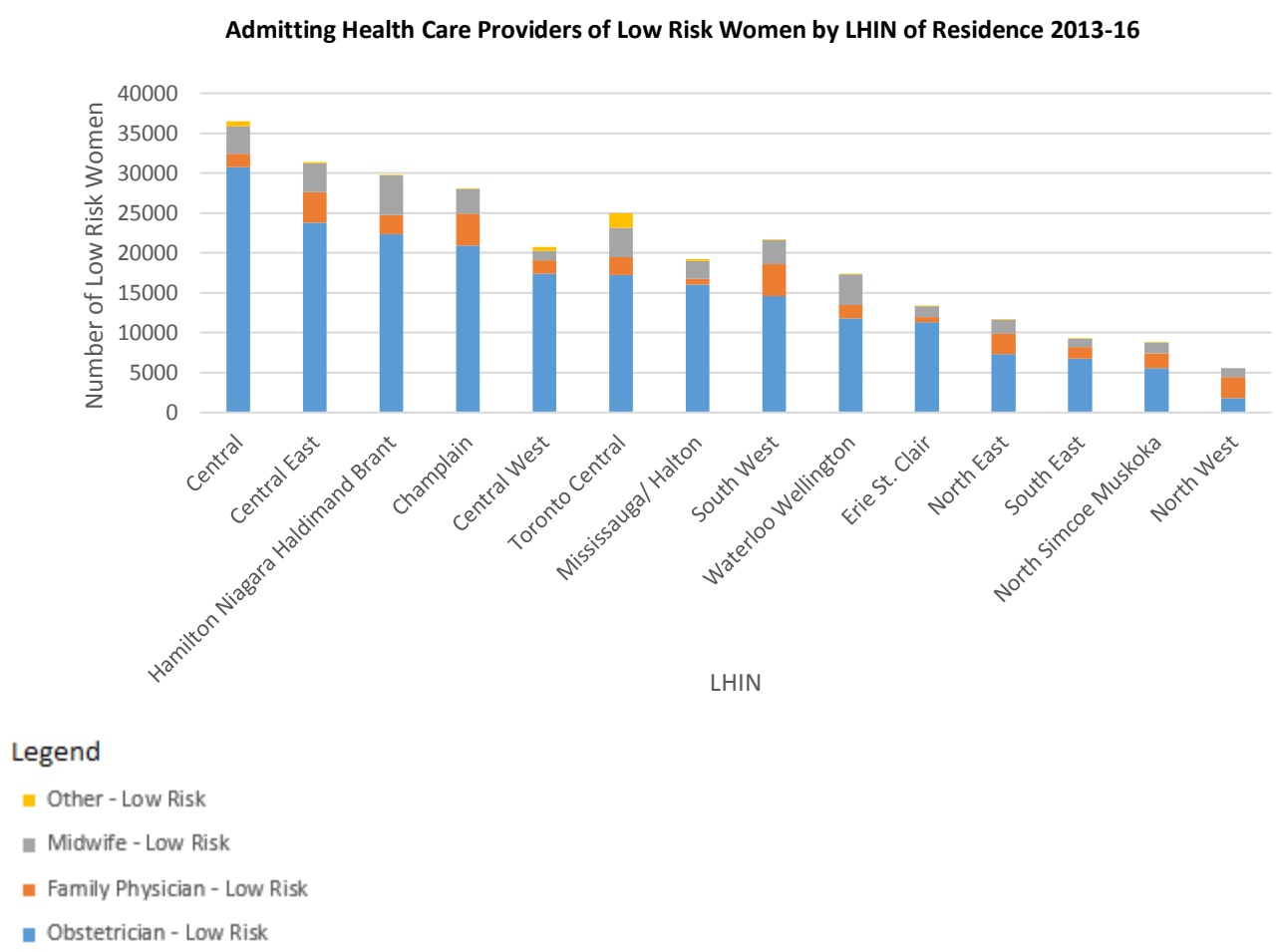
Table 5: Examples of Intrapartum Care Models

Different Intrapartum Care Models Across Ontario
Family Medicine Model At the Meno Ya Win Health Centre in Sioux Lookout, family physicians provide comprehensive maternity care for about 450-500 births per year, in a centre that does not have specialists on site. The team is trained to provide family medicine, anesthesia, surgery and pediatric care. They provide services for the 85-90 remote fly in communities of Ontario's North West LHIN, where people have to leave home to give birth, often for weeks or months.
Midwifery Model In Attawapiskat, the Neepeeshowan Midwives are the only intrapartum care providers for this remote Cree community, caring for about 60 pregnancies and attending 12 births per year. They work closely with physicians at the Moose Factory site of the Weeneebayko Health Authority. Having the midwifery practice in Attawapiskat has allowed consistent local prenatal and postpartum care from known providers, training of local health workers, and increased access to local intrapartum services. At the time of the interview proposals to expand the midwifery service in both Attawapiskat and Moose Factory promised to increase access to local intrapartum care.
Multiprofessional Model At Almonte General Hospital, the team includes 2 obstetricians, 10 midwives and 4 family doctors. This Level 1b hospital provides care for about 400 births per year, with about thirty percent of births attended by the midwifery team. Obstetricians cover one weekend per month and there is a stable team of locums who assist. Nurses are cross trained and float between covering obstetrical and medical/surgical patients.
Interprofessional Model In Parry Sound six family physicians and two midwives provide intrapartum care at the West Parry Sound Health Centre to about 100 families per year. The midwifery team participates in the on-call rotation to cover family medicine patients. Because there are only two midwives, nurses act as the second attendant at births with midwives for both hospital and home births, a model which helps the nurses maintain their intrapartum skills. The midwifery team has privileges at both West Parry Sound (Level 1) and Orillia Soldier's Memorial Hospital (Level 2). When family medicine patients are recommended to give birth in Orillia due to risk factors they can be referred to either the midwifery team or the obstetric team in Orillia. The midwives can provide local prenatal care and intrapartum care in the Level 2 hospital, with appropriate on-site consultation as needed.

Admitting Health Care Provider

Figure 6 details the health care providers who admitted the pregnant person to the hospital. The data is shown by LHIN of residence, and can be considered an indicator of who the primary prenatal/intrapartum care providers are in the area.

Figure 6: Admitting Health Care Providers of Low Risk Women by LHIN of Residence 2013-16



Source: BORN Ontario.
Low Risk Women defined as Robson Classification 1-4

These data show that most low risk births in the province are attended by obstetricians with an approximately equal percentage of births in hospital attended by family physicians and midwives. These data do not allow analysis by Level 1 or primary unit such as birth centres. It is recommended that an analysis by hospital Level of Care be conducted to gain a further understanding of care providers at low volume units and to complement our interview data.

When reviewing the data by LHIN Sub-Region (Appendix F) there is significant variation in admitting health provider by LHIN sub-region which confirms our interview findings that a variety of models exist for the care of the low risk populations. In some regions, for example in the south west of the province as well as in the north, there are higher rates of births admitted by family physicians and/or midwives. These data confirm the interview findings that some low volume centres rely on interprofessional models using primary care providers.

Limitations to Staffing and Staff Mix

Although the larger centres interviewed often offered a choice of care by an obstetrician, family doctor or midwife, many small centres had more limited choices with access to only one or two of the provider groups. In addition, not all low volume centres had access, or had only limited access, to additional health care providers such as ultrasound, lactation support, respiratory therapists and/or paediatricians.

Many of the centres interviewed stated that the retention of obstetrical nurses and the maintenance of obstetrical nursing competencies were both challenging. Reasons given included job dissatisfaction with cross-training to other units, the inability to gain experience because of low volumes, and the fiscal challenges of having a dedicated nurse educator for obstetrics.

Limitations on Services

Most centres offered 24/7 access to caesarean section and epidural anesthesia. In many of the smaller centres, caesarean section was provided by family physicians or general surgeons with extended training. Others used general surgeons for some or all caesareans. In some centres midwives were trained to offer first assist for surgical birth, although this option was not widely used. Others noted that it could be difficult to establish and/or sustain 24/7/365 physician coverage, especially with respect to anesthesia coverage, the availability of caesarean section and paediatric back-up. Some offered planned elective surgical birth on an intermittent basis performed by a visiting surgeon and transfers for intrapartum caesarean sections. The centres staffed by midwives only transferred for both planned and unplanned caesarean sections.

Although most centres that offered caesarean said they could perform the operation within 30 minutes some centres said they would often need 45 minutes. Those without quick access/or no access to emergent caesarean section noted that they did appropriate risk screening to minimize urgent transfer for this indication but that they had to be prepared for prompt transfer in emergencies.

Most centres also offer 24/7 access to epidural pain relief. Some informants reported a reluctance on the part of some of the anesthesia staff to offer epidurals in labour although they did provide the service for planned caesarean sections. Some of the northern centres relied largely on narcotic pain relief and thought this worked well for their communities. The birth centres and Attawapiskat site do not offer pain relief other than access to nitrous oxide.

