

Anesthesia Services For Maternity Care in Ontario

Key Issues & Barriers to Service Provision in Hospitals with Non-tertiary Obstetric Programmes

Potential Solutions Proposed by Maternity Anesthesia Stakeholders in Hospitals with Tertiary & Non-tertiary Obstetric Programmes

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Introduction & Background

Anesthesiologists and Family Physician Anesthetists are vital members of the interdisciplinary team working to provide high quality woman-centered maternity care in Ontario. Existing data suggest that these physicians provide care to more than 50 percent of Ontario women during childbirth. Services provided include pain relief during labour and delivery, anesthesia for operative vaginal deliveries and for elective, urgent and emergency cesarean sections, postpartum pain management, medical consultation related to maternity anesthesia service provision and co-existing disease, neonatal resuscitation, emergency and intensive care and maternal resuscitation during labor, delivery and the postpartum hospital stay.

Current Obstetrical Anesthesia Service Utilization

A recent report on maternity care in Ontario, which captured 84 percent of Ontario births in 2003, found that 59.4 percent and 25 percent of women with vaginal births in large and small community hospitals (respectively) received epidural analgesia (PPESO, 2005a). In addition, use of epidural analgesia, the gold standard form of labour analgesia, appears to be increasing with epidural rates in small community hospitals rising from 8.1 percent in 1998 to 25 percent in 2004 (PPESO, 2005b). Anesthetic care was also required as an essential service by the 26.6 percent of Ontario women delivering by cesarean section in 2003 (PPESO, 2005a).

Availability of Obstetrical Anesthesia Services in Ontario

Notable disparities currently exist in the accessibility of maternity anesthesia services provided in hospitals across Ontario. These disparities are increasingly apparent as hospital distances increase from major teaching centres and as delivery rates decrease. Access issues are most evident in small community, rural and rural remote locations. These are in part due to the existing and increasing shortage of physicians providing anesthetic services in Canada and worldwide (Byrick, et. al., 2002; Engen et al., 2005).

The OMCEP (2005) hospital survey provided some insight into Ontario's capacity for obstetrical anesthesia services. Results of the survey indicate that maternity anesthesia services are provided by anesthesiologists in 72 percent of hospitals and family physician anesthetists in 23 percent of hospitals (n=98). Sixty percent of hospitals reported that they provide obstetrical anesthesia services 24/7 for both pain management and cesarean section. Six hospitals reported that both Anesthesiologists and Family Physician Anesthetists provided obstetrical anesthesia care in their institution. In 25 percent of hospitals, labour epidurals were provided only when an anesthesiologist was available. In eight percent of hospitals, anesthesia coverage was limited to cesarean deliveries.

Results of the OMCEP (2005) hospital survey also indicate that 70 percent (n=65) of Ontario hospitals (n=92) providing maternity services do not always have the capacity to provide 24/7 cesarean section services. Sixty-two percent (n=40) of these hospitals

attributed lack of availability of Anesthesia coverage as the most important limiting factor in providing cesarean sections.

Family physician anesthetists represent an unheralded group of physicians making a noteworthy contribution to anesthesia service provision in Ontario. A recent survey (82% response rate) found that 39% of all hospitals (n=108) in Ontario rely solely upon Family Physician Anesthetists for anesthetic services and that these physicians largely practice in small community, rural and rural remote hospitals in Ontario that do not attract specialist Anesthesiologists (Brown et al., 2005). The authors reported that between 1988 and 1995, the number of Family Physician Anesthetists available for work in small community hospitals dropped by 24%, reducing the availability of anesthetic services, particularly those performed after hours. Of note, these reductions followed cessation of dedicated funding to university-based one year Anesthesia training programmes for Family Physicians in Ontario in 1992.

Projecting future human resources for obstetric anesthesia services in Ontario

Forty-six percent of hospitals surveyed by OMCEP (2005) projected that the number of births in their hospital would increase over the next year while 46 percent projected that their number of births would stay the same (n=96). At the same time 36 percent of hospitals projected that the demand for epidurals would increase, while 54 percent anticipated no change (n=96). In addition, 34 percent of hospitals projected an increase in the rate of cesarean section over the next year whereas 51 percent anticipated no change.

The current world-wide shortage of physicians providing anesthetic care has made maternity service provision difficult in even relatively well-resourced academic and large community hospitals. Other professions such as Obstetrics & Gynecology, Family Medicine, Midwifery and Nursing face similar human resources issues. The impact of these shortages on maternity services in Ontario hospitals, in particular in those with low volumes of deliveries (<2000 per annum), is of particular concern.

The present study was conducted to identify key issues and barriers to provision of maternity care faced by Anesthesiologists and Family Physician Anesthetists delivering care in hospitals with non-tertiary obstetric programmes across Ontario. While we report the range of maternity anesthesia practices found in University teaching hospitals to rural remote Ontario, this study was conducted to explore, in particular, issues faced by those physicians providing maternity anesthesia care in non-tertiary obstetric centres with less than 2000 deliveries per annum and level 1-2 neonatal care. In addition, an effort was made to examine potential solutions to the issues identified by these low volume programmes. The latter endeavour occurred in the setting of a "Finding Solutions" mixed focus group held with Anesthesiologists and Family Physician Anesthetists representing hospital practices ranging from those found in University-based teaching centres to those in rural remote Ontario.

The recommendations made at the end of this paper are derived 1) the results of the Maternity Anesthesia Survey; 2) from the overall themes emerging from focus groups with non-tertiary low volume (<2000 deliveries) and large volume (\geq 2000 deliveries) obstetric centres; and 3) most importantly, the solutions proposed by physicians participating in the final “ Finding Solutions” mixed focus group

Study Objectives

- To explore key issues and barriers to provision of maternity anesthesia care in Ontario hospitals with non-tertiary obstetric programmes and small volumes of deliveries (<2000 per annum, level 1-2 neonatal care).
- To explore key issues and barriers to provision of these same services in larger non-tertiary obstetric hospitals (\geq 2000 deliveries per annum, level 2+ neonatal care) as well as assess a potential role for such hospitals in knowledge transfer to smaller surrounding obstetric centres.
- To present the issues and barriers identified in non-tertiary low volume obstetric centres to a mixed physician focus group, representing key obstetric anesthesia stakeholders in practices spanning rural remote to University-based teaching programmes across Ontario, in order to examine potential solutions.
- To use study findings to inform development of a set of recommendations related to the:
 - 1) key strategies required in the short term to sustain existing maternity anesthesia services in hospitals with non-tertiary obstetric programmes; and,
 - 2) key mid-term strategies and infrastructures required to:
 - a. support human resource renewal as well as retain current anesthesia providers in programmes at risk; and
 - b. facilitate knowledge transfer related to “best practices” between tertiary and non-tertiary maternity anesthesia programmes.

Methods

A mixed methods sequential research design was employed. Findings from each study phase were used to inform the direction of questions developed for subsequent study phases.

Phase 1. As anesthesia services for maternity care likely vary across Ontario, the purposeful sampling strategy of maximum variation was used to permit exploration of major variations, illustrate subgroups, and capture patterns that might reflect important shared practices and experiences among physicians providing anesthesia services. (Patton, 1990; Miles & Huberman, 1994; Sandelowski, 1995). A purposeful sample of hospitals with non-tertiary obstetric programmes, low volume deliveries (<2000 per annum) and level 1-2 neonatal care, representing all geographic locations across Ontario was taken from a Ministry of Health contact list. Hospitals were contacted using telephone lists provided in the Canadian Medical Directory (2005). The names of department of Anesthesia Chiefs, Directors of Obstetric Anesthesia or next most responsible anesthesia provider (or next most available anesthesia provider when these persons could not be reached) were identified and then contacted by telephone for an introduction to the study and an invitation to participate. This sampling strategy also allowed for recruitment of anesthesia providers who differed in terms of qualifications as well as those from departments of anesthesia with different levels of human resources. In addition, this strategy enhanced the rigor of the study by allowing a more generic description of anesthesia providers' experiences to emerge (Marshall & Rossman, 1995).

Participants were asked to complete a demographic and practice survey related to current maternity anesthesia care at their primary hospital of employment. Practice information obtained was related to the spectrum of anesthetic services available for pain relief during labour and maternal access to these services. Information was also obtained related to post-cesarean pain relief following operative delivery, most common techniques used to provide anesthesia for cesarean deliveries (eg spinal, epidural, combined spinal epidural or general anesthesia), and the drug regimens and other analgesic techniques (wound infiltration, nerve blocks) used routinely in their hospitals for post cesarean analgesia.

Participants were also invited to join a focus group to discuss key issues and barriers to provision of anesthetic maternity services in their hospitals. Three focus groups were conducted via telephone conference for this study phase with Anesthesiologists and Family Physician Anesthetists, each lasting from 1.5 to 2 hours, using a semi-structured interview guide. Practice information obtained in the questionnaire was further explored in addition to individual hospital culture related to labour pain relief, mechanisms whereby women access labour analgesia once requested, obstacles to provision of maternity anesthesia services over a 24 hour period, issues related to skills upgrading and maintenance, continuing medical education, and recruitment and retention of physicians providing anesthetic care.

Additional questions were asked related to potential roles for alternative anesthesia providers and existing relationships and difficulties with other stakeholder professions involved with maternity care. All sessions were audio taped and transcribed verbatim.

Phase 2: Using the methodology described above in Phase 1, chiefs of anesthesia, or directors of obstetric anesthesia (when applicable) or the most responsible person otherwise most responsible for maternity anesthesia services provision were identified in large community hospitals with ≥ 2000 deliveries per annum or level 2+ neonatal care. These people, representing hospitals across all geographic areas in Ontario, were contacted and invited to participate in the study. Respondents were asked to complete the same Maternity Anesthesia Services Questionnaire used in Phase 1 as well as to join a focus group. Focus groups were conducted using questions covering the same content as that covered in Phase 1. Potential mechanisms by which knowledge transfer might be possible between high (≥ 2000 deliveries) volume non-tertiary obstetric hospital and low volume (<2000 deliveries) hospitals was also explored. These hospitals were initially identified as a potential source of information related skills and knowledge transfer by phase 1 focus group participants. Participants in hospitals with low delivery rates believed that high volume non-tertiary obstetric units might work in practice environments more similar to their own (compared with tertiary units) and therefore might represent a more suitable source of knowledge transfer in the future.

Phase 3. University Department of Anesthesia Chiefs, Directors of Obstetric Anesthesia programmes in tertiary centres across Ontario, key academic obstetric anesthesia informants and key informants identified in Phase 1 and 2 focus groups from non-tertiary obstetric programmes were invited to participate in a "Finding Solutions" focus group. Participants from tertiary obstetric centres were also asked to complete the same practice survey distributed to respondents in Phases 1 and 2. The semi-structured questionnaire used to facilitate the Finding Solutions focus group was informed by responses obtained in Phases 1 and 2. The findings of Phases 1 and 2 focus groups were presented to Phase 3 participants in order to: 1) member check key findings with Phase 1 and 2 participants, and; 2) provide context for participants from University-based obstetric anesthesia programmes. Phase 3 focus group members, representing practices from tertiary obstetric, large regional, small community, rural and rural remote anesthesia practices, then proceeded to brainstorm, discussing each of the major issues/key barriers identified by hospitals with low delivery rates and potential solutions to these barriers.

