POLICY BRIEFS

Issues in Rural Maternity Care

APPLIED POLICY RESEARCH UNIT

FOCUSING ON RURAL HEALTH

CENTRE FOR RURAL HEALTH RESEARCH

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Optimal Perinatal Surgical Services for Rural Women

Background

> "Rural maternity services show system stresses early and are particularly vulnerable to shifts in provider supply or availability for intra-partum care. Several consultations have pointed to the importance of sustained availability of c-section capacity in preserving the small maternity services. The availability of general practitioners with c-section (or general surgery) skills or anaesthesia skills could play a significant role outside of urban areas. There are tensions within the medical community that make it difficult to develop a concrete next step with regard particularly to GP Surgery but also GP Anaesthesia." - *Issue 13 of B.C.'s Primary Maternity Care Action Plan, 2012*

Starting early in 2012, B.C.'s Ministry of Health initiated province-wide key-stakeholder consultations to establish a set of consensus-derived action items for a provincial primary maternity care agenda. The move came from recognition of signs of system instability, particularly in rural settings where over 20 small maternity services have closed in the past 10 years, and resulted in the provincial Primary Maternity Care Action Plan document. Although larger systemic problems – such as disparate funding models providing disincentives to inter-professional practice – exist and demand a longer horizon to resolve, collaborating partners identified a series of short term (12 – 18 month) 'action items' resulting from the issues identified that could affect immediate change. One such issue (Issue 13, quoted above) concerns meeting the perinatal surgical needs (caesarean section) of rural women.

Tensions regarding the role General Practitioners with Enhanced Surgical Skills (GPESS) have included concerns over privileging, credentialing, education and regulation, alongside residual questions regarding the safety of procedural care in low-resource environments. These concerns have opened the debate and created the opportunity to consider the larger question: what is the best way to meet the perinatal surgical needs of rural women? This is asked against the backdrop of regionalization in British Columbia and the Ministry's vision of care 'Closer to Home'[27] for rural women within a political context of fiscal restraint.

Research on rural health services begins with the recognition that rural services are not 'like urban services, only smaller',[16] but instead involve unique relationships between providers and the community. Historically, B.C. has relied on General Practitioners with Enhanced Surgical Skills (GPESS) to provide surgical maternity services in rural and remote locations, and currently 39 such providers are practicing in rural B.C. The closure of 21 rural maternity centres since 2000 has radically transformed care patterns for rural women.

In December 2013, Perinatal Services B.C. and the Ministry of Health sought evidence from the Applied Policy Research Unit in the Centre for Rural Health Research at the University of British Columbia on the optimal level of centralized or decentralized maternal surgical services. Through a comprehensive review of international literature on rural models of birthing, a distributed model of surgical backup provided by GPESS was found to be both safe and effective.

SUMMARY

Perinatal surgical services in rural B.C. are in crisis. Since 2000, 21 maternity centres have closed and more are considered unstable.

The preference of women to deliver safely close to home is clear. The lack of local surgical capacity is linked to much higher rates of referral out of the community.

Distance to care is associated with worsened outcomes and increases in accidental, out-of-hospital births. Care should be provided as close to home as is organizationally feasible with defined service targets for all communities.

A comprehensive review of the international literature has shown that General Practitioners with Enhanced Surgical Skills (GPESS) can safely and effectively deliver perinatal surgical care in low-volume settings.

The fundamental challenge to providing operative backup for deliveries in rural communities is lack of availability of surgical providers.

Rural recruitment and retention is paramount to address rural workforce shortfalls.

The cost-effectiveness of maternal surgical care models remains largely unknown.

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AT A GLANCE

- Canada's neonatal mortality rate is 3.5 per 1,000 live births, ranked 40th in the world.
- Over 6 million Canadians live in rural and remote communities.
- Since 2000, 21 rural B.C. hospitals have stopped offering maternity services.
- 39 GPESS currently practice in B.C..
- GPs provide perinatal surgery care in the United States, Australia, New Zealand, Finland, Norway, Sweden, and the UK.
- A comprehensive review of international literature found that GPESS surgical care is safe for low-complexity procedures.