All of these factors affect caesarean section rates thus quality metrics and targets set for/by tertiary/academic centres and by national organizations may need modification for low volume centres.

Several centres reported more demand for midwifery services than could be met by their current complement of midwives. Most expressed a lack of lactation support services. One wanted to participate in the Baby Friendly Initiative but called it “too expensive” due to the lost income from formula companies which currently supports their unit.

Human Resources and Staff Competency

Education Resources and Opportunities

Low birth volume centers found creative means to maintain their clinical maternal-newborn competencies. Most noted using standardized educational programs in the past and had found benefits to them in both clinical education and in fostering interprofessional collaboration. Many of the sites that mentioned using these programs, however, also noted that they no longer take part in them due to the high cost or due to staff turnover. Some described continuing "skills drills" despite no longer continuing the formal programs. Staff turnover also presented a challenge in ensuring new staff are kept up-to-date with previous education cycles. Nevertheless, some sites stated they were making efforts to get standardized education programs running again soon.

Other methods of ensuring staff competencies in small centres included sending nursing staff to larger intrapartum care units in other hospitals in order to do their initial training for the labour and delivery unit. In centres with high turnover this is a significant challenge in terms of staffing and cost as training can take place at a site that is a distant from their home hospital.

Small centers generally do not have formal clinical educators to support maternal-child programs and various individuals act as informal leaders to support the ongoing competency of their staff. These informal leaders included physicians, nurses and midwives who demonstrate their passion for the subject and would take it upon themselves to seek out training and educational opportunities. This often would mean having to go off site to a higher volume centre to learn updated skills or be certified as an instructor to disseminate information. These informal leaders would then return to their home hospital to pass on their learning or run certification programs such as the Neonatal Resuscitation Program (NRP) to ensure the staff are up to date with best practice guidelines and skills.

Administrators work to ensure mandatory competencies and certifications are practiced and renewed (such as renewing NRP certification and fetal health surveillance certifications) by seeking out formal instructors from other institutions when not available on site. Some regional networks play a key role in ongoing skills maintenance. Certification programs and audits support the smaller institutions in planning quality improvement initiatives. However, some respondents reported that it is increasingly hard for hospitals to fund the networks to play this role. Some hospitals have built relationships with higher volume centers either within or outside of existing networks, where staff can go for training and have exposure to a higher volume of deliveries. In the case of centres in the North West LHIN, staff often have to travel to southern Ontario centres for training, where an existing strong relationship with Winnipeg hospitals exists. Many feel that the necessity of travelling to distant centres is not a reasonable solution for staff education or patient care.

Competency Vulnerability

There was significant vulnerability expressed when discussing staffing and competency maintenance. Although the passion of informal leaders was deemed to be very important to support ongoing obstetrical competencies, there is a sense of fragility in the system. There is a dependence on these individuals who are good-willed and eager to learn or who come to the community with certifications as educators. Without them, there is a risk of collapse of the birthing operations in low volume hospital settings. Some administrators capitalize on this passion by building out programs that they can fit around the individual's schedule. For example, one hospital has a registered nurse who had previously trained as a lactation consultant (LC) and who is scheduled to allow her to provide that support for patients in a clinic on a casual basis. In addition, she supports lactation teaching for her nursing colleagues. Yet, when that individual leaves or retires, LC support would not be specifically recruited for. In another community, a local midwife and family physician have taken it upon themselves to seek out instructor status for the NRP training. As for anaesthetists, a concern expressed by a few centers was that some anesthesiologists are not comfortable providing care for labouring patients and may require additional competency training. Those planning for a birth with an epidural may choose to deliver their baby elsewhere.

Staff Turnover

A major limitation with staffing and competency maintenance, is high turnover rates. In the words of one informant from Sioux Lookout, "We are always a couple of physician resignations away from difficulty". Another limitation that some small hospitals face is what one informant saw as a type of "medical tourism", when health care providers work in a rural community for a short time for "an adventure", without a vested long term interest in staying in the community. In contrast, some describe using a consistent group of long term locums to maintain access during holidays and lessen the impact of turnover.

When recruiting new staff, there is also need to facilitate opportunities for them to develop the intrapartum care competencies needed to deliver care. Many hospitals noted engaging in standardized education programs, however, due to their cost and intermittent enrollment, and depending on the timing of the recruitment, not all staff have participated in the program or have had opportunities to engage in the teaching and skills drills associated with them. Several sites described having to do extensive orientation for nurses to the multiple roles they play in a small hospital that may not have ward clerks, RTs, and that may combine Labour/Birth/Recovery/Post-partum (LBRP), triage and antenatal care on one unit. Some sites offer "on call learning" so that opportunities are used to provide staff with exposure to competencies they may not have regular access to.

Regional Maternal-Child Networks

Familiarity with Regional Maternal Child Networks

The concept of regional networks was not familiar to all of the sites interviewed. Hospitals that had engagement with a formal Regional Maternal-Child Network discussed many benefits such as supporting the sustainability of their low volume center by providing a connection to a tertiary center that could assist in staff education and competency maintenance. For example, some centers lacked a fetal health surveillance instructor and would rely on another hospital for an individual with that skill set. Some sites also had formalized agreements with a higher-volume centre to assist them with initial training of nurses in an environment that offered the opportunity to gain experience and confidence in a compressed time frame. In some sites, family physicians who had done enhanced skills training arranged experiences in larger centres to help maintain surgery or anesthesia skills. This strategy allowed staff to develop or maintain competencies related to birthing or operating room skills. Centres identified quality improvement and dissemination of evidence and guidelines as an important role for networks. One centre talked about taking questions about best practice for cases of high BMI and neonatal hypoglycemia to their network, "We rely on them for up to date information. It saves management which does not have time to do the extra leg work to fill in the gaps regarding best practice in a small centre with multiple roles and responsibility".

Benefits of Being Part of a Regional Maternal-Child Network

For the sites that identified being part of a Regional Maternal-Child Network, they discussed how a regional lead provided ongoing contact and would engage in annual auditing or hospital visitation. They found this engagement useful and identified areas for the Network to support hospital operations for consistency with other hospitals.

For those not in a Regional Maternal-Child Network, many identified that being a part of one would be valuable and may have the potential to:

- Facilitate more rapid and seamless maternal and neonatal transfers;
- Build and support relationships between centres (and between sending and receiving sites for transfers);
- Support standardized, evidence informed policies and procedures across hospitals and regions;
- Promote and facilitate the real-time dissemination of knowledge to services providers across the province;
- Support the establishment of shared electronic medical records (EMR);
- Assist with quality improvement and competence maintenance;
- Support more effective engagement with the LHINs; and
- Support greater public engagement.

The concepts of both vertical and horizontal networking were discussed and seen as valuable. Most sites had few informal mechanisms for public engagement beyond satisfaction questionnaires. The sites with

the most active formal engagement, including town halls and social media campaigns, were those sites threatened with closure and used public engagement to advocate for continuation of services. Most sites did not feel engaged with their LHINs, but saw the network as a vehicle for access to and engagement with the LHIN.

Caveats Regarding Regional Maternal-Child Networks

Despite the many benefits identified for Regional Maternal-Child Networks, those interviewed wanted to provide input about factors and concerns that should be taken into account in the structuring of networks. There was some concern regarding provincial boundaries and jurisdictions. For example, District of Kenora Hospital and Meno Ya Win Health Centre typically transfer to Winnipeg rather than to Thunder Bay for distance and practical reasons, and indicated that these relationships were strong and successful for providing safe care. Some sites had a sense of caution and/or fear about a network that could potentially disturb existing referral relationships or impose unrealistic policies or procedures. They identified that this could be potentially disadvantageous for care delivery and create a negative impact on the patient and their family (due a potential for increased distance to travel). As one site noted, "People and relationships matter". Many thought that hospitals without a network should be contacted independently to understand what alignment would be most appropriate for them. The idea is to reinforce relationships that complement their organically derived hospital referral networks. Level 1a/b units indicated that they wanted to be respected within a network as the experts in providing care in their area/setting. Some also indicated the need to network across Level 1a/b centres.

An additional limitation that was noted was with regards to the sustainability of existing networks or creating new ones was funding. Some networks or hospital relationships currently function on goodwill, others are funded by the larger centres, and in some cases small centres pay to be members, an expense which was difficult for the low volume units. The opportunity to formalize and fund networks was seen to have significant benefits to ensure their sustainability.

See Table 6 for examples of how Regional Networks can support low volume intrapartum care centres.