Analysis

Survey Data: Descriptive statistics were used to summarize the survey data, i.e. demographic characteristics of participants, their hospitals, spectrum of obstetrical anesthesia services provided and a description of routine practices related to labour and delivery and postpartum analgesia. In the case where more than one respondent came from the same hospital, responses describing the hospital and maternity anesthesia practices were taken from the questionnaire provided by the person most responsible for maternity anesthesia services in that hospital.

Focus Group Data: Qualitative content analysis was used to describe the key issues and solutions that emerged from the data (Sandelowski, 2000). This strategy is oriented to summarizing the latent and manifest data describing the phenomenon of interest and is considered the least interpretive of the qualitative analysis strategies (Altheide, 1987; Morgan, 1993; Sandelowski). Audiotapes and field notes were transcribed verbatim and the transcripts were reviewed for accuracy and analyzed by the researcher and a colleague. Coding of data and data management were done with the assistance of NVivo QSR 2.0. The analysis concentrated on parts of the focus groups' data in which physicians discussed issues related to provision of obstetrical anesthesia services and potential solutions. A provisional list of codes was developed from the research questions posed by the researcher and a colleague (Miles & Huberman, 1984) and applied to chunks of the data. This was followed by pattern coding (Miles & Huberman). Memos were made while coding to link observations and enable inferences from the data to be made (Miles & Huberman). Codes representing similar ideas or patterns within and across focus groups were then clustered into categories (themes). Lastly the categories were synthesized to obtain broad overarching themes representing major issues and solutions identified from the data (DeSantis & Ugarriza, 2000; Leininger, 1985; Polit & Hungler, 2001; Sandelowski; Watson, 1985

Results

Maternity Anesthesia Practice Survey

A total of 24 different hospitals, spanning all geographic areas and community types (urban, small and large community, rural and rural remote) across Ontario were represented by respondents. A map of the geographic areas represented by hospital practices in the study is provided in Figure 1 (Appendices).

A total of 28 respondents (Anesthesiologists, n= 17; Family Physician Anesthetists, n=11), representing chiefs of department, directors of obstetric anesthesia, key informants in obstetric anesthesia or the next most responsible (or next most available person in some small hospitals), responded to the questionnaire. Respondents' information related to their primary hospitals of work providing full representation of the spectrum of maternity anesthesia care practices in Ontario, ranging from university-based obstetric anesthesia teaching programmes to those found in rural remote communities. Demographic characteristics of survey respondents are presented in Table 1 (Appendix).

Department of Anesthesia characteristics are presented by hospital delivery volumes in Tables 2 & 3¹. Family physician anesthetists represented seventy-one percent of those most responsible for maternity anesthesia practice in hospitals with <2000 deliveries per annum whereas specialist anesthesiologists represented 100% of those most responsible for maternity anesthesia services in larger ≥ 2000 regional and tertiary obstetric centres. University teaching and large community hospitals were staffed almost exclusively by specialist Anesthesiologists whereas smaller community, rural and rural remote hospitals were staffed by departments comprised mostly or entirely by Family Physician Anesthetists. Epidural rates decreased as anesthesia staff volumes and delivery volumes decreased. Large differences in annual labour epidural rates and wait times were reported between low volume (range 5-35%) and large volume obstetric centres (60-80%) irrespective of tertiary vs non-tertiary hospital status. (Tables 2 & 3). Average epidural wait times were 4-6 hours (for those women actually receiving the service) in small volume centres whereas wait times were similar in large volume non-tertiary centres and tertiary obstetric centres (range <30minutes-1hour versus ≤ 30 minutes respectively). Methods used to provide anesthesia for elective cesarean section were similar between groups (Table 4).

Focus Groups

¹ In the case where more than one person answering the survey came from a single institution (4 cases total), responses from the person deemed most directly accountable for maternity anesthesia services in that hospital were used in the analysis.

It is noteworthy that the invitation to participate in this study met with an overwhelming response from Anesthesiologists and Family Physician Anesthetists from across the province. The sincere desire to provide high quality maternity anesthesia care, based on up-to-date knowledge of best practices was readily apparent across all groups of physicians. The vast majority of participants also voiced an interest in the future collaborative work required to develop solutions to the issues identified.

Participants

24 of 28 physicians completing the maternity anesthesia questionnaire also participated in at least one focus group. A total of five focus groups were conducted. Each focus group lasted between 1.5 to 2.5 hours. Physicians in these groups represented maternity anesthesia practices in 21 different hospitals across Ontario. Demographic characteristics of the 24 participants are found in Table 5 (Appendices).

Fifteen physicians (Anesthesiologists, n= 4; Family Physician Anesthetists, n= 11) participated in one of the first three focus groups conducted to identify key issues and barriers to maternity anesthesia provision in hospitals with < 2000 deliveries per annum (Phase 1). These respondents represented maternity anesthesia practices in 14 hospitals. Five physicians (Anesthesiologists n=5) from hospitals with \geq 2000 deliveries participated in a focus group designed to discuss issues and barriers in hospitals with \geq 2000 deliveries as well as to examine the capacity of these anesthesia departments to play a future role in knowledge transfer to smaller community, rural and rural remote hospitals. A total of eight physicians (Anesthesiologists n=5; Family Physician Anesthetists n=3) representing university-based obstetric Anesthesia teaching programmes (n=4) and key informants from Phase 1 and Phase 2 (low obstetric delivery volume) focus groups (n=4) participated in the final “Finding Solutions” focus group.

Maternity Anesthesia Providers in Context

1. Family Physician Anesthetists in Low Volume (<2000 deliveries per annum) Hospitals

Participants from low volume obstetric centres noted that anesthesia services in small, rural and rural remote hospitals are largely provided by Family Physician Anesthetists. They noted that the relatively low volume of surgical cases, lack of case complexity, and relatively low remuneration for such services did not attract specialist anesthesiologists to practice in their communities. Family Physician Anesthetists described their community health provider role as being “multi-taskers.” In addition to anesthesia services, most also provided family physician services in other settings including local hospital emergency wards, office-based general practice and/or family physician obstetric services. They also emphasized that multiple sets of skills were necessary to maintain an acceptable level of income in small community and rural practice.

Family Physician Anesthetists identified a number of barriers to maternity anesthesia care including understaffing and the inability to provide dedicated anesthesia coverage on the Labour floor 24/7. Participants noted that low delivery volumes made it financially not feasible to provide dedicated daytime coverage to the maternity ward and that this resulted in the provision of labour analgesia being done “as possible” between surgical cases in the operating room. Small group size, frequent overnight coverage of both the operating room and maternity anesthesia services, coupled with regular operating room services the next day were noted as major limitations to their ability to provide epidural analgesia for labour after hours.

Family Physician Anesthetists also noted additional difficulties imposed by rural and small community practice and the hybrid nature of their medical role in the community. These barriers included often insurmountable difficulties in finding physicians to cover their multiple clinical responsibilities to permit attendance at continuing education meetings or to go on vacation. Most providers covered overnight call an average of every third to fourth night in addition to other clinical responsibilities including operating room coverage the next day and weekend service coverage. Some providers reported being the sole provider of anesthetic services for their communities for months without relief. Some departments of anesthesia in rural communities were comprised of a single Family Physician Anesthetist.

Concern was also voiced over the current lack of meaningful (practical) medical education and research needed to guide best maternity anesthesia practices in small and rural communities, the difficulties experienced in identifying and maintaining the linkages with larger hospitals needed to permit knowledge transfer related to “best practices,” the need for linkages with those who could assist them to modify “best practices” from research in tertiary obstetric centres to provide safe and effective care in their resource-limited environments, and the need for linkages to be made with obstetric anesthesiologists in larger centres to provide a consultative role when needed. When asked questions related to a potential role for anesthesia extenders or nurse anesthetists in their practices all respondents noted that they could not see a clear role or cost-savings since extenders and nurse anesthetists would not solve the key issue of reducing their burden of over-night call coverage. The majority of Family Physician Anesthetists felt that their unique combination of skills was the “answer” to the severe physician/anesthesia service shortage in small and rural communities in Ontario. Many also felt that their small group size had left their important role in the community unrecognized and had left them without a professional “voice” within medicine.

2. Anesthesiologists Providing Maternity Anesthesia Care in High Volume (>2000 deliveries per annum) Hospitals

Anesthesia services in non-tertiary high volume (≥ 2000 deliveries per annum) were largely provided by specialist Anesthesiologists. Many of the issues and barriers to maternity service provision identified by Family Physician Anesthetists were also voiced by these physicians. These included understaffing and difficulties in providing dedicated anesthesia coverage on the Labour floor 24/7. These difficulties related in part to human

resources availability, issues with remuneration and a lower level of practitioner interest in obstetric anesthesia service provision. Heavy service demands in these hospitals variably limited departmental abilities to maintain continuing medical education. One centre had restricted department meetings to once per month (held mostly to address business issues with department education events held when possible after hours) in order to cope with heavy service demands. Others noted more regular educational rounds.

Overall, large community practitioners were more able to access obstetric anesthesia experts in tertiary centres for knowledge transfer than anesthesia providers in smaller centres. Barriers to attendance at continuing medical education issues were also less prominent in large community hospitals than in small and rural centres. In addition, while large community hospitals were closer in proximity to smaller centres than tertiary obstetric centres and voiced a willingness to provide knowledge transfer and skills updates to physicians in smaller centres, they appear to lack the human resources and infra-structures required to initiate and sustain such an endeavour at this time.

Focus Group Findings: Key Barriers to Maternity Anesthesia Service Provision & Potential Solutions

Several key themes and factors emerged from the analysis of Phase 1 and 2 focus groups that reflect multiple interacting “systems issues” that create barriers to provision of accessible, high quality maternity anesthesia care in non- tertiary obstetric programmes.

These include:

- Disparities in women’s access to maternity anesthesia services across Ontario hospitals.
- Barriers to the provision of “best practice” maternity anesthesia care
- The need for interdisciplinary maternity team education/training programmes to permit changes and improvements in services to occur.
- Medico-legal issues in the provision of obstetric anesthesia services to patients without involvement of a primary care physician; and,

While the factors contributing to barriers to service provision clearly impact at several levels, these have been separated, for the purposes of this discussion, under one major theme, and are illustrated below. Supporting quotations are designated by the originating hospital type. The barriers and issues presented in each theme are followed by solutions proposed by physician participants.

