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COMMENTARY

Rural health service planning: the need for a comprehensive approach to costing

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ABSTRACT

The precipitous closure of rural maternity services in industrialized countries over the past two decades is underscored in part by assumptions of efficiencies of scale leading to cost-effectiveness. However, there is scant evidence to support this and the costing evidence that exists lacks comprehensiveness. To clearly understand the cost-effectiveness of rural services we must take the broadest societal perspective to include not only health system costs, but also those costs incurred at the family and community levels. We must consider manifest costs (hard, easily quantifiable costs, both direct and indirect) and latent costs (understood as what is sacrificed or lost), and take into account cost shifting (reallocating costs to different parts of the system) and cost downloading (passing costs on to women and families). Further, we must compare the costs of having a rural maternity service to those incurred by *not* having a service, a comparison that is seldom made. This approach will require determining a methodological framework for weighing all costs, one which will likely involve attention to the rich descriptions of those experiencing loss.

Key words: Australia, Canada, comprehensive costing, cost, health planning.

Introduction

In rural Canada and Australia, as well as in most other industrialized nations, we are currently witnessing the constriction of maternity services, characterized by the movement of services away from rural communities and into more populous settings. This has been prompted by a variety of factors including the general move towards healthcare centralization in the age of subspecialists[1,2], growing risk aversion in the absence of such specialists[3-5], challenges recruiting and retaining providers to work in low resource environments[6-9] and, ostensibly, costs[10-12].

An argument used to support the centralization of services has been one of safety. This is underscored by the assumption that high procedural volume is assumed to be related to safer birth[13-15]. It is our view that this argument has been settled with substantial evidence pointing to the safety of small (low volume) obstetric units[16-28].

We would like to build from this evidence base to consider a relatively unexplored assumption underscoring debates on centralized versus decentralized rural services: that centralized services are more cost-effective.

The assumed efficiencies of scale embedded in the centralization model are believed to lead to cost-effectiveness. However, we have been unable to find any evidence to support this, particularly when we take a societal perspective[29]. For residents of rural communities, this assumption has meant the loss of local access to many rural health services, and the attendant decrease in healthcare-related jobs that can spiral into diminished social capital and loss of future development for a community[30,31]. Maternity care for rural populations is notably impacted, with psychosocial[32,33] and physiological consequences[17,34-36] following local service closures[13-16].

We suggest that health planners must consider taking a societal perspective *to measure comprehensive costs when planning health services*. This imperative is not without its challenges.

From an evidence-based planning perspective, decisions must be made to determine what constitutes reasonable access to maternity care services for rural populations and what evidence we have with respect to comprehensive costs. We suggest that health planners are still determining the answer to the former and identifying significant evidence gaps in the latter. The goal of this article is to signal an overt step towards a conceptual framework and methodology for inclusive costing of rural maternity and other health services.

Triple aim framework: an organizing structure

A current driver in healthcare planning is adherence to the Institute of Healthcare Improvement's Triple Aim, a framework designed to optimize health system performance[37]. At its most basic, optimization involves simultaneous attention to improvement in three key determinants: population health, the experience of care, and per capita costs. Although theoretically sound, several authors have acknowledged the gap between the framework and its successful implementation[38,39], leading to a suggested set of preconditions necessary to accomplish its realization[39]. The first precondition is a clear definition of the population of concern as a baseline for understanding its 'experience of care, its health status, and the per capita costs of caring for it'[40]. Further, a clear understanding of external policy constraints is fundamental to successful implementation, along with the existence of a coordinating service to maintain focus on all three dimensions equitably.

To these suggestions, we would add the need for an additional precondition: taking a societal perspective in measuring costs when planning health services. It is crucial for us to include outcomes such as psychosocial stress in our costing equations. These, alongside potential physiological consequences of lack of access to care, are an essential

baseline for understanding true cost[17,33-35]. Neglecting these realities will lead to an inadequate appraisal of influencing factors and, more importantly, decision consequences.

Cost shifting and indirect costs as system influencers

Even in standard practice, consideration of the immediately tangible, quantifiable, and manifest costs of maintaining a rural maternity service raises significant challenges to comprehensiveness. The challenges are rooted in the propensity to count costs that are easily measured (capital, operating, and provider) without regard for cost shifting (reallocating costs to different parts of the system), cost downloading (passing costs on to women and families), or additional external costs.

Cost shifting

Cost shifting includes the transfer of expenses for things that are no longer in the domain of the body responsible for running local services but are still incurred by the system. In the example of the closure of a small primary maternity service, this would include facilities and provider costs in a different location, perhaps outside of the administrative boundaries of the local health authority. Although immediate costs will not be borne by the local administration, they will be incurred in other parts of the system (assuming the birth takes place somewhere with the support of some other professional). The displaced births will likely occur 'upstream' at a hospital with a higher level of service and more frequent interventions, ultimately at a higher overall cost. From a societal costing perspective, birthing women and families need to spend more money on travel, food, and/or childcare while they are birthing in a hospital further from home[41]. In this scenario, costs removed from the health service system do not simply disappear, but are downloaded onto women and families who have to travel for care.