Table 6: Examples of How Regional Networks Support Low Volume Intrapartum Centres

How Networks Can Support Low Volume Intrapartum Care Centres
Supporting Small Centres to Stay Open Georgian Bay General Hospital (GBGH) in Midland is supported by a strong relationship with Orillia Soldier's Memorial Hospital. Prior to establishing a formal partnership, there was a recommendation to close the birthing unit at GBGH due to downward trend in births and the retirement of a long serving obstetrician. Their partnership includes a quality and risk management framework and standardized policies and education across the two sites. They also share a professional practice leader and manager and do monthly risk assessment rounds together. An informant at Huntsville hospital noted that by supporting small centres to provide intrapartum care networks can ensure the "right care at the right time, close to home".
Quality and Continuing Education Staff at the Almonte General Hospital talked about how the Champlain Maternal Newborn Regional Program (CMNRP) support them to maintain quality at their site. CMNRP staff make annual visits, facilitate case study review and provide feedback for learning, and share best evidence and practice guidelines. This is a vital role given the limited resources for continuing education and quality improvement at a small centre. They also provide follow up to cases that are transferred, which provides staff with closure on patient status post transfer.
Respecting Existing Referral Patterns Many of the centres we spoke with noted the importance of networks mapping onto current patterns of referral. Small centres want the larger centres they work with to understand the realities of low volume intrapartum care. They value shared policies, EMRs and educational opportunities across sites that reflect existing relationships. This poses a particular challenge in the North West LHIN where referrals are often to Winnipeg.
Horizontal and Vertical Networking Several of the small centres noted the value of exchanges with other Level 1 centres and some noted that informal networks have developed to share best practices for low volume units. They hoped this kind of horizontal exchange would be built into the networks and allow "learning from successes and challenges of others through dialogue in the form of teleconferences, email groups and educational networks". There was also support for reporting outcomes across sites with similar challenges. We heard from Indigenous care providers that a network of sites serving Indigenous communities would assist with knowledge translation and could assist in sharing best practices and resources. Horizontal networks can help provide input to national standards that do not recognize the context of rurality and low volume, and create standards for rural and remote settings.
Bi-directional Learning Some informants noted that the benefits of a network are not only "top down" but also "bottom up". Safe birth close to home depends on effective transfer and referral which is enhanced by larger sites being committed to supporting small centres. Regional Networks that promote learning about the challenges and the benefits of low volume centres by the tertiary centres and about the importance of consultation, acknowledge the realities of rural and remote intrapartum care.

Distance Map

A distance map that will include road travel time to intrapartum care services for urban and rural areas, as well as non-urgent air travel times for those in remote areas, will be forthcoming.

Recommendations

Based on the findings in this report, a number of recommendations are put forward to better support and further develop the provincial capacity for low risk intrapartum care services.

Geography and Access to Care

1) Ongoing provincial monitoring of access to care issues, including maternity service closures, would be prudent.
2) A systematic approach to increasing options for intrapartum care services where it is safe and sustainable is recommended.
3) Health care workers and community members from communities without access to intrapartum care should be included in further work on access to care in rural remote and Indigenous communities

Models of Care

4) Support for interprofessional models of care may increase sustainability, contribute to quality and relieve recruitment and retention pressures. These models need to take into account different staffing compositions for different communities.
5) Family physician and midwifery services supported through strong referral relationships can increase access in communities without local intrapartum services and should be supported.
6) Support should be provided for access to surgical services in Level 1a/b centres whenever possible including support for family medicine, anesthesia and surgery programs.
7) Support should be provided for development of safe intrapartum services without access to surgery where appropriate.

Human Resources Strategy

8) Small centres require support for recruitment and retention of staff.
9) Small centres require support for maintenance of intrapartum skills/competencies, ongoing certifications and the implementation of quality improvement programs.

Regional Maternal-Child Networks

10) Complete provincial coverage is required, being mindful of the informal networks, relationships and referral patterns that already exist.
11) Small centres should be involved in the development of the networks.
12) Ensure understanding of the benefits, challenges and supports required to provide local access to intrapartum services.
13) Ensure understanding of local social and cultural issues and the need for culturally safe care for the local population.
14) Respond to the recommendations of the Truth and Reconciliation Commission and the Society of Obstetricians and Gynaecologists of Canada regarding the education and retention of Indigenous health professionals and the return of birth to rural, remote and Indigenous communities.

Provincial and Regional Network Quality Metrics

15) Variables related to distance and access to care should be taken into account when reviewing regional or provincial quality metrics.
16) An analysis of maternal and neonatal transfer data as well as risk screening practices would further inform planning an expansion of intrapartum services closer to home.
17) Inclusion of medical evacuation flight times into distance mapping is important to give a full picture of transport from remote regions.

Conclusion

The passion and resourcefulness of those working in low volume, rural and remote centres and their dedication to providing access to intrapartum care to their communities was impressive. The challenges faced and the solutions suggested by our informants reveal similar themes but also vary across the vast geography of Ontario and the unique populations within each region. The findings of this work, and the observation that there is no “one size fits all” model for low volume intrapartum care, resonates with previous reports. The development of maternal-newborn health policy and guidelines needs to be informed and inclusive of the realities of these centres and the communities they serve. Efforts to improve the models, safety, and quality of care in the province will be most effective when they take into account the challenges faced by low volume hospitals and communities. There is a need to respond to calls for culturally safe care for Indigenous peoples. Regional Maternal-Child Networks developed in partnership with small centres and local communities could play a vital role in supporting the sustainability, safety and quality of these centres. It is important to note that our research was limited to health care providers working in low volume centres that provide intrapartum care and did not include the views of community members or the views of those who work in centres without access to intrapartum care. Ongoing work is needed to further understanding of the needs of the vast areas of the province served by low volume centres.

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Appendix A – Interview Questions

1. What current services or structures are available to deliver babies in your community/service area?
    - How many births does your organization do annually?
    - How many Labour & Delivery beds does your organization have?
    - Is midwifery care offered?
    - What is the approximate number of/proportion of physician and midwife deliveries?
    - What is the approximate number of hospital and home births?
    - Are you seeing a trend in an increasing or decreasing number of births?

2. Are there notable characteristics of the population you serve (i.e. cultural, religious, socioeconomic)?

3. What are the challenges for maternal-newborn care in your community?
    - Do you have issues transferring to a higher level of care?
        - Which centres do you normally refer to for higher level maternal/newborn care?
    - Are there challenges regarding the accessibility or equity of services for populations noted above (Question 2)?

4. Can you describe the staffing and staffing model at your organization?
    - What types and how many of physicians are available (FP, OB, general surgeon, anesthesiologist, pediatrician)?
        - Are they on the premises, on call, and/or from another organization?
        - How do they manage call (i.e. on their own vs shared)?
        - Is their availability stable or is there high turnover?
    - Do you have anesthesia coverage to provide pain relief in labor?
    - Do you have a respiratory therapist?
    - Are nurses assigned to more than Labour & Delivery?
    - Do you have issues with staff back-up?

5. Does your organization offer *caesarean section*s?
    - If yes, who are they performed by? (i.e. OB/GYN, GP/FP, General Surgeon, other)
    - Do you use OR nurses or Labour & Delivery nurses for *caesarean section*s?
    - If no, (for Level 1a), what do you do to plan for unplanned *caesarean section*s?

6. Do you have anesthesia coverage to provide pain relief in labour?

7. How is early labour admission handled?
    - Is it different if someone is traveling a distance vs someone who lives in close proximity?

8. What strategies does your organization use to maintain competencies/staff and unit functions in the face of low birth volumes?

9. Do pregnant people need to leave their communities to give birth?
    - If yes, where do they have to travel to, and how do they get there?

10. Is there anywhere in your service area that doesn't offer local access to low risk birth services to pregnant people in their community?
    - If yes, what is preventing these services from being offered?
    - If yes, would the community like to have local access to low risk birth services?
    - What would these services look like?

11. What is needed for local access to low risk birth services in your service area?

12. Have you done any community engagement to understand the patient's perspective, or is there any work currently being done with patients in your community already?