Theme I. Disparities in Access to Maternity Anesthesia Services and Contributing Factors

Multiple factors contribute to existing disparities in women’s access to maternity anesthesia care in Ontario. These disparities are clearly evident between University teaching hospitals, where women wait an average of 30 minutes or less for a labour

epidural to small community and rural hospitals in Ontario where they wait an average of 4-6 hours for pain relief or may find that they do not have access to such services at all. Factors contributing to disparities in access include: the shortage of human resources resulting from inadequate numbers of new anesthesia trainees, issues with recruitment and retention of existing providers; issues with provision of 24/7 “on call” coverage of maternity services while covering other anesthesia emergency services, and issues with remuneration for maternity anesthesia services coverage.

While these issues were voiced by physician respondents providing obstetric anesthesia care in both large and small community hospitals, they were found to be most acute in small community (<2000 deliveries per year) and rural programmes (self identified as rural and having < 1000 deliveries per year). The overall provincial maternity anesthesia services situation was summarized thusly by one Family Physician Anesthetist,

“...and so we’ve got a two-tiered [maternity anesthesia] system that needs to be fixed and these (investigators) need to tell the Ministry that ...so we can set up a program to try and fix it...”

Therefore, while this report provides information related to issues and barriers to maternity anesthesia care in both large and low volume community obstetric programmes, it is focused largely on the issues found in small and rural community anesthesia programmes and their potential solutions. The interactions of these factors to produce limitations in women’s choices and their ability to access maternity anesthesia services are illustrated below.

1. Patient Expectations and the Effect of the Anesthesia Shortage on Women’s Access to High Quality Pain Relief in Labour in Hospitals with <2000 deliveries per annum

Community Maternity Anesthesia providers described the disconnect between patient expectations and the reality of labour analgesia service provision in their hospitals. Physicians described their need to prioritize competing service demands and the difficulties in doing so.

“Their [patients’] expectations are that epidural anesthesia... [is] provided 24 hours a day basically on demand.... There are some individuals who come and say, “You know I want an epidural” to the registration clerk. So they are priming the pump and being very directive in their care.” [Small community]

“I believe that most [women] that come through our institution are coming from our own practitioners... and they probably would have had some degree of discussion about the reality of us being available or not. We are not always available to come at the drop of a hat because we do not have [anesthesia] staff attending to the obstetrical floor ... we have someone on call who may be involved in many other things...and you triage at any point in time where you’re going to be able to provide your service... you try to give an appropriate time...when you’ll be able to attend to something like an epidural... so that they can transfer that information to the patient to keep their expectations

realistic...there's always some discussion [with the obstetrician] of how important [the epidural] is." [Small community]

"So women who want an epidural as soon as they come in, generally speaking, make the choice of going to the city. And women who stay here for the most part [primiparous patients] are not expecting epidurals." [Small community]

"We've got about 750 deliveries a year and I'm the only person doing epidurals, aside from a few ... locums who come and maybe do about 2 to 3 days of call a month... so they'll call me and we'll try to use our epidurals judiciously. ..we can't have an "on demand service." [Small community]

"We offer it [an epidural over] 24 hours at [institution].... But it's unofficial...I'm the epidural service with the backup of 3 others [Family Physician Anesthetists] who do take their turns but I'm usually available." [Small community]

"We just had one of the 4 [Family Physician Anesthetists] say that [they're] leaving... already we're talking about well, that that means we won't be doing 24 hour [coverage] anymore." [Small community]

"...we have an unusual situation. We share [call coverage] with [another institution] and it's ½ hour away. So when the [staff at the other hospital is] on call for the OR, which is every second night, I tend not to be available for epidurals. .. I do sort of one in 2 calls (overnight service coverage) for epidurals. And they can try me. I might be around on those "off" nights." [Small community]

"...there's always the discussion of how important it [an epidural] is and when the timing of the call is and so on...we do not appreciate it if they're [obstetric coverage] calling us from their home in bed and saying you know please come in and do an epidural. Most of them stay in house and most of them will do that assessment and then call us." [Small Community]

"I think it's important if I'm going to triage my time, if I have more than one thing on my plate... I'm asking them to sell me this patient...You treat all of them the same, but it is important when you're making a decision to know how their labour has been, where they're at, what the risk factors are...I think those pieces of information are very useful to us managing our time because we can't like a lot of the places I suspect we're talking to today, provide someone to sit in the [delivery suite] ... for even part of the day let alone the whole day." [Small Community]

"...But we can't attract someone to sit and do 3 or 4 epidurals a day and do a section or two. That's just not going to pay it. We're doing you know 13-1400 births, 40% epidural rate, 20,25% C-section rate, you know it works out to be 2 epidurals, you might get them all 6 in one day but it's still going to happen infrequently enough that you can't make enough money." [Small Community]

“We don’t do a lot of epidurals. They [nursing staff and obstetricians] realize that if I was in there every day doing an epidural, I...just wouldn’t have a life.” [Rural]

2. Maternity Anesthesia Services have Lower Priority in the System than Non-emergency Operating Room Anesthesia Services

Only one larger community hospital had an Anesthesiologist designated solely to the maternity care unit during regular working hours and only one larger community hospital had an Anesthesiologist dedicated primarily to obstetric coverage 24hours per day. The rest of the participants (large, small and rural community hospitals) shared that in their hospitals maternity care anesthesia services, outside of emergency and booked cesarean sections were often given lower priority than the anesthesia needs of the operating room. This was particularly the case in small and rural hospitals where women receiving epidural analgesia waited 4-6 hours on average or simply could not be cared for due to competing hospital service needs, the onerous on call schedule or lack of skilled providers. Epidural rates ranged from 5% to 35% in small and rural hospitals to 60-80% in large community hospitals, the latter rates being similar to those found in large tertiary obstetric centres in Ontario. Average epidural wait times in large community hospitals were estimated from 30minutes to one hour, also similar to those found in tertiary obstetric centres (average wait time 30minutes or less). Factors contributing to difficulties in maintaining maternity anesthesia services are illustrated below with the most significant barriers found in under-resourced small and rural communities.

“We basically...do call for 24hours. You do an elective [surgical] list during the day—you [cover] whatever [service needs that have to] interrupt that list and then go on [working] throughout the day and night.” [Small community]

“If I’m in the OR, it [the labour epidural] has to be done when I can get around to it.” [Small community]

“The OR’s usually pretty busy and if you have to tell the surgeon I have to go up and sometimes even do an epidural, because you got some momentum going with one surgeon and you want to get through the [operating room cases]. They can get somewhat nasty about it. There’ve been times when you feel like you’re being pulled both directions.” [Large Community]

If I’m in the OR it has to be done when I can get around to it. After hours, we take call from home so I’ll happily come in in the evening for an appropriate case....I also kind of have a standing order ,that they shouldn’t call me, that the physician will call me only if it’s an extreme case, say after midnight...I think those are just survival rules.” [Small community]

3. Reimbursement Issues and Maternity Anesthesia Coverage in Low delivery Volume Hospitals

“It’s these smaller communities, smaller than myself and we’re bad enough, but the

smaller ones where they actually have to factor in income from 24 hour coverage and get it you know 150 and 200 dollars[for coming in in the middle of the night for an epidural', lose your sleep, put themselves, compromise the next day, die of heart attacks sooner and everything else for 150 bucks.” [Small Community]

“..most, if not the entire billing manual is based I think on urban experience and I think the way that we provide epidurals in rural areas is a little bit different...[including the] fact that we’re usually called in from home [to provide a labour epidural]”.[Small Community]

4. The Effect of Local Hospital Culture on Patient Access to High Quality Pain Relief in Labour

Local hospital culture also played a variable but important role in determining if and when the Anesthesiologist/Anesthetist would be contacted following a patient request for labour pain relief, when that request would be met and the level of quality of the options offered.

- ***The Lower Appeal of Maternity Anesthesia as a Practice***

“I hear this time and time again when I’m trying to hire people: I want to slow down so I’d like to come to your hospital.... .we have some people that really don’t like to do obstetrics but continue to do it because they know that there’s nobody out there that would be willing to take on a preponderance of that practice.” [Large community hospital]

“No one, no one has expressed an interest in taking on a larger share of obstetrical anesthesia.... [Large Community]

- ***Other Professional Decision-making and its Impact on Access to Labour Epidurals***

“...as soon as they arrive to the birthing unit, they’re assessed by the obstetrician. And the obstetrician always writes down epidural prn[when requested]. So basically it comes right down to the nurse. There are some nurses who are very pro-epidural and then there are others who are not. And you can always tell, judging by who’s on on a typical night for example, whether you’re going to have like a busy night or a quiet night [for epidurals]. So basically it comes down to the nurses just like I think probably in most hospitals.” [Large Community]

“It’s on a scale of 0-10 it’s [hospital culture] probably around a 7 or 8 in favour of epidurals. I mean there’s always these other factors that prevent you from being there on the spot when the nurse and the patient agree that an epidural is the most appropriate course of action. I mean we’re busy in the operating room... And that varies. And then

there are you know the, some residual prevailing nursing attitudes. And maybe even some attitudes on the part of the anesthetists as well.” [Large Community]

“...some of the people in our department are very, I guess very protective of their income. So they will not call anybody else [to perform the epidural if they are busy]. They will have the patient wait. And I would have to say that’s probably about like 5 or 10%. Most of the people have no problem whatsoever to just go ahead and call [for another person to help out].”[Large Community]

- ***Cultural Barriers to Practice Change and Access to High Quality Labour Analgesia***

“No we have some young members as well. You know they tend to get entrenched in the culture...I’ve been trying for years to get PCEA {patient controlled epidural analgesia—walking type epidurals) in our hospital. We’ve, tried a couple of times to try, to convince the members of the department at large that this is probably the way to go. And ... they said no we want to go in, put the epidural in, make sure it’s working and never see the patient again.” [Large Community]

.”Some people are more educated than others. Some maintain their CME more than others do...there’s a bell curve there of education. There’s a bell curve there of demographics and age and interest in adopting new techniques.” [Large Community]

“I think the problem is that you might be preaching to the converted, meaning some people who are keen on adopting new techniques or be willing to take the time off or to make the trip and that kind of thing. And the people who are resistant and just want to stick with the old way’ll probably tend to decline [the option to learn].”