Indirect costs

There will be some indirect cost consequences with the closure of a local service. In the instance of rural maternity care, maternal stress precipitated by lack of local services resulting in complications such as preterm delivery and low birthweight infants is a reality that can lead to increased days in neonatal intensive care and the attendant costs of this admission[17]. These additional costs were noted in a provincial study in British Columbia reviewing outcomes based on distance to care. The study also found that the smaller cohort of women who live in remote communities that are referred to a larger community hospital have a three times higher perinatal mortality rate associated with travelling more than 4 hours[17].

Further indirect costs need to be considered as potentially contributing to the cost shift. These may include events potentially related to travelling for maternity care, such as emergency response costs of roadside deliveries or, worse, response to traffic accidents due to road conditions and/or driving in an emergency situation.

Psychosocial costs

In a comprehensive framework, consideration of costs requires attention to what is sacrificed or lost to achieve the desired goal. This should include psychosocial and cultural costs to women and their families, which have been rigorously documented in both Canada and Australia. They include increased stress and anxiety throughout pregnancy, labor, and delivery[32]; the absence of kinship and community support at the time of birth[42]; and the potential disruption of family relationships[42]. Cultural consequences are articulated most vividly by Aboriginal communities, and have been described as the loss of the closure of the cycle of life and death (when there is only death and never birth in the community), and the loss of maintaining the lineage of historical connection to the land[43].

Table 1: Framework for comprehensive costing of rural maternity care services

Costs of having services versus costs of not having services Across service levels: communities (1) without maternity care, (2) with primary care but no access to cesarean section, (3) with surgical backup supported by general practitioners with enhanced surgical skills	
Manifest costs (system costs collected from existing administrative data)	**Latent costs** (individual and familial costs gathered through structured interviews with key stakeholders)
• Capital costs (operating room, equipment) • Annual operating costs (supplies, equipment cleaning and sterilization) • Emergency travel expenses • Equipment maintenance	• Travel to referral community • Accommodation in referral community if travel occurs in the prenatal period • Food expenses additional to what would be incurred in the course of regular life • Miscellaneous expenses, which may include child or house care, long-distance telephone calls, and extraneous daily supplies • Lost wages for partners, taking into account the considerable variation that will occur

Towards an inclusive methodology

Low representation in the political process is an inherent disadvantage for rural communities: available voters often do not provide enough weight to sway political decision-making, let alone elections. If we can accept, as the adage suggests, 'not everything that can be counted counts, and not everything that counts can be counted'[44], we are compelled to find alternative ways of acknowledging the indirect, hidden, latent costs incurred by these communities. The methodology to do this will be rooted in the rich descriptions of those suffering such losses and must be reconciled alongside the 'hard' and 'soft' costs incurred. Further, it is the narrative itself that will alert us to categories of meaningful consideration that might otherwise be overlooked. Description, however, is not measurement, and the difficulty of creating a metric to capture the psychosocial and cultural 'loss' of local service closure is evident.

Pursuit of a framework

The pursuit of a framework for the comprehensive costing for rural maternal health services must start by comparing costs of services weighed against costs of *not* having services. Table 1 represents a starting place for delineation. Weighing the costs of services against the costs of *not* having services should be done across three defined rural maternity care service levels: for communities without maternity care, for communities with primary care but no access to cesarean section, and for communities with surgical backup supports by general practitioners with enhanced surgical skills. Within these groups, there are a variety of manifest (immediately identifiable) costs when providing maternity care services in the community, and latent (hidden) costs when referring birthing women outside the community. These two types of cost are applicable to the three defined rural maternity care service levels.

Although it may be tempting to attribute dollar amounts to the latent costs so they can be more easily reconciled with the concrete costs, this would be an error of reduction open to either under- or overrepresenting the 'costs of separation'. Instead, they should be recognized as a source of key context in interpreting concrete costs. These costs must be gleaned through structured interviews with mothers, healthcare providers, hospital administrators, and community members.

Conclusions

The latent cost consequences of rural maternity care closures are difficult to not only measure, but also capture as a category of consideration within the pragmatic costing framework we currently apply to health care. We have articulated the clear evidence for loss and cost due to the psychosocial[32,33] and physiological consequences[17,34-36] for childbearing women. We anticipate that the process of thinking through the potentially wide-ranging effects of local services needed – or the loss of those services – in a comprehensive analysis will lead to a more accurate understanding of the cost–benefit ratio. Until we have developed a mechanism to acknowledge and account for costs in an inclusive way, however, the assumption that centralized services are more efficient must be viewed with significant suspicion.

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