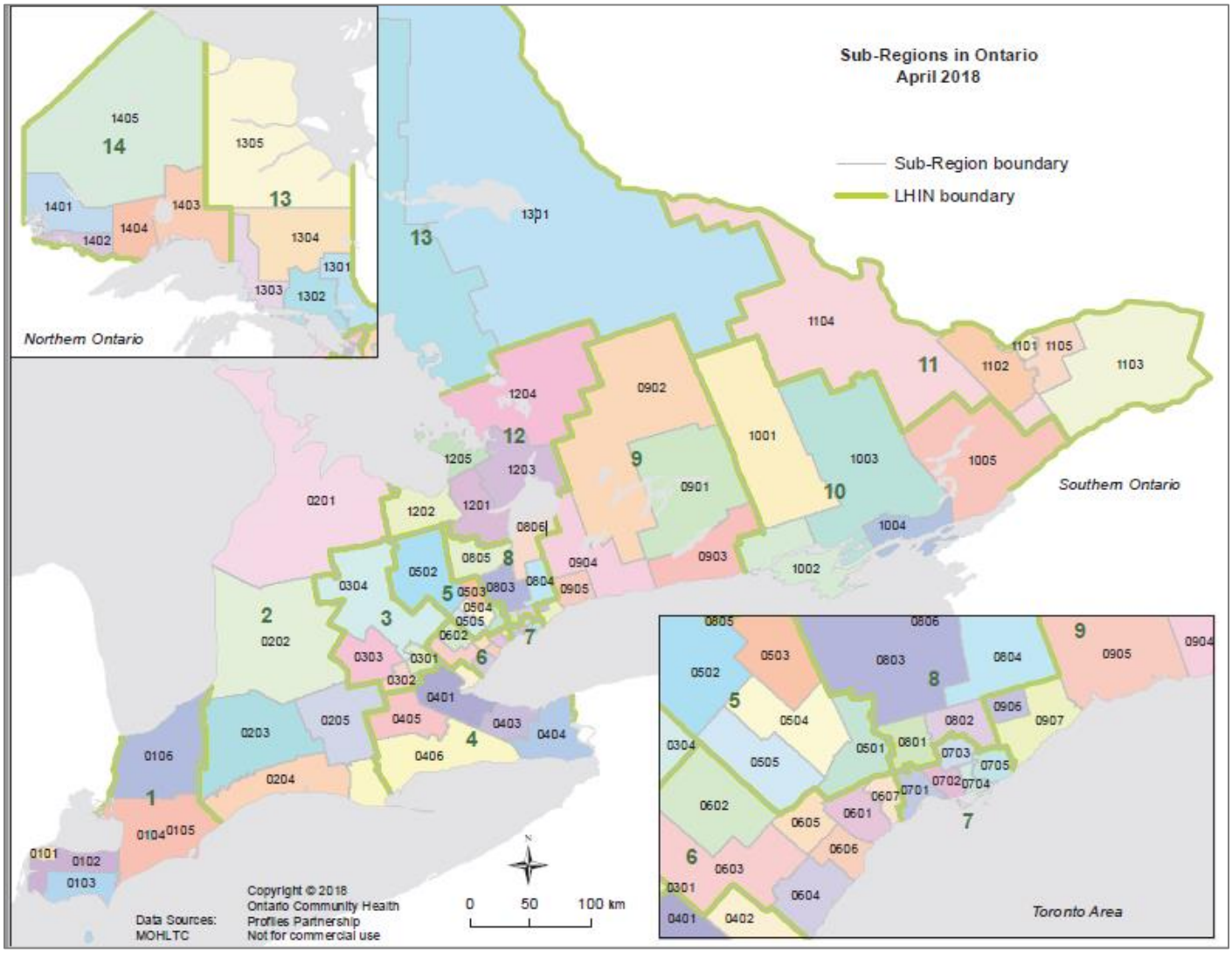
13. Are you in/do you know if your organization is in a Regional Maternal-Child Network?
    - If yes, what benefits does it provide you?
    - If no, how would being part of a network benefit you?
    - How should a network be structured to best support capacity building, sustainability, knowledge translation, program planning, etc.?

14. Do you/how do you work with your LHIN?

15. Are we asking you the right questions? Are there other issues we should be thinking about? What do you want to tell us?

Appendix B – LHIN Sub-Regions

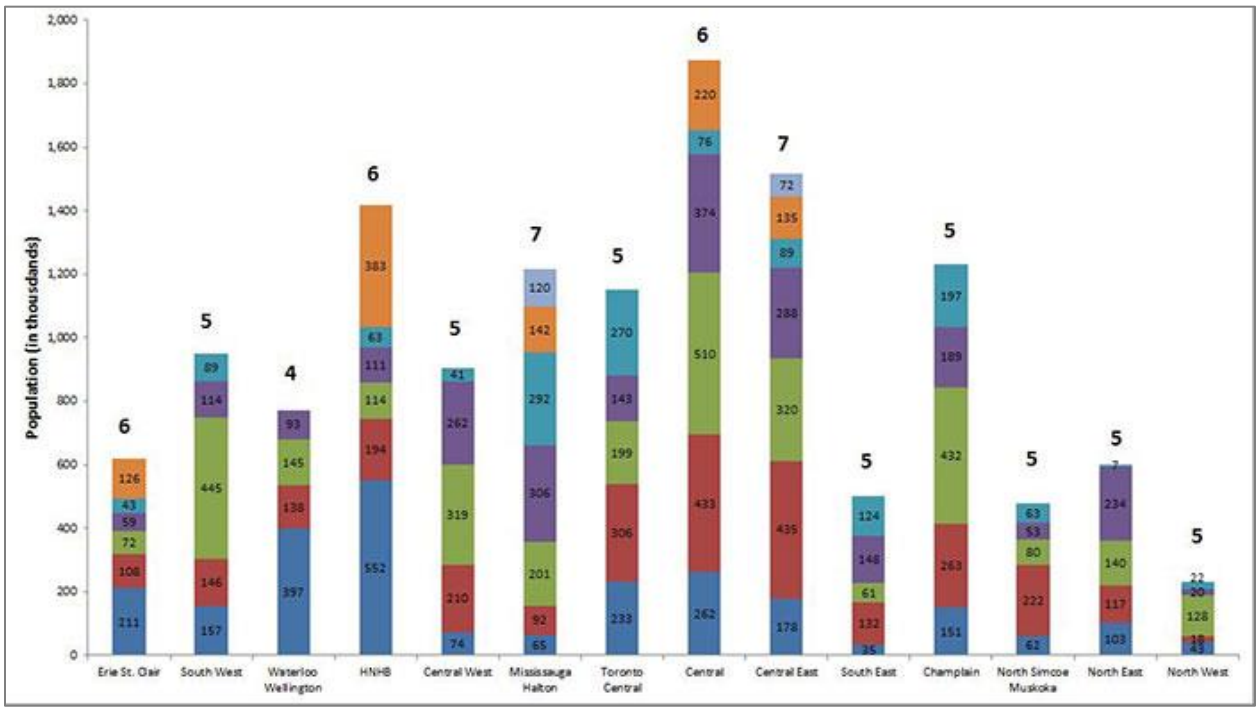
Ontario LHIN Sub-Regions



Source: St Michael's Hospital, Ontario Community Health Profiles Partnership. 2018

LHIN	Sub-Region ID	Sub-Region Name	LHIN	Sub-Region ID	Sub-Region Name
1	101	Windsor	8	801	North York West
1	102	Tecumseh Lakeshore Amherstburg LaSalle	8	802	North York Central
1	103	Essex South Shore	8	803	Western York Region
1	104	Chatham City Centre	8	804	Eastern York Region
1	105	Rural Kent	8	805	South Simcoe
1	106	Lambton	8	806	Northern York Region
2	201	Grey Bruce	9	901	Peterborough City and County
2	202	Huron Perth	9	902	Haliburton County and City of Kawartha Lakes
2	203	London Middlesex	9	903	Northumberland County
2	204	Elgin	9	904	Durham North East
2	205	Oxford	9	905	Durham West
3	301	Guelph-Puslinch	9	906	Scarborough North
3	302	Cambridge-North Dumfries	9	907	Scarborough South
3	303	Kitchener-Waterloo-Wellesley-Wilmot-Woolwich	10	1001	Rural Hastings
3	304	Wellington	10	1002	Quinte
4	401	Hamilton	10	1003	Rural Frontenac, Lennox & Addington
4	402	Burlington	10	1004	Kingston
4	403	Niagara North West	10	1005	Leeds, Lanark & Granville
4	404	Niagara	11	1101	Central Ottawa
4	405	Brant	11	1102	Western Ottawa
4	406	Haldimand Norfolk	11	1103	Eastern Champlain
5	501	North Etobicoke Malton West Woodbridge	11	1104	Western Champlain
5	502	Dufferin	11	1105	Eastern Ottawa
5	503	Bolton-Caledon	12	1201	Barrie and Area
5	504	Bramalea	12	1202	South Georgian Bay
5	505	Brampton	12	1203	Couchiching
6	601	East Mississauga	12	1204	Muskoka
6	602	Halton Hills	12	1205	North Simcoe
6	603	Milton	13	1301	Nipissing-Temiskaming
6	604	Oakville	13	1302	Sudbury-Manitoulin-Parry Sound
6	605	North West Mississauga	13	1303	Algoma
6	606	South West Mississauga	13	1304	Cochrane
6	607	South Etobicoke	13	1305	James and Hudson Bay Coasts
7	701	West Toronto	14	1401	District of Kenora
7	702	Mid-West Toronto	14	1402	District of Rainy River
7	703	North Toronto	14	1403	District of Thunder Bay
7	704	Mid-East Toronto	14	1404	City of Thunder Bay
7	705	East Toronto	14	1405	Northern

Number and Size of LHIN Sub-Regions



Source: Ministry of Health and Long-Term Care. Health Bulletins. Update: Health System Integration. 2017. http://www.health.gov.on.ca/en/news/bulletin/2017/hb_20170127_2.aspx. [Accessed April 2018].