Theme 1. Proposed Solutions to Lack of Access to High Quality Labour Analgesia from Key Stakeholders

The most immediate and important barriers to Maternity Anesthesia Service provision were demonstrated in small and rural community hospitals suffering from chronic and worsening human resources shortages. The need to address these issues simultaneously using multiple strategies is illustrated by the responses below:

I. Addressing Human Resource Issues to Improve Patient Access

1. Optimize Maternity Anesthesia Services Provision by Currently Trained Family Physician Anesthetists

- ***The Need for Provincial Maternity Anesthesia Networks to Support Existing Family Physician Anesthesia Services & Support Skills Updating/Retraining of***

Existing Staff in Small & Rural Communities

“ My impression over 20 years is that people would get their year of [Family Physician] anesthesia training and a certain number would drop out after a year or two ‘cause they realize this is a little more stressful than what they’re prepared to deal with. But after that first year or 2, people tend to drop out or at least question their abilities, after they’ve had a really tough case or maybe a couple of tough cases in a year. And usually they’re related to pediatrics and obstetrics ‘cause you know how quickly those things can frighten you. So that’s I think the reason that people give up doing it...in times of bad obstetric outcomes, that shakes a person quite a bit. And it takes a very strong person to shake that off and carry on.” [Rural provider]

“... in rural practice, it seems like there are a fair number of places where people are not doing epidurals. I know in one place the [who] person wasn’t doing [them] hadn’t had the training I think. Do you think there would be ... a role for...making available for those people a place where they could come in, it’s a protected environment so they could get their skills up and they might have confidence?” [Small Community Provider]

“... I think that’s a good idea [opening up places where re-training and updating skills are possible] because that’s salvaging people who you’re going to lose maybe from ... anesthesia. So and that would always [need to] be a ... one-on-one situation where they could come to be a bigger center and be supported and taught and encouraged.” [Small Community Provider]

- ***The Need to Grade Under-serviced Remuneration to Attract Existing Family Physician Anesthetists to Locations with Greatest Service Needs***

“My only concern is I’m at (hospital in under-serviced area) and probably taking (physicians providing anesthesia) away from places like Smith Falls and Sioux Lookout [when recruiting]. Because I am an hour from Toronto, just like [X hospital] and we get [recruit] them (physicians providing anesthesia) first before the others do. And that’s unfortunate for them.” [Small community]

“This under-serviced area thing became quite an issue... when the under-serviced area program came out ... the places that were under-serviced were you know [remote rural location] and you know [remote rural location]. Well it worked and we were able to utilize it to help us get people. Well now when the under-serviced area program calls [small community hospital] under-serviced and we’re on par with them for support, the levels of support that are being provided, it ain’t working anymore. So, as you see me working more and more hours every year it gets worse and worse, because of that phenomenon. [Rural]

2. Developing New Family Physician Anesthetist Resources for Maternity Anesthesia Care

- ***The Need to Make Changes to Current Policies and Funding for Family Physicians Wishing Re-entrant Anesthesia Training***

“One thing that the government might want to do, and again it is robbing Peter to pay Paul but at least it’s do-able because Paul and Peter are the same, is if they put some sort of **reasonable** re-entrant program for GP’s to do anesthesia. And by that I mean it’s like, bite the bullet, find someone, pay them a [reasonable] salary for that year, because... nobody out there in practice today can afford to go back [for training]. If you’ve got a family and mortgage and everything... it’s not an option. You can’t afford to go back to do a year on a resident’s salary. I mean I couldn’t.” [Rural]

“That’s the way we’ve trained our people here is that we send them back on the residency salary and we pull together money in the community and prop up their salary so they’ve got a real salary to go away in.” [Small Community]

- ***The Need to Increase the Numbers of Family Physicians Choosing Family Physician Anesthesia Training & to Increase the Attractiveness of Family Physician Anesthesia as a Profession***

“My first community was [rural community]. I was up there for 8 years and we went from 9 people doing anesthesia to 3. At [my current small community hospital, we’ve experienced the] same thing. We went from 6 staff to now where we’ve got 2 full-time[staff] and a handful of locums.”

“I think the difference between emerg [emergency ward family medicine] and [Family Physician] anesthesia is the remuneration. You can just do emerg and that’s probably the best financial decision for somebody just starting out. ...compare that to doing just anesthesia where you have to do call on top of it....Anesthesia is not nearly as inviting.”

“...we have had people. They’ve come up for a year or 2 and now one’s off on maternity [leave]. There’s always a situation, it’s kind of slow turn-over.”[Rural provider]

“...[as a profession] we [Family Physician Anesthetists] have no voice.” [Small Community]

3. The Need to Optimize Training Assessments of Foreign Trained Anesthesiologists

“... there are lots of process issues that really need to be addressed, whether this report just identifies the sort of the horrific state of analgesia ... for ladies in labour in rural settings and says it like that, enough to force a re-think of College licensing practices or provincial bodies assessing training. ...every international medical grad has a story about how the Royal College hasn't even gotten to their application. These are fully-trained, foreign-trained anesthesiologists that I'm sure would be you know interested in any kind of solution we have to get them into clinical service.... So I think there has to be pressure. It's an opportunity to have this Panel [OMCEP] consider you know lobbying other national licensing bodies or provincial licensing bodies to be creative. I know we all want to have standards of health care and practice and I don't think we would be lowering our standards. I just I think we need to be more flexible and we just don't seem to have it in our bureaucracy.” [Tertiary Maternity Anesthesia Provider- Finding Solutions Focus Group]

4. Perspectives on Alternate Anesthesia Providers

Focus group participants discussed the feasibility and utility of training alternate anesthesia providers in order to solve the anesthesia human resources shortage. Many physicians in large community and teaching hospitals saw a role for respiratory therapists and/or registered nurses as anesthesia extenders. These positions were always described within the context of direct supervision by an Anesthesiologist.

Physician anesthesia providers in small and rural community hospitals, however, did not see an important role for alternate anesthesia providers in their communities. Family physician anesthesiologists saw their profession as the most appropriate alternative anesthesia provider group for small and rural communities since they were able to serve other health care needs including medical coverage of emergency wards, family practice obstetrics and provide office-based family practice services in addition to coverage of hospital-based anesthesia services. They noted that neither nurse anesthetists nor RTs would reduce the onerous numbers of 24 hour service coverage required of them since these alternate anesthesia providers could not cover anesthesia night call services alone. They also felt that nurse and RT alternate providers would be unlikely to come to their communities, would be expensive and might cause “turf issues”.

The summary of findings regarding alternate anesthesia providers outlined above are reflected in the quotes below.

- ***Large Community and Teaching Hospital Anesthesiologist's Views of Alternate Anesthesia Providers***

“Well I mean any IV anesthetic care, sedation, monitoring, we now have our RTs [Respiratory Therapists] doing. So now they're covered by somebody in house. But you know they are very skilled individuals and a lot of the acute resuscitative interventions, so they are particularly useful group in the case of, you know if you gave a narcotic and it was a bit too much, well this is an individual who knows how to do a bag and a mask.

And can be taught about Narcan [narcotic reversal agent] and everything. They may not be a nurse but they can certainly learn .. limited pharmacology. [Tertiary Maternity Anesthesia Provider- Finding Solutions Focus Group]

“At the retreat that the Ontario anesthetists had, when they mentioned nurse anesthetists, it was booed out of the room. So there’s a tremendous attitudinal bias against nurse anesthetists in particular. And for those of us that have been in anesthesia for awhile, we you know, we’ve all heard of the American model and in some places nurse anesthetists down there work very well and others they don’t.” [Tertiary Maternity Anesthesia Provider- Finding Solutions Focus Group]

“To me, I was a GP anesthetist for about 5 years, and to me it seems sort of silly to set up a separate group, certainly in the rural areas when you already have the GP anesthetists who are the best resource I think. And I think training more GP anesthetists would probably be the answer.” [Anesthesiologist in a Large Community Hospital]

- *Small and Rural Community Providers*

“My view is that there is already ...an alternative group... the family practice anesthetists. And it would seem like until we’ve maxed out that potential, to develop a third stream [of anesthesia providers] ... doesn’t seem sensible to me. And it [Family Practice Anesthesia] seems ...like a very long term [solution]... so I don’t see a real need for it personally ... the other [non-anesthesia providers] will cause of turf issues in the future.” [Small Community Anesthesia Provider]

“Well I think that’s the issue....I mean all anesthetists are treated as technicians in the sense that you know come in and do this epidural, come in and do this sedation for person in emerg, whatever it is. And it’s sort of forgotten that ... there are medical issues underlying all those [issues]. And I guess the assumption is that you need to ...have some experience and [medical] background to deal with the problems, and their co-morbidities or the problems that occur as a result of whatever actions you took, to be able to deal with them in a way that a technician wouldn’t have the breadth of experience or training to deal with.” [Small Community Anesthesia Provider]

“But the bottom line is anesthesia is anesthesia. And even if you’re talking about the eye room [eye surgery cases], you know these are older people, they’re going to be stressed and they’re going to have pressure on their eyeballs and vagal responses [severe slowing of the heart rate (or pauses in the heart rate) and reductions in blood pressure implied] and things like that. ... let’s put it this way, when you have a fire, you want a fire extinguisher.” [Rural Anesthesia Provider]

“I think the issue that “X” mentioned – that...someone like an ...extender would have to have a broader skill set [**including being able to provide independent maternity anesthesia call coverage**] than just being able to do one thing in a rural setting [in order]

for this solution ...to be really effective....”[Small Community Anesthesia Provider]

“It seems to me that the nursing crisis is worse than the physician crisis. And where are these bodies going to come from [for nurse anesthetists]?”[Rural Anesthesia Provider]

“So far my impression of people in those sorts of roles, it doesn’t really work very well for the rural setting because you need a number of them to cover...to provide 24 hour coverage. And you can never attract them, there’s always jobs in more attractive areas.”[Small Community Anesthesia Provider]

“But the only way they’re going to get anesthetic services is to either make us -- get us to work longer hours which – well good luck -- or somehow give us more assistants to take some of the things that we do that can be done by others away from us, IV being a primary example. [Small Community Anesthesia Provider]

“I think anesthesia assistants within the OR is a good thing as long as they’re just assisting the anesthetist. One anesthetist for one person. I’m a firm believer of that. I think that will increase efficiency and in the same fashion, it may increase efficiency up in the obstetrics unit as well, [for example, having an anesthesia assistant] to set up the epidural pump.” [Small Community Anesthesia Provider]

“I think efficiency wise, anesthesia assistants is a good thing but not doing these procedures as such.”[Small Community Anesthesia Provider]

“I disagree that they’re lesser expensive. Because if you’re paying someone a salary, you’re paying someone’s pension, you’re paying someone’s malpractice insurance....I think that family physicians provide health care at a much more efficient and cheaper rate than some of the specialty sort of sub- sub-groups.” [Small Community Anesthesia Provider]

“Well I think there are two issues in a rural setting. I mean one is the breadth of medical issues associated with the service you’re providing and the other is that approach just hasn’t worked in the rural areas. Now it’s rare to find nurse practitioners in rural areas; it’s rare to find midwives and nurse practitioners, yet the whole raison d’etre was... to provide rural services... I don’t know if it[the money spent on training these groups] was wasted in a sense that I mean the service is bring provided somewhere but it certainly hasn’t reached the peripheral setting We’d love to have midwives here, we’d love to have more nurse practitioners. But we just can’t attract them you know.” [Rural Anesthesia Provider]

“Anesthesia’s given by anesthetists. If someone other than an anesthetist can do it, then it’s not anesthesia. I mean I hate to sound simplistic about it. I know who I, if I was getting an anesthetic [I’d want an anesthetist] doing it. If, you know X and Y get us anesthesia assistants, that might, that would, that might help. And by an assistant, I really mean like even something like you know, at our center if they funded one more nurse to just stuff an IV in everybody before they hit the OR, it would make us more efficient.”