"Calculations that would integrate all costs do not exist, and often, the costs of a birth facility are simply divided by the number of births. Studies that include all the relevant costs do not exist." - *Hemminki, Heino, & Gissler 2011, p1192*

Safety and Outcomes

Recent population-based evidence demonstrates better outcomes for women and their newborns if they can access services in their home community[78, 153, 171] and point to the positive impact that local obstetrical surgical services make to the proportion of women who can be delivered in their home community (on average >75% vs. <30% if maternity services are provided with and without local caesarean section respectively).[98, 105, 121, 212]

Rural perinatal surgical care was demonstrated to be safe and effective in a number of ways. GPESS surgical back-up was found to meet surgical guidelines[55, 112, 190] and community expectations.[36, 229] As well, GPESS perinatal surgical care was found to be safe and effective relative to specialist care for simple procedures, including c-section.[7, 78, 90] No clinical, case study, or qualitative evidence was found that basic maternal surgical care, including c-section, is less safe when provided by GP proceduralists with enhanced surgical skills than when provided by specialist obstetricians.

Population level data from various international settings shows that low-volume settings are also safe. The balance of evidence shows excellent outcomes for low-risk women in low-volume settings around the world[87, 114, 157, 209, 218] and even improved outcomes in low-volume settings when maternal health factors are controlled for.[63, 192]

Three studies since 1990 from high-income countries found poorer outcomes among small units.[86, 143, 150] However, each showed exemplary outcomes in even the smallest volume units from an international perspective, with extremely small absolute differences in perinatal mortality between the largest and smallest units among low-risk pregnancies.

Meanwhile, evidence indicates significant negative health impacts from greater distance to care consequent of centralizing births to higher-volume units, with one study suggesting an increase in risk by a factor of 0.01 for every minute of travel to care.[170] That number is consistent with data from B.C. that found women with more than 240 minutes to travel to care faced a more than three-fold increase in the likelihood of neonatal mortality.[77] As well, accidental, out-of-hospital births increased significantly with small unit closure,[87, 148] and the crude risk of neonatal mortality is six times higher in such undesirable circumstances.[77, 87, 217]

→ Basic maternal surgery services (including c-section) can be safely offered in rural settings and by GPs with enhanced procedural skills

→ Volume-to-outcome associations do not appear to be applicable in low-risk maternity care

→ Greater distance to care associated with increased centralization leads to both higher risk of poor outcomes and a greater rate of accidental, out-of-hospital births

Sustainability and Satisfaction

Patient preference for safe and trustworthy care close to home is clear. Women report feeling more involved in their care, increased empowerment, and greater satisfaction along with greater familiarity birthing in their home community.[16, 83, 98, 116] As well, negative psychosocial affects are associated with traveling to care, including a lack of support, isolation, and fear,[117] though the clinical implications of psychosocial challenges are understudied.

Sustainability of rural practice is dependent on efficient recruitment and retention of surgical service providers. This challenge of recruitment is noted in international literature. The reality of a declining rural workforce is common to all jurisdictions covered in this review. In the B.C. context, 90% of B.C.'s GPESS workforce is over 45 years of age and 60% are foreign trained.[99]

Considerable evidence indicates that medical students and residents are more likely to choose rural practice with positive, early exposure to rural environments, including but not limited to medical education in a rural setting.[5, 38, 43, 51, 61, 80, 127] Such programs are in early stages in every jurisdiction, with limited data

on their impact on sustainability. A rural track training program is in development at the UBC medical school and will complement the existing program at the University of Saskatchewan as the second in Canada.

Beyond recruiting providers into rural practice, retention requires action at the policy level, as some estimates suggest that rural track graduates enter rural practice at a rate as low as 40%.[61]

A consistent theme in the research literature is that rural providers feel overextended by the expectation to perform beyond usual role delineations. Burnout is related to burdensome on-call schedules and lack of professional supports, [38, 88, 101] and exceptional stress was reported among providers in hospitals where the maternity unit was closed due to the fear of emergency deliveries of local parturient women.[203]

Still, the satisfaction of existing rural providers is highly related to the opportunity to work to their maximum potential, including a more varied case mix and opportunities for procedural practice.[2, 11, 97, 101] The literature demonstrates the need for adequate locum support to allow for Continued Medical Education and better quality of life, better on-call support, and professional support including access to advice from specialists.[69, 163, 224]

→ Lack of sustainability is due largely to workforce shortage issues, including recruiting and retaining care providers in low-volume setting

→ Sustainability is also related to challenges with training and prepapredness for rural practice

→ Educational programs have a significant role in attracting new practitioners to rural practice; strategies include recruiting students from rural settings and early social and professional exposure to rural evironments

Costs and Cost-Effectiveness

The cost and cost-effectiveness of distributed rural care is a largely unstudied subject. Centralization is broadly assumed to be more cost -effective on principles of efficiency of scale and concentrated capital costs, but evidence suggests that distance to care leads to unintended morbidity, and though no study has quantified the costs to women and their families, we know qualitatively that out-of-pocket costs of travel can be a barrier to optimal care.