Appendix C – Interview Site Descriptions

A Snapshot of the Interview Sites
Erie Shores Health Care – Leamington District Memorial Hospital, LHIN 1 This Level 1b hospital reports 300-330 births per year and is slowly increasing. Most births are attended by the two obstetricians who share on call responsibilities. The midwives who work in Leamington also attend births in Windsor and attend home births at about 2% of the total number in Essex County. Nurses are cross assigned to the medicine and surgery unit if labour and birth unit is not busy. There are three labour, delivery, recovery, and postpartum beds. Caesarean section is available 24/7. Epidural pain relief is available 24/7 and is provided by a team of three anaesthesiologists. This site normally transfers to Windsor Regional Hospital or London Health Sciences Centre and report that time and weather can be a challenge. They serve a large immigrant Low German speaking Mennonite population with socio-economic challenges and language barriers. A recommended closure in 2015 was met with community protest and media attention. The LHIN commissioned an expert panel and a decision was made to continue the service.
Huron Perth Healthcare Alliance – Stratford General Hospital Site, LHIN 2 Stratford General is a Level 2a birthing unit which accepts transfers from several Level 1 units in Goderich, Listowel, Woodstock and Wingham. There are about 1,000-1,200 births per year in Stratford. The Level 1 units range from less than 100 to 800 births per year and some are subject to closures when anaesthesia coverage is not available locally. There are three affiliated midwifery practices who attend about 250 births per year in the Stratford hospital. They also attend births at some of the Level 1 hospitals in the region and home birth rates for the practices range from 25-60% of the midwifery caseload. The use of midwifery services in the region is growing steadily. There are no obstetricians at the Level 1 units that transfer to Stratford. One of the Level 1 hospitals has family medicine surgery coverage and occasional general surgery coverage for caesarean section, but most transfer to Stratford for unplanned intrapartum surgery. Challenges to access to care include distance, options for transportation and finances. Most travel under one hour but travel time may be up to two hours. These hospitals serve a large rural Amish and Mennonite population.
North Wellington Health Care: Louise Marshall Hospital – Mount Forest and Palmerston District Hospital, LHIN 3 The Mount Forest and Palmerston sites are Level 1a hospitals. There are about 110 births between the sites with about 70 at Palmerston. Birth numbers have decreased with changing practice standard, the introduction of midwifery and an increase in home births in the area. Both sites are staffed with family physicians that provide emergency department coverage, maternity care and some anaesthesia services, as well as midwives and nurses. There are two labour and delivery/postpartum rooms in Palmerston and one at Louise Marshall. Nine of the 16 family doctors attend births. Midwives attend about 22% of hospital births. Nurses are cross trained in labour and delivery/postpartum, emergency and medicine. Because they have no OR on call they perform only planned caesareans when an obstetrician from Groves Memorial Hospital in Fergus or Guelph General Hospital are on site. They transfer for patient concerns during labour that may have the potential to lead to caesarean. They do careful risk screening and transfer early in light of their site's limitations. They can sometimes offer epidural (but not 24/7) so they use fentanyl and nitrous oxide for pain relief. They are in an alliance with Groves Memorial Community Hospital (Level 1b) and often transfer there. For those requiring tertiary care Palmerston transfers most often to London and Louise Marshall transfers more often to McMaster. They may go to Guelph if Level 2 care is needed. They have not experienced service closures. These hospitals

serve a high proportion of rural Mennonite and Amish populations, younger mothers and some with low socio-economic status and related problems with transport and access to care. Many pregnant people travel between 30 – 40 minutes to get to these sites. These sites face the challenges of very small units with limited resources and services, which in turn limit patient choices. It can be hard to recruit physicians willing provide obstetrical care without electronic fetal monitoring or emergency surgical services on site.

Norfolk General Hospital – Simcoe, LHIN 4

This Level 1a centre reports about 350 births per year and volumes are increasing. It has four beds. There are four family doctors, one obstetrician, five surgeons and four anaesthesiologists. One nurse is assigned to the labour floor only with back up from nurses working on the medical floor. Midwives attend about 30 births per year as well as home births. Transfers are to McMaster. Caesarean sections are available 24/7 performed by the obstetrician or general surgeon, assisted by family doctors. Epidural pain relief is available 24/7. This centre serves the local Mennonite community. One of the biggest challenges for this centre is the recruitment and retention of skilled staff.

Headwaters Health Care Centre – Orangeville Site, LHIN 5

This Level 1b hospital cares for about 800 births per year with 7 labour, delivery, recovery, and postpartum beds. Local communities are growing and volumes are increasing. They have four obstetricians and five midwives. Labour and delivery is staffed by two registered nurses and one Registered Practical Nurse (RPN), who may be assigned to another floor if not busy. Midwives attend about 200 births per year in hospital, with 15-20% of their caseload being home births. Caesarean section is available 24/7 provided by the OB team. Pain relief in labour, including epidural analgesia is provided 24/7 by a team which includes specialist anaesthesiologists and family medicine anaesthesiologists. They normally transfer to William Osler Health Services, Brampton Civic Hospital. They serve the surrounding rural community which includes a small Mennonite population, with many travelling up to an hour for care. Some come from Brampton as they prefer the small family-centred unit or are under the care of the midwifery group. Challenges include paediatric coverage which is shared by local pediatricians and family doctors. Nurses and RPNs are trained in NRP and Respiratory Therapists are available.

Almonte General Hospital, LHIN 11

This Level 1b hospital reports about 400 births per year, with birth numbers increasing with the closure of the maternity service in Renfrew. The team includes two obstetricians, 10 midwives and four family doctors who also provide anaesthesia services. About 30% of births at the hospital are attended by the midwifery team who also work at the Queensway Carleton hospital. Nurses are cross trained to work in the medical/surgery unit and OR nurses attend caesareans. About 30% of the midwifery practice is home birth. Midwifery clients tend to be willing to travel to Almonte. The hospital provides 24/7 access to caesarean section and epidural. Both family doctors and midwives are trained in surgical assist but only family doctors play this role. Transfer is to Ottawa. Patients travel from up to one hour away, some from as far away as Pembroke or Smiths Falls as they prefer to give birth in Almonte. Challenges include a lack of lactation services and the need for standards appropriate to Level 1 hospitals on subjects such as BMI and neonatal hypoglycemia.

Georgian Bay General Hospital (GBGH) – Midland *in partnership with* Orillia Soldiers' Memorial Hospital (OSMH), LHIN 12

Georgian Bay General Hospital is a Level 1b hospital and Orillia Soldier's Memorial is a Level 2c hospital. The two organizations have established a formal partnership agreement with which came into place in 2017. This

partnership was formed after a recommendation to close obstetrical services at GBGH due to a downward trend in births following the retirement of a long servicing Obstetrician. GBGH and OSMH share a professional practice leader (educator) and a manager. Policies and procedures, staff education and training, and quality and risk assessments are standardized at both sites. Also, the two organizations conduct interdisciplinary risk assessment rounds together. GBGH has about 115 births per year which had been declining but are now stable and increasing. Four family doctors and three midwives attend births at GBGH, with about 20% of births in hospital with midwives and an equal number at home. They have three obstetrical beds which are in close proximity to the medical/surgical unit. They have two general surgeons and a family physician doing caesarean sections and three family medicine anaesthetists. The unit occasionally closes due to lack of nursing and anaesthesia coverage. However, significant reductions in closures have been realized most recently with the focus on strengthening the program. Transfers to Orillia occur if closed or if mother or baby require Level 2c care which is about 50 minutes away. People travel up to 1.5 hours to get to GBGH and if they need to go to Orillia it is an additional hour. GBGH serves a local Indigenous and French language populations with challenges including low socio-economic status and lack of transportation. Challenges include distance, especially for the First Nations community who live on Christian Island, lack of staff to support lactation, a perception in the community that the unit has closed, and cost of continuing education.

Muskoka Algonquin Healthcare – Huntsville, LHIN 12

This Level 1b multi-site unit (Huntsville and Bracebridge) has about 150 births per year which has remained stable. There are six family physicians, three surgeons and three anaesthesiologists in Huntsville and three surgeons and three anaesthesiologists at the Bracebridge site. About 32% of births are under midwifery care with about 16% being home births. This site has two labour and birth beds and seven postpartum beds shared with the medical/surgery unit. Orillia is the most common site to transfer to, which is one hour away. Weather and road conditions can be an issue. There are challenges for families that have to give birth away from home as they often have do not have a place to stay and do not have money to stay in a hotel or travel back and forth. If follow up in Orillia is needed in pregnancy or for a baby after discharge, this is often missed due to distance. They serve many young mothers who experience socio-economic challenges. People travel up to one hour from as far as Magnetawan and Parry Sound. Lack of public transportation access can be a challenge. Additionally, they lack of lactation consultants and mental health support.