[Large Community Anesthesia Provider]

5. Alternative Strategies For Providing Access to Maternity Anesthesia Services

- ***Informing Patients About the Types of Maternity Anesthesia Services Available in Small and Rural Hospitals & Local Difficulties in Predicting their Availability***

“...I think if you said that every woman delivering in a particular area could find out what was available before it came time to deliver and then decide whether or not they were going to accept that, then I think that would be reasonable. And obviously it ... may mean that you offer people the ability to move elsewhere to deliver.” [Small Community]

“I think a woman has the right to know what’s available if she’s planning on delivering wherever she is and if she’s not happy with it, I mean the next step is then the government has to decide whether or not they want to fund having her deliver elsewhere.” [Small Community]

“Each rural location changes it’s [epidural service] availability day to day, week to week, month to month and even in our hospital we can’t readily predict how much epidural service is going to be available.” [Small community provider]

- ***Intravenous Patient Controlled [Narcotic] Analgesia as an Alternative to Epidurals for Labour***

Many community hospitals voiced interest in patient controlled intravenous narcotic analgesia (PCA) for labour as a “stop gap” measure for women waiting for epidurals. Some hospitals described having a similar practice known as nurse controlled intravenous analgesia already in place. One tertiary maternity anesthesia provider described the use of PCA, placing its role as an analgesic modality into perspective.

“...I worked in [western province] and that’s [PCA] what was available in a lot of under-serviced] places and it is safe as long as, I think the biggest issue is defining your neonatal resuscitation team, because that has to be adequate. Being able to give mum Narcan [a narcotic reversal agent] and shake her and wake her, that...really doesn’t, it doesn’t end up being a huge problem. But it’s a problem to ensure you’ve got adequate neonatal resuscitation support. And [you need to realize] ...that this [PCA] is really a second rate level of analgesia compared to an epidural” [Tertiary provider]

Theme 2. Barriers to the provision of “best practice”maternity anesthesia care in hospitals with low delivery volumes

1. Anesthesia Shortage and the Inability to Attend Formal Continuing Medical Education Events

- ***Shortage of Family Physician Anesthetists and Difficulty in Finding Coverage of their “ Multi-tasker”Health Care Roles***

Family Physician Anesthetists described multiple, significant barriers that made it very difficult for them to leave their communities to attend CME events. These related to anesthesia shortages in their communities and the difficulty in finding others to cover their multiple physician roles.

“In our facility there [are] 4 GP anesthetists 5 days a week with 2 ORs running each day, so most anesthetists alternate between 2 and 3 days a week [in the OR] and if you’re taking time off, one of your colleagues has to coverAs GP anesthetists most of us have a family practice or do emergency room work. ... I think the biggest issue is there’s only so many bodies to go around.... CME time is often at the bottom of the list, unfortunately... And it’s just imposing on your colleagues when you [do]... who are already stressed for time themselves.”

“The other thing is in terms of us coming down to places is...[that] most of us are multi-tasking and doing a bazillion things. It’s really hard to get away. ...

- ***Market Pressures & the High Costs of Locum Coverage to Permit Time off for CME***

Family Physician Anesthetists noted that human resource shortages had made acquiring locum anesthesia coverage very expensive, since they had no resources to supplement locum funding in order to attract them to their hospitals. These additional expenses had to be ‘out of pocket’ and were prohibitively expensive.

“The other money issue that I ... wanted to... point out was as we’re trying to get people to come up and ... spell us off so we can go to a meeting, there’s a new breed ...of locum physician out there, who’s very much cherry-picking... their opportunities. And there’s a lot of places [hospitals] with you know mills and factories [hospitals with large operating room case volumes] that seem to be able to kind of up the ante a bit and this [new breed of locum]... who have their hand out and say show me the money and then we’ll talk about me coming. And so it’s very difficult to find people that want to come.... we as anesthetists in our community with an APP ... basically have no support [for this extra cost]. And so to get people up here, it’s it’s I mean you know ... we can do it but it costs us so much that at the end of the day you say what the heck did I do that for you know? That cost me ten thousand bucks to have this guy to come to in for a weekend you know. And it came out of my pocket right. So...it’s very painful.” [Rural provider]

2. ***The Need for Permanent Formalized Networks to Provide Maternity Anesthesia Knowledge Transfer***

Physicians providing community maternity anesthesia care described difficulties

ranging from those encountered when developing and implementing best practice protocols and the occasional need for “real time” maternity anesthesia consultations to the general lack of CME relevant to their practice needs. The degree and spectrum of difficulties described often correlated with institutional distances from university-based maternity anesthesia teaching hospitals. Obstetric anesthesia providers in distant hospitals in general (in both large and small/rural community hospitals) were less likely to have maintained significant contacts with experts in maternity anesthesia at university teaching hospitals than providers in hospitals in closer proximity to such centres.

- ***Lack of Access to Best Maternity Anesthesia Practice Protocols***

Family Physician Anesthetists and Anesthesiologists from community hospitals distant from tertiary maternity hospitals described the absence of formal linkages with maternity anesthesia teaching hospitals as a significant impediment to institution of best practice protocols in their hospitals. They noted that outside of sporadic transfers of such protocols from experts at CME events, they had no real mechanism of accessing new protocols and voiced the need for more formalized permanent networks of maternity anesthesia support.

“We don’t have a formal link with anybody. We’re out in the middle of nowhere.”
[Rural provider]

“What we find is we go out to a meeting or an interesting place and often there’s a hands-on component, a simulator, maybe a day in the OB unit or OR, and often we’ll pick up protocols from just that group of people and that relationship goes on for a month or two. And then it’s basically over.”

“I think that getting protocols from other places is, especially if it’s accompanied by a little bit of personal communication, is quite helpful when we’re rural. And protocols alone that come out of the blue are probably ignored. Protocols that come with a little discussion...probably have a huge effect.

They also described the need to know if current maternity anesthesia practices in their institutions were consistent with the baseline standard of care expected. They noted that it was difficult to keep up with changes in maternity anesthesia practice without continuing contact and feedback from experts in centres of excellence. Participants noted that without continued access to maternity anesthesia advisors, particularly during the implementation phase, that new protocols even once acquired from the experts, were unlikely to result in adoption of “best practices” due to lack of additional supports.

“We’re just trying to implement PCEA ourselves and we had this discussion about a team of us, anesthesiologists, nurses, going to for example Toronto versus having someone come to us. ...we felt that if we had one person, even if we didn’t actually have an epidural running at that point,...come to us [here in our own hospital] who could do an in-service with all the nurses and all the anesthesiologists that would that would definitely be worth our while. I think from my perspective it would be easier to have someone come to our team rather than several of us going out. When the information is just coming back via one person, ... it gets diluted a little bit. If everybody hears it first hand from the experienced providers, I think it’s a little a little more useful.”[Small community]

“It’s easy for me to get protocols but it’s hard for me to get the rest of the team organized and get matching team teaching to do the things that I want to do you know. I can easily come home from a meeting with that protocol but the nurse educators, the pharmacy, everybody has more questions than I usually come home with. And that’s the biggest stumbling block.” [Rural provider]

Anesthesiologists from large community hospitals in closer proximity to university-based maternity anesthesia teaching programmes experienced different difficulties since most had maintained some degree of contact with teaching centres. They noted that their heavy clinical case loads, lack of infrastructure supports and lack of time made obtaining hospital committee approvals for new best practices protocols onerous and frustrating.

“Every institution has been re-defining [protocols] again and again and again ...if we add up all the professional hours spent re-writing protocols and re-formatting with different letterheads and thinking them through, it’s a real waste of time. It would really be nice if there was a central process.” [Large Community provider]

“...the hardest part to get this whole thing started was just going through the dozens of committees just to try to get you know the paperwork going through pharmacy... and you know we are busy as well...the meetings are always around lunchtime. And I guess they figure that we’ve got nothing else to do at lunchtime even though I’m stuck in the OR... still so I’ve got to find somebody to watch my [anesthetized patient in the operating] room while I run down, just present either my ...case, whatever it may be. And then run back up to my OR... So that’s been the hardest part, just to get to all those committees because if I miss one committee, I have to wait the following month just to get through that committee before it goes on any further.”[Large Community]

“I think everybody ...would agree that we’ve all sat down at meetings and heard somebody talk...and we’ve all sort of sat around the table and nodded, said ‘gee that’d be a really good idea’ and the thing dies on the table. Because there’s just no time or ...are no resources or there’s no initiative or there’s no help or whatever to make these ideas come to fruition.” [Small Community provider]

Both large and small/rural community maternity anesthesia providers believed that more formal maternity anesthesia networks would help to facilitate improvements in practice.

“Just a comment. I mean that’s the kind of thing that if there was a network to provide [resources for protocols] ... all that work has been done somewhere. If there’s just some way to access that, you know, when we decide okay we want to bring some epi-morph, [or bring in] continuous infusion or PCEA (patient controlled epidural analgesia), we can just sort of contact somebody, get a package of information and...[just get it up and running].”

- ***The Need for Access to Maternity Anesthesia Experts for Consultative Advice***

While some community maternity anesthesia providers noted that they had maintained contact with their mentors after training, others voiced the need for a more formalized relationship with maternity anesthesia experts in teaching centres, particularly for management advice related to difficult obstetric cases.

“I don’t think you can ever get away from the phone call. Again if you have a specific linkage... I’m sure in the most of the teaching centers, they’re 24 hour a day providers, so there is always somebody potentially at the end of a phone call. But it can’t be for you know anything other than I think intrapartum emergencies.”

“...and it would be nice to be able to communicate it [the problem to an expert] at the time that it’s happening.” [Small Community]

- ***The Need for Flexible Models of CME Made Relevant to Community Practice Maternity Anesthesia Issues***

Small Community and Rural Participants reported that many formal Anesthesia CME venues did not meet their learning needs. They noted that they needed CME aimed at a very practical level and a venue in which to discuss difficult obstetric anesthesia cases with maternity anesthesia experts in form of rounds as part of ongoing CME.

“I think that one of the key points is that rural type anesthesia is quite different from big city anesthesia. And a lot of the GP anesthetists would probably not find the tertiary care discussions completely very relevant to their day-to-day [information needs]. If there was some format for specific GP anesthesia rounds, that would be most helpful.”

“I think we need to have a very real-time process when these [clinical] problems come up [so that they don’t] get forgotten or lost [for CME discussions]. ...it’s like somebody hasn’t written down what ...the problem was months ago and

nobody can quite remember ...[why] there was a concern or interest in this area, you know.