The centralization of capital and health human resources are assumed to be more cost effective because of efficiencies of scale. However, no data was found in this review to support this claim. In fact, very limited data exists in the academic or grey literature regarding the cost of models of care for maternal surgery. Higher rates of intervention are found in high-resource environments, even among low-risk women,[167, 174, 224] and though limited in scope, there is evidence from Australia that women who undergo c-section represent greater cost to the health system than do women who undergo even complicated vaginal delivery.[8, 173] In addition to limited data on the capital and health human resource costs of maternity care, significant gaps exist regarding unintentional and out-of-pocket costs.

Some evidence suggests that women living in high-outflow communities are at higher risk of additional complications and length of stay longer than 5 days in hospital, which is in keeping with findings of worsened outcomes from greater distance to care. The mean cost of infant care in high-outflow communities in Washington State was significantly higher ($1,041) than the mean cost of infant care in low-outflow communities ($817).[153] Here in B.C., higher rates of admission to NICU units and longer stays in both NICU2 and NICU3 beds were found for women who travel 1-2 hours to care.[76]

As well, costs exist outside the health system which can affect access to care. Some travel costs are borne by women and their families, including accommodation in the referral community and food. Neither of these are currently covered in B.C.'s medical Travel Assistance Program, and are just part of a mixture of factors that create fear of women presenting to formerly closed maternity units.[203]

GLOSSARY

Centralized Health Care is the organization of health services around concentrated infrastructural and health human resources, usually for specialized and high-tech procedures such as coronary catheterization.

Decentralization means to maximize local access, with specialist service availability based on population size and characteristics. Appropriate examples include chronic disease management and maternity care.

Regionalization involves the devolving of administrative responsibility for the delivery of health services to geographically-defined regional zones. Rural service delivery occurs within a tiered system of increasingly specialized care in which women attend the unit best suited to their anticipated needs.

GPESS: Terminology applied to general practitioners with enhanced procedural training and skills varies by jurisdiction. These providers are alternately called GP Surgeons, GP Obstetricians or GP Proceduralists.

The **Applied Policy Research Unit (APRU)** is an arm of the Centre for Rural Health Research focused on producing and synthesizing policy relevant research to inform rural maternity service planning in a timely, user-friendly way.

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Qualities of Rural Perinatal Surgical Models of Care

No descriptions of rural perinatal service delivery models in this review were either entirely centralized or entirely decentralized; they instead exhibited characteristics of both models with varying degrees of geographic and service-level integration. Qualities of successful systems, whether centralized or decentralized, included the following:

1) High degrees of inter-professional cooperation. Rural surgical services require enthusiastic support from the medical community and inter-professional support between midwives, GPs, specialists/consultants, anaesthetists and nurses;[38, 55]

2) Specialist support in rural settings, particularly fly-in specialist services for remote communities;[203]

3) Practitioners working to their broadest scope of practice at each tiered level of service;[97]

4) Clearly articulated referral criteria, referral pathways and transfer processes within a region;[154]

5) Attention to local contextual barriers to care such as language, geography, and climate.[56]

Recommendations

The following summative recommendations are based on a comprehensive reading of the research evidence included in this summary and applied to the British Columbia health planning context.

1. Care should be provided as close to home as is organizationally feasible. **"Close to Home" must be defined and operationalized with service targets for all communities.**

2. The extent of population need for perinatal surgical services should define the organizational feasibility for local care, regional care, and subspecialized care.

3. Population need should be defined by the numbers of births in the population served, the characteristics of the births (complexity, risk), and community/regional geography.

4. Population catchments should be established for local community, regional referral, and subspecialized care, and population outcomes should be linked with the responsible services.

5. The service, whether local, regional or subspecialized, should be resourced by integrated teams of practitioners working to the full extent of their skill set, be they generalists with enhanced skills, specialists or subspecialists.

6. These integrated networks of surgical care should be established between referral services and smaller community services which would include outreach surgical support to the smaller centres.

7. Measurement of outcomes should be grounded in utilization patterns starting with normative goals for the catchment population and compared to similar populations.

8. Perinatal surgical system management should support innovative service evolution identified through outcome monitoring and leading to 'scaling up' where appropriate.

For details of the literature cited within this brief, please see the full report, *Optimal Perinatal Surgical Services for Rural Women: A Realist Review*, available on our website at www.crhr.ca/apru

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