Weeneebayko Area Health Authority – Moose Factory, LHIN 13

While open and providing intrapartum care services during the development of this report, at the time of publication, Weenebayko Area Health Authority had temporarily closed their Labour and Delivery services. A date for reinstating services is unknown.

This Level 1b hospital has four labour and delivery beds and reports about 80-150 births per year. The hospital serves the Cree communities of the Ontario James Bay coast – Moose Factory, Moosonee, Fort Albany, Kashechewan, Attawapiskat (see Neepeeshowan Midwives below) and Peawanuck. Family physicians attend births and provide pediatric care. There is 24/7 access to surgery and anesthesia, but the general surgeon and OR nurses are called in from home so it can take up to 45 minutes. Nurses are cross trained in obstetrics, emergency, medicine and surgery. There is a plan in progress to have a midwifery program in Moose Factory to increase access to care and birth in the other communities. It is challenging to provide quality prenatal care in the smaller communities without family doctors or midwives on site. Forty percent of the population has to leave home to give birth and many women and families want to give birth in their own communities. Most of the pre and postnatal care is done by nurses under medical directives. Some women may not come for care and

barriers include lack of local care, having to travel for basic tests, childcare concerns when having to leave for care and no phone access, although Facebook is providing new options to contact pregnant women. Women leave home at 38 weeks and stay in one of the wards of the hospital. There is a high turnover of physicians and nursing staff and the site occasionally has to close obstetrics and surgery due to gaps in anaesthesia coverage. Other challenges include out of date equipment.

West Parry Sound Health Centre, LHIN 13

This site is a Level 1a with a stable rate of about 100 births per year. There are six family doctors and two midwives who attend births and about 5-10 home births per year. They have two birth rooms and two postpartum beds. There is always a general surgeon and family physician anaesthetist on call. Nurses are cross trained and OR nurses attend caesarean sections. A second physician assists at surgery and a third is called in to assist with baby care. Although this role is in midwifery scope, anaesthesia is not willing to be the only "unscrubbed" physician present. There is usually good access to epidurals but it is not guaranteed as one anaesthetist does not do epidurals. The population is low income, and they serve seven Indigenous communities in the surrounding area. In the summer the population triples with tourists. Recruitment has been easier since the Northern Ontario School of Medicine opened. CritiCall Ontario is used for transfer. Orillia Soldier's Memorial, just under an hour away, is the Level 2 transfer hospital and higher risk go to Mount Sinai Hospital or The Hospital for Sick Children which is over two hours away. This site reports excellent interprofessional team work and midwives are funded through the Ontario Midwifery Program of the MOHLTC to take a turn covering call in the family physician call rotation. Challenges include maintaining the anaesthesia providers support of the hospital's commitment to maternity care.

Notre Dame Hospital – Hearst, LHIN 13

This Level 1a hospital has stable volumes of about 60 births per year and has one labour, delivery, recovery, and postpartum room. Two family doctors provide intrapartum care and one of the family physicians shares on call responsibilities for caesarean section with a general surgeon. Access to surgery can occasionally be limited due to holidays and locum coverage of both the family medicine surgeon and the general surgeon. Nurses are crossed trained and an RT is on call less than 24/7 from home. There is a midwife in the community but she no longer has hospital privileges. The closest Level 2 hospital is Timmins which is 150 km away. The centre serves communities which are between 1-2 hours away from Hearst. They serve a francophone population and an Aboriginal community which is about 30 minutes away. Challenges centre around the distances when transfer is needed which can lead to a lower threshold to do a caesarean section.

Meno Ya Win Health Centre - Sioux Lookout, LHIN 14

This Level 1b is the referral centre for 28 fly-in communities in north western Ontario. The hospital reports 450-500 births per year, with 85-90 from the fly-in communities. They have two family doctors on call at all times for births, one that can perform caesarean sections and another to assist. A family medicine anaesthetist is on call 24/7. They have two nurses dedicated to labour, delivery, recovery, and postpartum on each shift and OR nurses cover the OR while the labour floor nurses provide care for the baby. There are no midwives affiliated with this centre. Caesarean and epidural services are always available. They normally transfer to Winnipeg. The population is 90% First Nations and younger age and higher parity patients are common. Challenges include outdated equipment, turnover of both doctors and nurses and serving such a vast geographic area. Those from fly-in communities have to leave at 38 weeks or earlier and they live in hostel adjacent to the facility.

Lake-Of-The-Woods District Hospital – Kenora, LHIN 14

This Level 1b hospital does about 200 births per year and they expect this to rise. They have three labour, delivery, recovery, and postpartum beds. Births are attended by five family physicians and two midwives. Three of the family doctors share on call responsibilities for caesarean sections. A family physician anaesthetist covers the whole hospital and all will do anesthesia for surgery but not all are comfortable with epidurals. Fentanyl is the usual pain relief option used. RNs work on a shared floor which includes labour and birth and acute adult and paediatric care. They may also cover emergency. Midwives attend about 80-100 births per year with 15-20% at home. Transfer is to Winnipeg or occasionally London or Minneapolis. The hospital serves the local community and surrounding areas with a majority of Indigenous patients who are often coming from 1-1.5 hours away. Access to care is very challenging to many. The nursing stations on some of the First Nations communities are not always able to provide quality prenatal care, however travelling to Kenora for care is not realistic due to cost and often weather. Births occasionally happen in the nursing stations. The site reports an increase in IV drug use and those using methadone and suboxone. Challenges for patients include concerns about transport and some do not stay in Winnipeg even after transfer. The unit has gone through a lot of change with a shift from being a standalone unit to being combined with acute adult and paediatric care due to lack of funding to support a standalone unit. This resulted in staff turnover and the need to train new staff. Some families from other communities come long distances to Kenora to access midwifery care as the Kenora midwives are the only midwifery practice between Winnipeg and Thunder Bay.

Toronto Birth Centre, LHIN 7

This birth centre was funded as an Independent Health Facility, designed to accommodate 450 admissions per year. Since opening at the end of January 2014 it has steadily grown and has exceeded the target of 525 admissions set in 2017-18. Further demand for the Birth Centre is projected to grow. Ten midwifery practices have admitting privileges and the centre is staffed with Birth Centre Aides who are present 24/7. There are three birth rooms, a consult room that can serve as a fourth birthing space, two family waiting areas and a kitchen. There is no on-site caesarean section or pharmacological pain relief. A variety of low intervention options exist for comfort and pain management including birth tubs and nitrous oxide. Non-urgent transports are to the hospital where the midwife has privileges. Urgent transfers are to St. Michael's Hospital or the Hospital for Sick Children. The mandate of the centre is to provide culturally safer, and increased access to birthing care for populations that are under-served or marginalized by the healthcare system. Its services are Indigenous designed and governed, and midwifery-led. Approximately 50% of admissions identify as being part of one or more priority populations including those without health insurance. Some clients may travel up to an hour to access this centre, but typical travel is half an hour. Challenges include the need for more midwives, privileges for more midwives in the GTA hospitals and better integration of Birth Centres and the profession of Midwifery into the cost effective planning for the provincial health care system.

Tsi Non:we Ionnakeratstha Ona:grahsta Six Nations Maternal and Child Centre - Oshweken, Ontario, LHIN 4

This birth centre cares for about 110 births per year. About 60% are at the centre and the other 40% are at home. In the past they have only cared for low risk pregnancies (about 40% of the population) however they are expanding to include care of those who have medical or social challenges such as diabetes or addictions. The centre is staffed with midwives and "house mothers" (birth centre aids). The centre is part of a broader community health centre staffed with family doctors. The midwives work under the Aboriginal midwives and Healers exemption clause of the RHPA and do not have hospital privileges but work very collaboratively with obstetricians and paediatricians in Brantford and McMaster which are their usual transfer sites. There is no