“And I think that’s you know the problem with identifying topics for you know for big CME events. You know my little situation here may be totally different than Bs in [rural community] or X’s in [a small community hospital] or it may be similar. But specific issues like ... how to set up PCA program or some other specific project like that... I think it’s up to the individual situation and physician to identify their needs and if they have a contact person, then to sort out what mechanism is best suited to address those needs, whether it’s a team visiting them or their team going down to their institution or just one [physician going] at a time, whatever. But I think it’s going to vary with each institution, with each individual physician. But I think having those mechanisms [available] is what’s the key issue.”

Theme 2. Proposed Solutions to Lack of Access to both Formal CME Meetings, Knowledge and Skills Updating and Retraining

1. Develop a System to provide Locum Anesthesia Coverage for CME and Respite Relief

Small and rural community maternity anesthetists noted that locum physician services provided by the under-serviced area programme had worked in the past and had permitted them to leave their communities for CME, had provided “hands-on” CME by way of visiting locum professors to their communities and had permitted them to go on vacation. They voiced the need for re-institution of such a system or an alternative system to provide them with a source for anesthesia locum coverage.

“... we used to get support from the under-serviced area program where retired sort of professors in the city ... would do a day or 2 together here ... and share notes.... And that used to be set up through the under-serviced area program but it died a number of years ago. It was quite effective I thought. It was a creative way of solving both our need for locum coverage and it gave us ... CME... and sharing of information.” [Rural provider]

Another potential solution to the shortage of locum anesthesia service providers arose from the mixed provider “Finding Solutions” Focus Group. This related to the possibility of specific licensing of anesthesia fellows to work as locums in under-serviced areas as part of a pool of anesthesia providers providing relief to physicians in these areas. Existing sources of funding and potential sources of accommodation for locums in their communities were noted.

“...I was thinking if you had a system that ...was a special system set up specifically to serve under-serviced areas that would allow them [anesthesia fellows and residents] to

work only in these circumstances, [so]they couldn't necessarily just go down the street [and work in their own cities]. The only way they could do it [work independently for a fee would be in] a sense going into some kind of you know human resource pool that was designed for under-serviced areas only. ...then it's either choose that [type of work] and get the advantage of the experience and some income. But they don't get to go work in downtown Toronto or Markham. They've got to go wherever [whatever under-serviced area that needed them] and they would." [Tertiary provider]

"... I think most remote places that are used to having locums have accommodations pre-arranged in some form. Either they take over the person's house or they have some other alternative already established. And there is funding already available for that kind of thing through the OMA. Not at a high rate but I mean there's X number of days per full-time physicians that, whether it's a specialist or a family physician to cover it with. The issue with residents, like [fifth] year anesthesia residents or fellows doing it is the licensing." [Small Community Provider]

2. Develop Formal Permanent Geographic University-based Anesthesia Networks to Facilitate Knowledge Transfer between Maternity Anesthesia Experts and Community Maternity Anesthesia Providers

Maternity Anesthesia Providers described the need for formal anesthesia networks linking large, small, rural and rural remote hospitals to a university-based centre of maternity anesthesia excellence. Two to three networks provincial networks were envisioned, dividing the province into geographic pies with each network originating from a single university-anesthesia programme office intimately linked with maternity anesthesia experts in a tertiary obstetric centre. These geographically-based networks were envisioned as the infrastructure across which information could be transferred. Networks were envisioned as dynamic, capable of providing continued information and practice updates with the human resources required to not only to develop best practice protocols but also to conduct the research studies needed to continually improve these practices. The university-based centre of maternity anesthesia excellence would also need to be capable of providing practical interdisciplinary team training for protocol implementation in community hospitals (on site in the community hospital or on location in centre of excellence/teaching hospital) as well as serve as a protected clinical teaching environment where those wishing for retraining in maternity anesthesia skills or skills updates could pursue such training.

"I think we have to go to the Ministry of Health and say ...we need program funding to provide this [anesthesia] networking service to bring the provincial bar of maternal services up ... to a certain level you know." [Small community provider]

"I think they [the links between non-tertiary and tertiary centres] have to be initially formalized. Because that's the problem, we've all been relying on a friend who we went to med school with who turned up to be an FRCPC anesthesiologist somewhere or wherever. And then when those people move on who you knew, then ...you know then

the link goes. So I think it almost has to be institutionally based or region based.” [Small Community provider]

“I see the universities having one designated staff person with a special interest in community [maternity anesthesia] ...and that person would be ... a resource for any potential problems, like the residents go to the staff who’s most interested in regional, too, that person could also run weekly ... problem rounds by teleconference for example for the whole catchment area. And so that there’s an ongoing link so the anesthetist who had a bad case can talk about it And again an ongoing link like that. ...there could be a once a year visit, or once every two years even, to those communities...if there was one designated resource with some funding for that and if there was a well-established follow-through on on-going education that people could expect, I think that that would be a very good way of going about it. And there could be more to the program but I see that as an essential part.”

“ I think that it [knowledge translation maternity anesthesia networks] would be probably better institutionally-linked and that the group at that institution buys-in so that there’s ownership amongst a group of [anesthesia providers] ...cause it is much easier that way so ...we kind of divide geographically and become linked to whatever communities [are designated to us]. I mean I think the key is not to burden the system, whatever system gets developed don’t overwhelm it to begin with, you want to set it up for success.” [tertiary hospital provider]

“I feel that obstetrics is much more organized than we [anesthesia] are. And I’ll give you a few examples. I see instance this outreach program that some of our colleagues at [tertiary centre] have for obstetrics. They spend once a week you know in other places trying to take care of patients and work with somebody else in a teaching role.”

Conversations between Tertiary and Small Community or Rural Providers

Conversation #1: “Is there any idea if [non tertiary providers] would be willing to come for a short time of service ships or fellowships and if we could get funding for them. And then they could take the skills from the university hospital and bring it back to their community.” [Tertiary Centre provider]

“That’s a really great idea because especially when you want to pick up a particular skill like PCEA... which we’re considering now. And I know that if I can spend 3 or 4 days watching people do it,that would be very very helpful. And you always learn better by doing it with somebody.[Small community]

“Would you lose money though if you came? Is there any funding available for you?” [Tertiary provider]

“No at this point in time ... It would have to be a voluntary effort on my part to go pick up a particular skill.” [Small community provider]

Theme 3. The need for interdisciplinary maternity team education/training to facilitate improvements in maternity anesthesia services.

Many participants in both large and small/rural community hospitals shared that continuing medical education which provided only current protocols and [didactic] education was limited and even ineffective in helping maternity anesthesia providers institute best practices in maternity anesthesia. They shared that they often had difficulty obtaining resources, education and training for other team members such as nurses and pharmacists who were important to the implementation of new best practices and that this was a significant impediment to change.

“It’s very difficult when you’re, when you’re just starting out or you just come to a new hospital and you, you come here and you think you want to change the world. And then you realize that the status quo is very rigid and sometimes difficult to change.” [Large community provider]

“I find when I’m off at meetings and I bring back ideas and I’m trying to sell them, the part that’s hardest to get together is the nursing education package. And if you could please, while you’re doing this, the nursing educators at the same website put together the nursing side of it, in parallel with it. And that would be just a huge benefit for us in the periphery. Just huge.”

“I’ve been off at various meetings and picked up new ideas, I often have no trouble getting the PCA protocol from someone like you. But then when I say alright now about the nursing package? I often get referred on to this you know this nurse who’s not really very interested in talking to me. And then I go to some more trouble and I try and set it up so my nurse calls them . And so far we’ve never had a successful link with a nursing.” [Small community]

“... once we got the Nurse Educator on our side (related to Patient Controlled Epidural Analgesia), then it became much easier because the other nurses really just had to start performing.” [Large Community]

“Our workload is phenomenal, our resources are strapped, we’re always broke. So the reality of taking our budget and sending a nursing team down to Sunnybrook to learn how to do something, it will not happen.” [Rural provider]

“But yeah the nursing part of it, getting the in-service and everything was the biggest part, and if that were available in parallel on that program that would be great. If the program would sponsor, like would pay for someone who set this up

in hospital A no matter what size, actually it's even better if hospital A in some ways is not the teaching center but is someone more comparable to our hospital. If the program would pay for that person to come over and do in-services and all that and explain the ins and outs, that would be great." [Rural]

"And if you had a package that just isn't aimed at physicians but maybe included pharmacists and nursing staff in your recommendations or in your commendations, and uh I think that would really help us a lot." [Small Community]

"Pharmacy, pharmacy likes to put up barriers for any new drugs. ..I can't just say I'd like some epi-morph. I have to prove, provide evidence and go to a few meetings and push for it." [Small Community]

"There's a bell curve there of demographics and age and interest in adopting new techniques. You bring people out to talk to the department and maybe half the department will show up or maybe you have it as a dinner time session and some people say well I'm not going to go to any of those cause it's not convenient to me, I want to go home and spend time with my family. So there are a lot of issues around just the education of it." [Large community provider]

"It's not just the education, it's the follow-through. I think someone else alluded to this when I think they said that they you know spent the next 5 months in meetings just to ram the protocol through. ...and you can't guarantee success unless people are educated. You can go and tell people that you're going to do something and they'll get upset with you. You have to come with a presentation that offers the evidence and you have to build up a sense in them that they understand and that they've been intellectually stimulated by it. And that, that's where the motivation comes. Once you've got the motivation, you've still got a long way to go with establishing protocols and the shifting sands of the of the hospital bureaucracy. I mean, I think if we were to get help with anything it would be someone that that could be an executive assistant to the anesthesia department, to do all the things that they wanted, that spoke "hospitalese" so that the anesthetist could get back to work and all of this stuff went on." [Large Community Provider]

"We introduced the PCEA (Patient Controlled Epidural Analgesia--walking type epidurals) about 4 or 5 months ago. But there is a lot of reluctance among our colleagues as well as the nurses too to do the PCEA. That is because of lack education or lack of knowledge about the PCEA.[Large Community Provider]

"Yeah but it's it's all a matter of time you know. Basically you know when you work in an anesthesia department and you're fee-for-service, there is no time, there's very little leeway, there isn't much lateral shift. ...My question to you is

when are we going to have time to sit down and do all this? As a group collectively...., I meet with my department once a month for an hour and a half that's it (context: most academic centres have weekly CME rounds for one hour per week). So you know it's pretty valuable time. So we took away to CME for that [service provision]. We have our CME at other times that are a little less convenient and therefore attendance is a little less. But we're very busy." [Large Community Provider]

Theme 4. Medico-legal issues in the provision of obstetric anesthesia services to patients without involvement of a primary care physician

- ***Midwifery, Anesthesia and Medico-legal Responsibilities***

The level of comfort with midwifery care differed by the level of supports available within hospitals. Those with more obstetric support and more anesthesia resources (ie large volume obstetrics, large community hospitals) expressed fewer concerns than those in small and rural communities where significant issues were voiced related to medico-legal responsibilities. Differences in the perspectives of those practicing in these different environments are illustrated below.