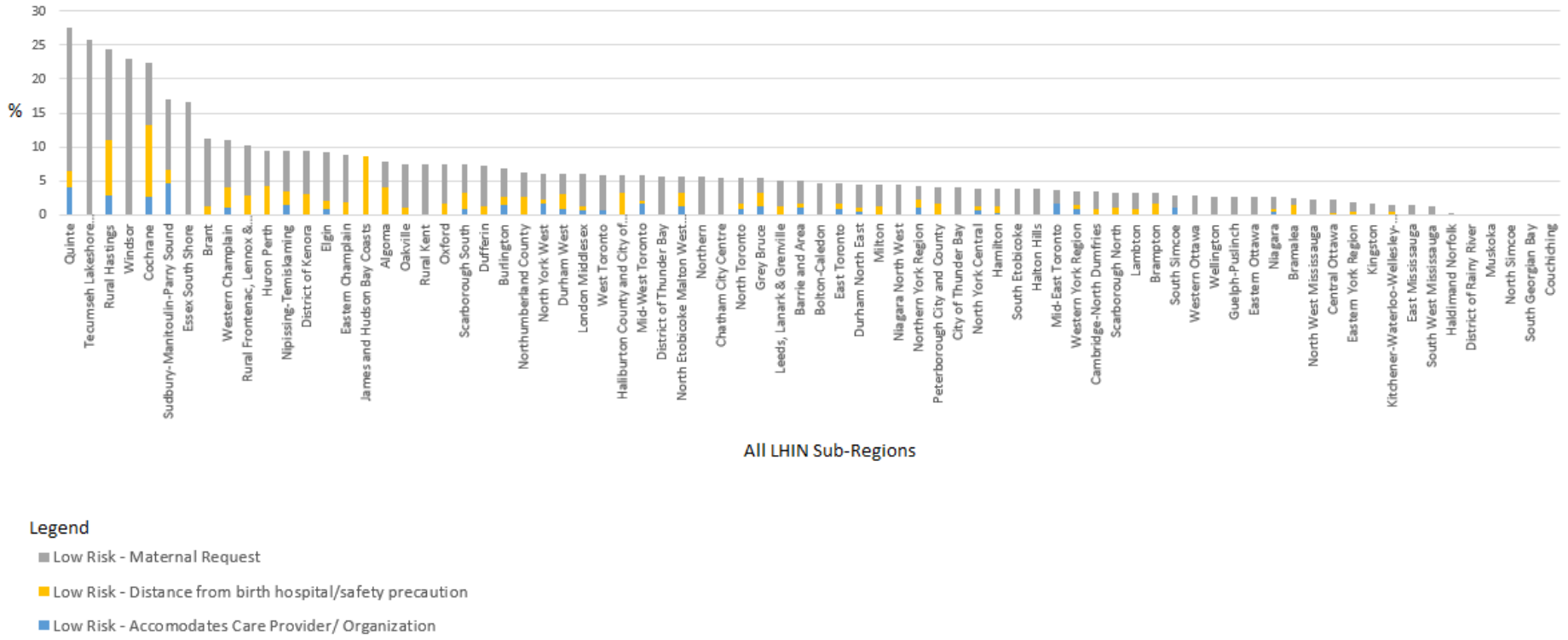
caesarean section on site and no pain relief beyond water tubs and traditional remedies. They serve the local Haudenosaunee community with the goal of community wellness. The midwives play a broad role in community health and health education as well as attending births in keeping with a traditional role and current community need. They provide sexual and reproductive health care such as PAP and STI screening and contraception. They attend families at other times of crisis including death. They serve a young multiparous population. Many are single mothers and some struggle with addictions. Transport to the centre can be a challenge and midwives do many home visits and home births as far as London and Niagara. Challenges include the need to train more Indigenous midwives as they have been the main education centre, especially with the announcement of new Aboriginal midwifery practices. They have very high retention rates as the midwives are from the community and live in the community. They are respected members of their community, playing other leadership roles and are role models in the community.

Neepeeshowan Midwives - Weeneebayko Area Health Authority, LHIN 13

This is the first remote midwifery practice in Ontario at the Attawapiskat site of the Weeneebayko Health Authority. Attawapiskat is 300 km from Moose Factory and is a remote fly-in community of 1800-1900 people on the northern James Bay coast. There is one bed for labour and birth in this small 17 bed hospital and outpatient clinic which is staffed by nurses. Access to most maternity services are provided by the midwifery practice with one full time midwife with locums who cover holidays. The midwives care for about 60 pregnant women per year with about 12 births taking place in the community when women choose to birth in the community. The number of births in the community is expected to increase due to a recent support for planned birth in Attawapiskat from the Moose Factory site. Low risk birth or planned caesarean section can take place in Moose Factory (see the information above about the Moose Factory site). Clients who require obstetric care are transferred to Timmins or Kingston. Women leave the community at 38 weeks or earlier, depending on risk. Neonatal transport is to Children's Hospital of Eastern Ontario or Mount Sinai Hospital. There is no access at this site to surgery or pain relief.

Appendix D – Variance in Non-Medically Indicated Induction Rates by LHIN Sub-Region of Residence

Variance in Non-Medically Indicated Induction Rates in Low Risk Women by LHIN Sub-Region of Residence (2013/14-2015/16)



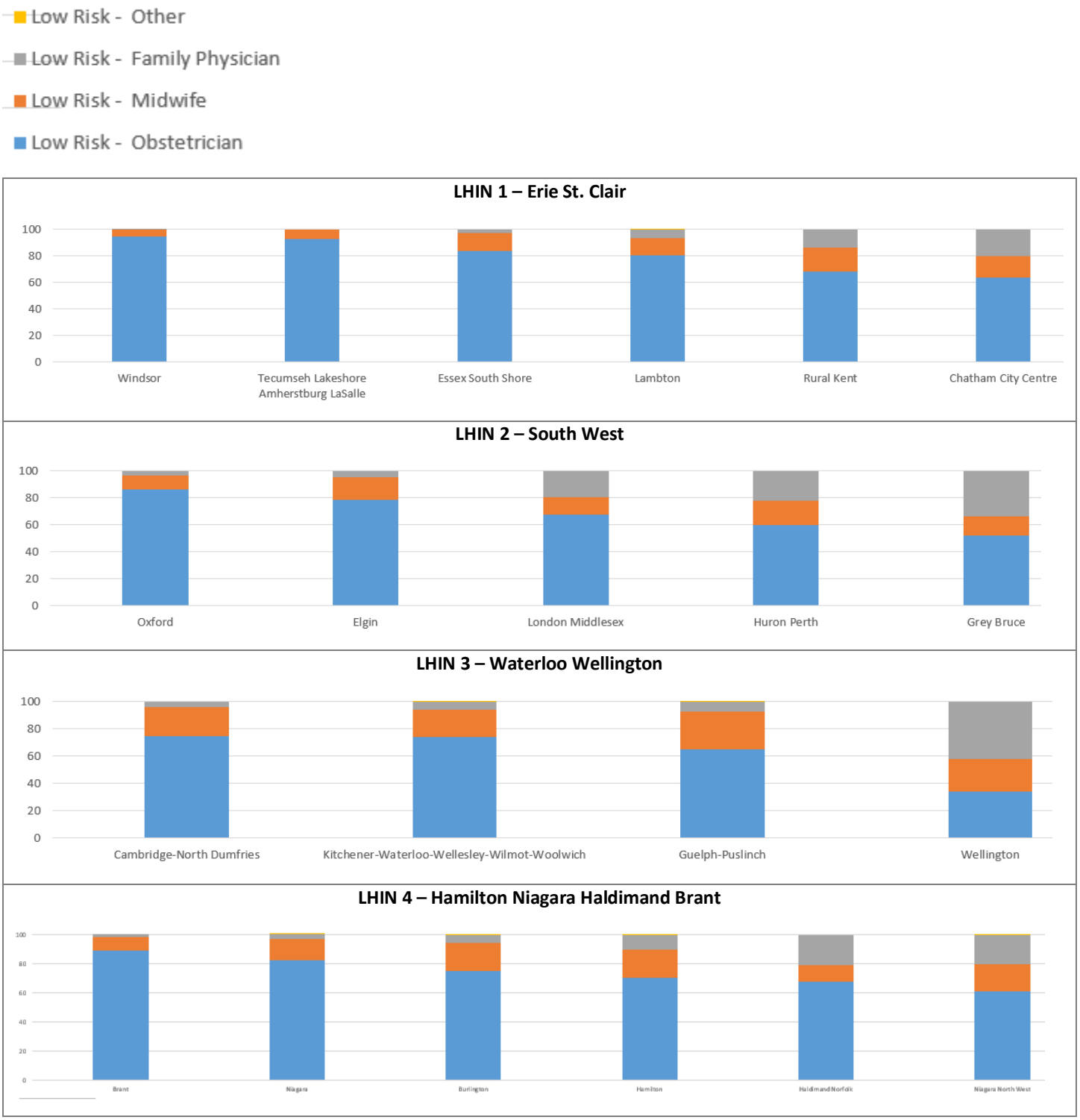
Source: BORN Ontario

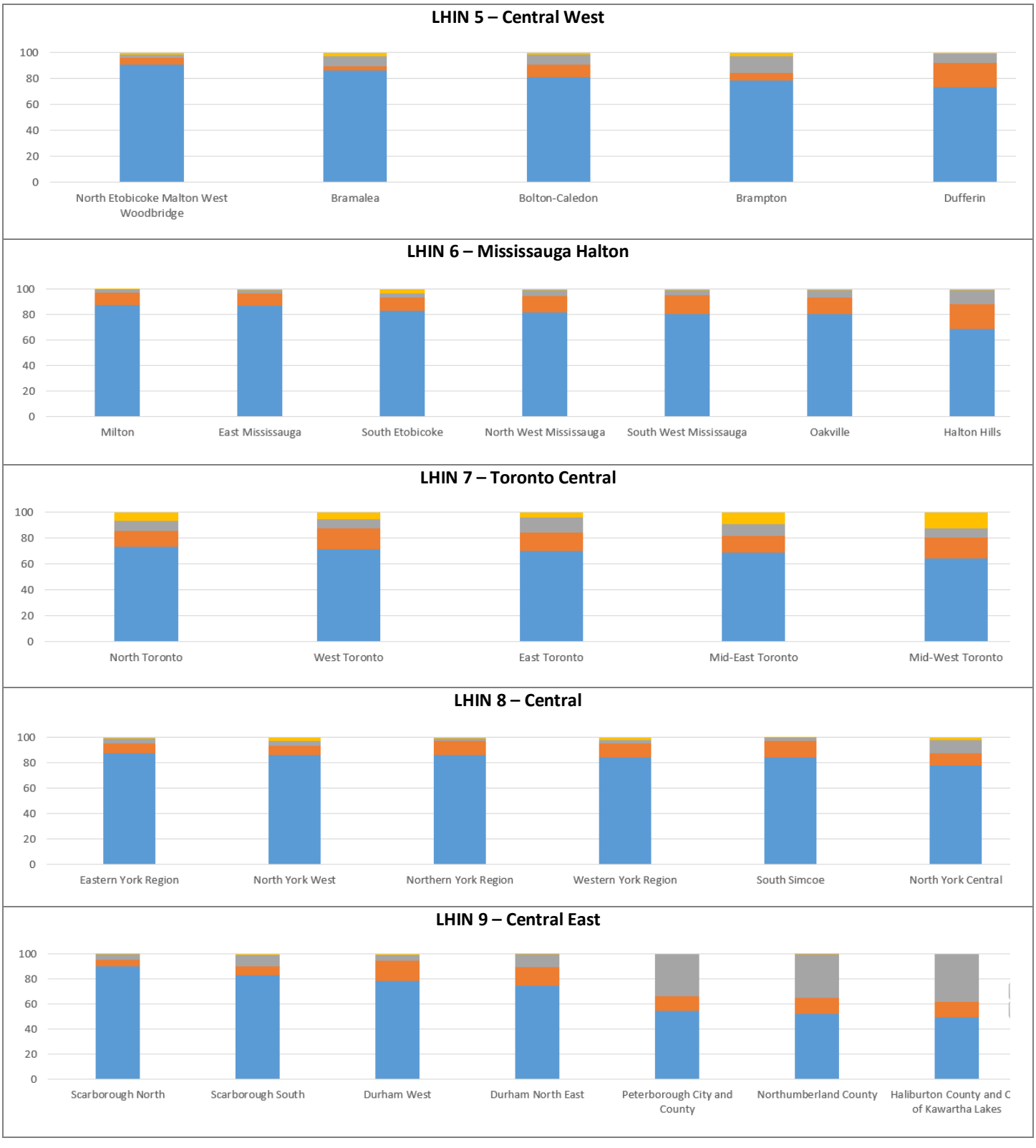
Low Risk Women defined as Robson Classification 1-4

Maternal Newborn Gap Analysis | 51

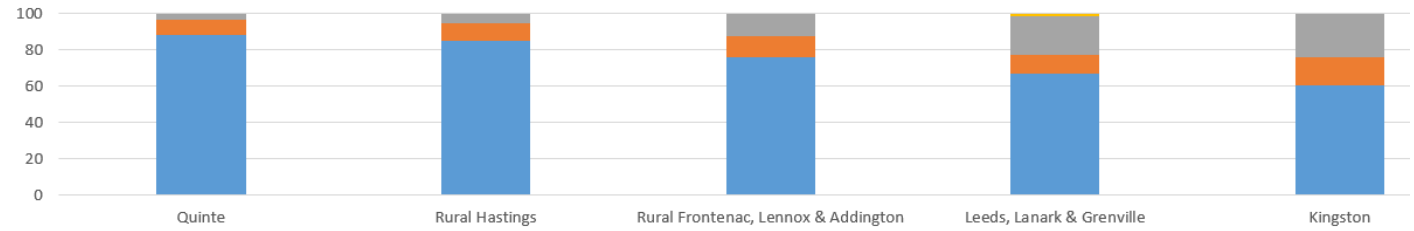
Appendix E – Admitting Health Care Providers of Low Risk Women by LHIN Sub-Region

Percentage of low risk women admitted to hospital by health care provider, by LHIN Sub-Region of residence, FY 2013-16

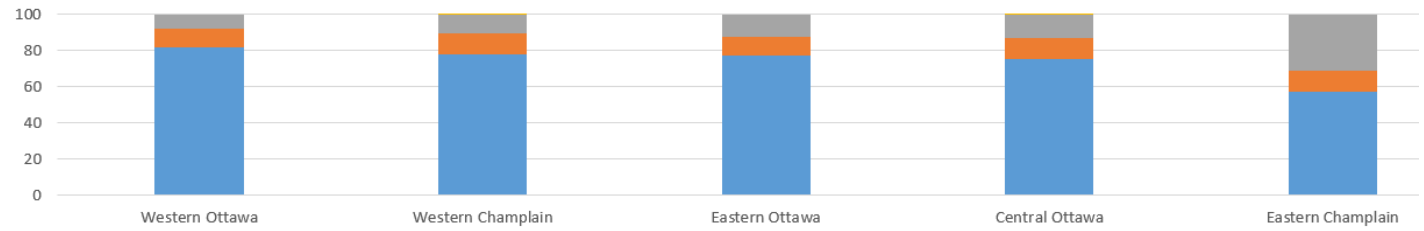



LHIN 5 – Central West
100
80
60
40
20
0
North Etobicoke Malton West Woodbridge
Bramalea
Bolton-Caledon
Brampton
Dufferin
LHIN 6 – Mississauga Halton
100
80
60
40
20
0
Milton
East Mississauga
South Etobicoke
North West Mississauga
South West Mississauga
Oakville
Halton Hills
LHIN 7 – Toronto Central
100
80
60
40
20
0
North Toronto
West Toronto
East Toronto
Mid-East Toronto
Mid-West Toronto
LHIN 8 – Central
100
80
60
40
20
0
Eastern York Region
North York West
Northern York Region
Western York Region
South Simcoe
North York Central
LHIN 9 – Central East
100
80
60
40
20
0
Scarborough North
Scarborough South
Durham West
Durham North East
Peterborough City and County
Northumberland County
Haliburton County and C of Kawartha Lakes

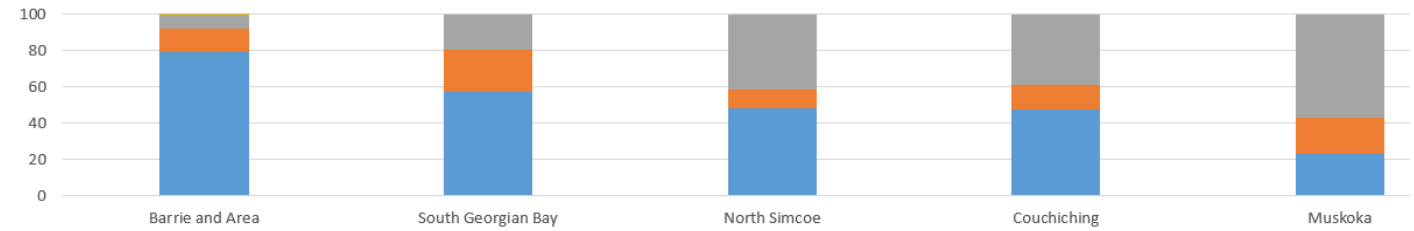
LHIN 10 – South East



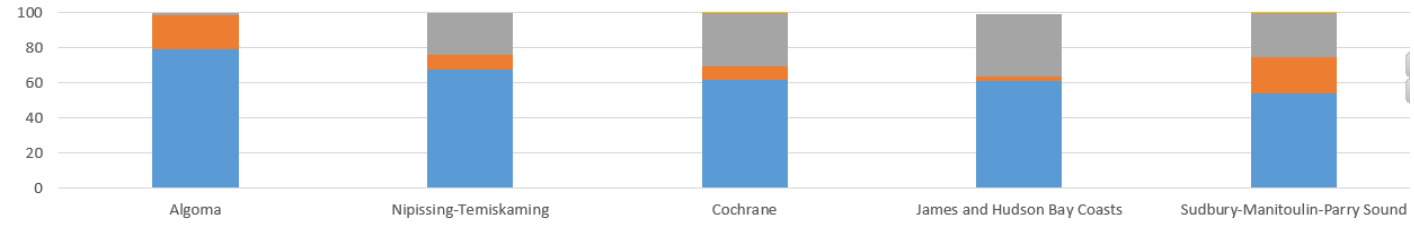
LHIN 11 – Champlain



LHIN 12 – North Simcoe Muskoka



LHIN 13 – North East



LHIN 14 – North West