"So in their general obstetric care, I think, these midwives I don't know so well. And ... I'm just not comfortable with their skills. My physician colleagues I have [been] a little bit more comfortable with [Midwifery care] that if everything's going fine...I always ask for a physician [covering obstetric care] to be consulted, just, mostly to protect me medico-legally if there's something I'm missing. I don't do obstetrics so, I just.... If there's a bad medico-legal outcome, I know that the epidural probably won't be the cause but I don't want to be the only MD that can get a finger pointed at me." [Small Community]

"Once you are the only physician looking after the patient for whatever reason[ie even if only for a labour epidural], you know I think you're the most responsible physician for all areas of care...I think the midwives need to be supervised by their peers and you don't want to get into a situation where the anesthetist is giving obstetrical advice." [Small Community]

"If there was, just generally if there was some sort of policy statement that but... I guess there can't be because there's no protecting me medico- legally. If something goes wrong and the patient decides to point their finger at me, the anesthetist who's being involved just a little bit versus the midwife who they've become essentially friends with, I don't think there's any way to protect me from that. If there was a general consensus that I would not take on any obstetrical responsibility, that would make me more comfortable. But I don't think there's any way of making that happen." [Small Community]

“Up until recently the nurses were called if a midwife requested an epidural. Then they would communicate with us directly. We had sort of a gentleman’s agreement with the obstetricians that if we had inserted an epidural and there were untoward problems, which is rare, that they would assist us and intervene. And actually it’s gone quite well. The nurses have educated the midwives in terms of what’s required for you know insertion and maintenance of an epidural. And of course the midwives have risen to the challenge quite readily and it’s working fine.” [Large Community]

“... we do have set up with the midwife group, a protocol..., cause they actually, they don’t have a nurse in the room often, because, so that we had to ...come up with a protocol of how they would monitor the epidural. So we’ve gotten quite comfortable with their capabilities of doing that.”[Large Community]

Summary of Findings

This study was conducted to explore issues and barriers to maternity anesthesia care in non-tertiary obstetric hospitals in Ontario. While we report on practices spanning the spectrum of maternity anesthesia service available (from university-based maternity anesthesia teaching hospitals to rural remote hospitals), the report’s focus was predominantly on issues found in small community, rural and rural remote hospitals providing obstetric anesthesia care and potential solutions to those issues.

Maternity anesthesia care in non-tertiary Ontario hospitals is currently provided by both specialist Anesthesiologists and Family Physician Anesthetists. The latter profession represents physicians with dual qualifications in both family medicine and anesthesia. While large community hospitals were usually staffed by specialist anesthesiologists, anesthesia services in smaller and more remote hospitals were usually staffed by Family Physician Anesthetists. To be successful, health policies developed to improve maternity anesthesia care should take into account important differences in the scopes of practice provided by both professions as well as distinct differences in the nature of the issues imposed by practice locations (small/rural versus large community).

Family Physician Anesthetists provided multiple and diverse types of health services to their communities including anesthesia, emergency ward coverage, family physician obstetrics and general office-based practices. Small and rural community anesthesia practice required coverage of relatively low case volumes distributed over large numbers of hours (24/7) by few Family Physician Anesthetists. Respondents noted the current significant and growing shortage of Family Physician Anesthetists in small and rural communities in Ontario and their increasing difficulty in recruiting those few available to more distant small community and rural practices. This shortage, coupled with the absence of funding for a designated provider to cover maternity anesthesia services provision during daytime hours, has led to difficulty in covering maternity anesthesia services both during the day (due to competing priorities in the operating room) and at night (due to the onerous numbers of 24 hour “on calls” required of staff to maintain service provision and competing priorities in the operating room). Labour epidural rates in small community and rural hospitals were lower (ranging from 5-35%) than those

found in large community hospitals with longer wait times of 4-6 hours for those women who were able to receive the service. Some women did not have access to these services at all. Remuneration for overnight coverage of anesthesia services varied between institutions and was not seen as equitable.

Low numbers of anesthesia providers, difficulties in finding locum anesthesia coverage and the associated expenses (including the need to “top up locum fees out of pocket”) made it difficult for Family Physician Anesthetists to attend formal CME events. While some described continuing availability of maternity anesthesia mentorship at university-based centres, others did not have such access and described the need for more formal permanent maternity anesthesia networks to provide them with best practice protocols, interdisciplinary team training and the continuing supports required to implement these best practices. It was believed that such networking would also be capable of providing them with ready access to maternity anesthesia consultation with experts, opportunities for skills updating in centres of excellence and provision of CME made more relevant to their specific practice needs.

Low case volumes led to the need for Family Physician Anesthetists to be “multi-taskers” in order to maintain an income. Most Family Physician Anesthetists saw no role for alternate anesthesia providers in their setting since RTs (respiratory therapists) and nurses would not be able to cover operating room and maternity anesthesia services independently, might cause turf issues and would be an expensive solution because of their limited utility. Family Physician Anesthetists saw their profession as the answer to health services shortages in small community and rural Ontario. They voiced the need for increased training of Family Physician Anesthetists (requiring one additional year beyond Family Medicine training) and changes to re-entrant Family Physician programmes to encourage existing community physicians to obtain training in Anesthesia. They also spoke of their need to have their profession more formally recognized and given a voice. They believed that additional incentives needed to be created to increase the appeal of Family Physician Anesthesia as a profession as well as attracting them to practice in small and rural community hospitals in general. One key point was the noted need for graded underserved remuneration to attract existing Family Physician Anesthetists to the most needy areas of the province.

By comparison, large community anesthesia departments were characterized by more complex and heavy anesthesia service loads. While there were more anesthesia staff to cover night calls difficulties were still encountered covering maternity anesthesia services due to competing needs in the operating room. Some hospitals reported dedicated daytime obstetric coverage. One hospital noted 24/7 obstetric coverage similar to that found in tertiary obstetric centres. Epidural rates in large community hospitals (60-80%) were similar to those found in tertiary institutions with slightly longer wait times (30minutes to one hour versus 30minutes respectively). Heavy clinical responsibilities led to varying degrees of difficulty in maintaining departmental CME. Most large community hospitals in closer proximity to university-based maternity anesthesia teaching centres continued to maintain informal linkages to maternity experts in those centres. This was not the case in larger community hospitals distant from university-

based centres of maternity anesthesia excellence. Like Family Physician Anesthetists, large community anesthesia providers also voiced the need for more formal links to university-based centres of maternity anesthesia excellence to permit more efficient knowledge transfer. Alternate anesthesia providers, given a role as anesthesia service extenders under direct supervision of an anesthesiologist, were seen as having a potential role by some large community anesthesia providers.

All groups of physicians providing maternity anesthesia services exhibited a clear, sincere desire to provide care based on best practices. They also voiced their interest in participating in the future work required to provide solutions. All believed that formal permanent university-based maternity anesthesia networks, once established would facilitate knowledge transfer between centres of excellence and provincial maternity hospitals, providing a mechanism for stabilization and rejuvenation of small programmes in the present and the necessary infrastructures to support continued growth and high quality maternity care in the future.

The Intent of Study Recommendations

Recommendations are presented firstly, in the context of an over-arching vision for the supports and infrastructures required to integrate all essential maternity care services as well as their coordinate their function and provide ongoing monitoring of health service quality in Ontario. Specific recommendations follow which address, in particular, the issues and barriers to maternity anesthesia service provision identified in hospitals with low volume deliveries (<2000 per annum) in this study. These recommendations reflect the findings of the entire study as well as incorporating recommendations of the mixed physician group participating in the final “Finding Solutions” focus group. They are divided into:

- 1) short term recommendations, intended for immediate implementation to take pressure off of existing services and support educational renewal while longer term strategies take effect; and,
- 2) mid- term recommendations, intended to provide the necessary infrastructures required to support development and continued renewal of human resources and maintenance of best maternity anesthesia practices in the near future.

Recommendations

1. Creation of a Ministry of Health and Long Term Care Maternity Care Branch responsible for setting provincial maternity care standards, integration of existing maternity care services, human resources planning and surveillance of health outcomes. Anesthesiology should be included amongst the key stakeholder groups and represented by both specialist Anesthesiologists and Family Physician Anesthetists due to fundamental differences in their scopes of practice and the spectrum of issues imposed by various practice settings across the Province.

2. Improve women's access to obstetrical anesthesia services in smaller non-tertiary maternity care centres.

Short Term Recommendations:

Intent: To improve retention of existing anesthesia providers and support continued maintenance of existing obstetrical anesthesia services in non-tertiary obstetric centres.

- Provide graded levels of under-serviced remuneration by geographic location to attract providers to less attractive under-serviced locations.
- Provide specific additional financial incentives tied to anesthetic maternity care provided between midnight and 8am in low volume centres.
- Implement equitable payment models for maternity anesthesia services (eg between permanent staff and locum staff) across all low volume centres.
- Develop and fund the human resources networks required to facilitate respite relief for physician continuing medical education and vacation in under-serviced areas (ie advertising and recruitment of locums).

Mid-term Recommendations

Intent: To increase the number of Family Physician Anesthetists available to meet service needs in smaller non-tertiary obstetric centres.

Training New Family Physician Anesthetists

- Establish **dedicated funding** for one year anesthesia training positions within University Departments of Anesthesia for Family Physicians as part of the postgraduate level 3 year of residency training. The number of positions funded should be based on both existing and projected human resource shortages. Funding could be re-instituted for this program and recruitment begun within 12months.

- Develop strategies to promote recruitment of Family Practice residents into Family Practice Anesthesia Fellowships (PGY 3 year).

Re-entrant Anesthesia Training

- Facilitate re-entry of established Family Physicians into one-year, University-based Anesthesia teaching programmes with dedicated funding, including provision of additional supplemental funding above that currently supplied since loss of practice income is an important barrier to re-entrant training.
- Provide clear and transparent remuneration contracts for those wishing to re-enter training in Family Physician Anesthetist programmes. This should include an *a priori* contractual agreement between the Province and the physician related to the specific location of employment required as part of the return of service agreement since many Family Physicians wish to ensure their ability to return to their own communities after training.

3. Facilitate the uptake and implementation of Best Practices in Obstetrical Anesthesia by the multidisciplinary team in non-tertiary maternity care centres.

- Establish permanent formal obstetrical anesthesia networks for knowledge translation between academic anesthesia providers in University tertiary obstetric centers and community providers across specified geographic areas within the Province. It is likely that two to three networks will be required. Each network will be best served if coordinated out of a single University Anesthesia office dedicated to developing linkages and facilitating knowledge transfer between tertiary, large community, small community, rural and rural remote hospitals in a single geographic area. Infrastructure support and further study will be required to determine the most appropriate and efficient linkages. These networks should be integrated with existing and future networks developed by other members of interdisciplinary maternity care teams across the province.
- Formal knowledge translation networks will develop multiple strategies to disseminate best practices and support their implementation including research. These should include development and maintenance of web sites with “best practice protocols,” telephone consultation and educational rounds between hospital physicians and between physicians and interdisciplinary teams, the ability to provide on-site interdisciplinary obstetrical anesthesia education in under-served areas where providers experience major barriers to attending off site CME and the potential for interdisciplinary team training at tertiary obstetric centres when possible.
- Provision of hospital infrastructure supports to facilitate the uptake of best practices, including education for the multidisciplinary teams involved in the

care of maternity patients receiving anesthesia services (eg. nurses, pharmacists, midwives).

4. Clarification of medical and legal responsibilities of anesthesiologists and family physician anesthetists when they are the sole physicians involved in patient care of midwifery patients. “Who is the most responsible physician?”

- Obtain clear guidelines from the College of Physicians and Surgeons of Ontario and the Ontario College of Midwives regarding the scope of responsibility of physicians providing anesthesia to women under the sole care of midwives.
- Obtain guidelines clarifying the legal responsibilities of physicians providing anesthesia services to women under the sole care of midwives from the Canadian Medical Protective Association.

5. Establish a formal organization to represent family physician anesthetists.

- Recommend that the Ontario Medical Association or Ontario College of Family Physicians promote and support the formation of a permanent group within its organization to represent the issues and needs of family physician anesthetists.

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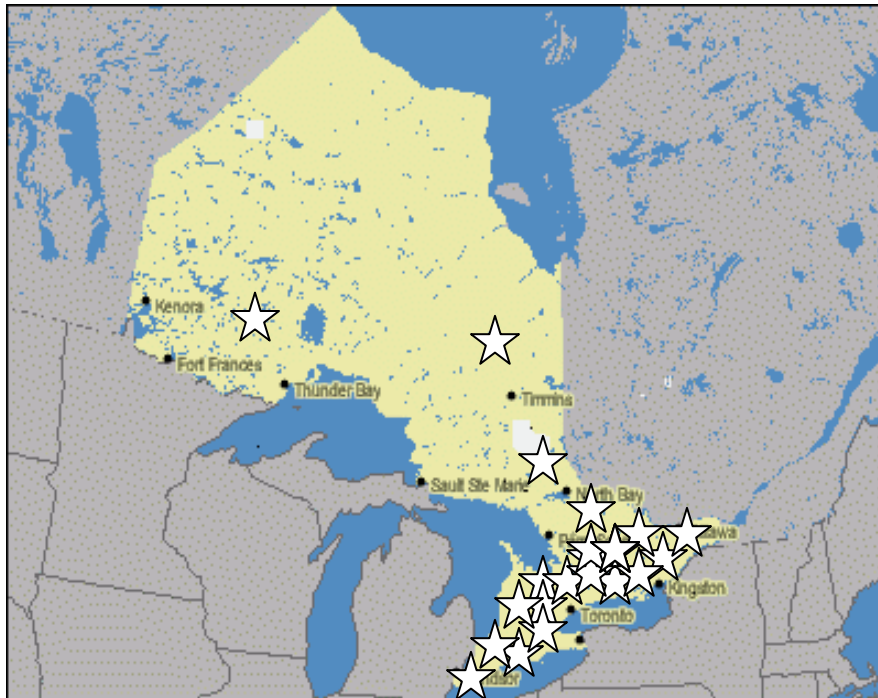
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APPENDICES

FIGURES

Figure 1. Geographic Map of Hospitals Represented by Survey Physician Respondents (n=24 hospitals)



Source: Ontario Ministry of Natural Resources

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Maternity Anesthesia Practice Survey

Table 1. Characteristics of Survey Respondents (n=28) and Their Primary Hospitals of Employment

Age (n=27) Mean (SD) [minimum-maximum]	44.7 (7.9); [32-63years]	
Gender (n=28)	Female	7/28 (25%)
	Male	21/28(75%)
Designation (n=28)	Anesthesiologist	17/28(61%)
	Family Physician Anesthetist	11/28(39%)
Years in practice since training completed Mean (SD) [Minimum-Maximum] (n=28)	10.7 (6.2); [2-25]	
Total number of hospitals in which the participant works on a regular basis (1 day or more per week) (n=27)	1 hospital only	23/27(85%)
	2 hospitals	3/27(11%)
	3 hospitals	1/27 (4%)
Geographic Areas of the 24 Different Ontario Hospitals Represented by (n=28) respondents	Hamilton Waterloo: 4/24 Kingston Ottawa & Near North: 3/24 North West: 1/24 GTA Near North: 3/24 GTA: 6/24 North East:2/24 London Windsor & Near North: 5/24	
Community type served by Primary Hospital of Employment (n=24)	Urban	5/24 (21 %)
	Large Community	8/24 (33%)
	Small Community	6/24 (25%)
	Small Community Rural or Rural	5/24 (21%)

Table 2. Survey Results from Maternity Anesthesia Providers in Hospitals with <2000 deliveries per annum (n= 14)

Respondent training	Anesthesiologist 4/14 (28.6%) Family Physician Anesthetist 10/14 (71.4%)
Age in Years: Mean (SD)	44.8 (7.5) [32-56]
Gender	Male 12/14 (85.7%) Female 2/14 (14.3%)
Years in practice since training completed Mean (SD), [Minimum-Maximum] (n=14)	13.9 (8.7), [2-30]
Respondent years in practice since training completion (n=14)	<5 years : 3/14 (21.4%) 5-9years: 3/14 (21.4%) ≥10 <20 years: 3/14(21.4%) ≥20 years: 5/14 (36%)
Total number of hospitals worked at on a regular basis (1 or more days per week)?	1 12/14 (85.7%) 2 2/14 (14.3%)
Total number of anesthesia providers in the primary hospital of employment (excluding locums working less than 1 day per week): Median [Interquartile range]	Median 4 providers; Interquartile range [3-5.25]
Frequency breakdown of responses related to number of physician anesthesia providers in departments of Anesthesia	Frequency Percent ≤2 providers 2/14 (14.3%) 3 to 4 providers 5/14 (35.7%) 5 to 6 providers 3/14 (21.4%) >6 providers 2/14 (14.3%)
Estimated Hospital Labour Epidural Rates per annum	Range 5%-35%
Average estimated epidural wait time for women requesting an epidural (who actually receive one)	4-6hours
University Affiliated?	Yes 5/ 14 (36 %)

Table 3. Survey Results from Maternity Anesthesia Providers in Ontario hospitals with ≥ 2000 deliveries per annum (n= 10)

Respondent training	Anesthesiologist : 10/10 (100%) Family Physician Anesthetist: 0/14(0%)
Age in Years: Mean (SD) [Minimum-Maximum]	44.4 (7.6) [35-53]
Gender	Female 3/10 (30%) Male 7/10 (70%)
Years in practice since training completed. Mean (SD), [Minimum-Maximum]	13.4 (8.4), [3-25]
Years in practice since training completion	<5 years : 2/10 (20.0%) 5-9years: 4/10 (40%) ≥ 10 <20 years: 1/10 (10%) ≥ 20 years: 4/10 (40%)
Total number of hospitals worked at on a regular basis (1 or more days per week)? (n=9)	1 8/9 (89%) 2 1/9 (11%)
Total number of anesthesia providers in the primary hospital of employment (excluding locums working less than 1 day per week): Median [Interquartile range] (n=9)	20 providers [14.5-23.5] Frequency Percent <10 providers 0/10 (0%) 10-20 providers 5/10 (50%) ≥ 21 providers 5/10 (50%)
Estimated Hospital Labour Epidural rates per annum	Non-tertiary: 70% (60-80%) Tertiary: 70% (67.5-70%)
Estimated Average Epidural Wait Time	Non-tertiary: 30- 1 hour Tertiary: 30minutes (<30minutes to 30minutes)
University Affiliated?	Yes 7/10 (70%)

Table 4. Methods Used to Provide Anesthesia for Elective Cesarean Section in their Primary Hospital of Work (n=24 Ontario Hospitals)

Number of deliveries per annum	Spinal	Epidural	Combined Spinal Epidural	General Anesthesia
<2000 (n=14)	Median 95%; 25 th & 75 th percentiles [87.5-98.0]; Minimum-Maximum: [40-100%]	Median 1.5%; 25 th & 75 th percentiles; [0.0-5.75] Minimum-Maximum [0-20%]	Median 0%; 25 th & 75 th percentiles [0-0.0] Minimum-Maximum [0.0-56%]	Median 2%, 25 th & 75 th percentiles [1- 5]; Minimum – Maximum [1-5%]
≥2000 non-tertiary obstetric centres (n=4)	Median 94%; 25 th & 75 th percentiles [92.3, 97.3]; Minimum – Maximum [92-98%]	Median 4%; 25 th & 75 th percentiles [1, 5.5]; Minimum – Maximum [0- 6%]	Median 0%; 25 th & 75 th percentiles [0, 0.75] Minimum – Maximum [0-1%]	Median 1.5% 25 th & 75 th percentiles [1-2.75] Minimum-Maximum [1-3%]
≥2000 tertiary obstetric centres (n=5)	Median 90% 25 th & 75 th percentiles [77.5,93.5] Minimum – Maximum [75-95]	Median 2% 25 th & 75 th percentiles [0.5, 7.5] Minimum-Maximum [0-10]	Median 3% 25 th & 75 th percentiles [0.5, 11.5] Minimum-Maximum [0-18]	Median 4.5% 25 th & 75 th percentiles [2.5, 7] Minimum-Maximum [2-9]

Focus Groups

Table 5. Characteristics of Focus Group Participants (n=24) representing 21 Different Ontario Hospitals

Age Mean (SD)	43.8years (7.2)
Gender	Female 5/24 (20.8%) Male 19/24 (79.2%)
Designation	Anesthesiologist 14/24 (58.3%) Family Physician Anesthetist 10/24 (41.7%)
Year training completed Mean (SD)	13.7 (8.4)
Total number of hospitals in which the participant works on a regular basis (1 day or more per week) (n=23)	1 hospital only 20/24 (87%) 2 hospitals 2/24 (8.7%) 3 hospitals 1/24 (4.3%)
Number of hospitals represented by geographic location in Ontario (n=21 different hospitals)	Hamilton Waterloo: 4/21 Kingston Ottawa & Near North: 2/21 North West: 1/21 GTA Near North: 3/21 GTA: 5/21 North East:2/21 London Windsor & Near North: 4/21
Description of primary hospital location	Urban 3/21 (14 %) Large Community 8/21(38%) Small Community 5/21 (24%) Small Community Rural or Rural 5/21 (24%)