

# Initial Steps in Developing and Implementing a Canadian Obstetric Survey System (CanOSS) for Severe Maternal Morbidity



I. Malhamé

Isabelle Malhamé, MD, MSc;<sup>1,2</sup> Marian Knight, MBChB, MPH, DPhil;<sup>3</sup>  
Rohan D'Souza, MD, PhD<sup>4</sup>

<sup>1</sup>Department of Medicine, McGill University Health Centre, Montréal, QC

<sup>2</sup>Centre for Outcomes Research and Evaluation, Research Institute of the McGill University Health Centre, Montréal, QC

<sup>3</sup>National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford, Oxford, UK

<sup>4</sup>Departments of Obstetrics & Gynaecology and Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, ON

For every woman who dies during or after pregnancy in high-income countries, around 85 experience severe maternal morbidity (SMM).<sup>1</sup> SMM refers to a set of unexpected maternal outcomes related to pregnancy, labour, childbirth, and the postpartum period resulting in severe illness, prolonged hospitalization, and/or long-term disability.<sup>2</sup> Examining SMM in high-income countries such as Canada is essential to monitor and improve the quality of obstetric care.<sup>3</sup>

To standardize population-based surveillance and facilitate cross-country comparisons, the World Health Organization describes several methods for identifying SMM.<sup>3</sup> In Canada, the Canadian Perinatal Surveillance System has operationalized a definition of SMM by using administrative codes for diagnostics, interventions, and conditions that signify organ failure.<sup>4</sup> These efforts have allowed a description of trends and regional variations in the incidence of SMM; evaluation of risk factors, risk markers, and predictors of SMM; and identification of priority conditions to target for SMM reduction at a national scale.

Despite their many advantages, use of administrative databases to identify persons with SMM and generate actions to improve care and outcomes has certain limitations. First, some conditions considered to be or lead to SMM may not be identifiable through administrative databases because codes are not specific enough or may not exist (e.g., obstetric hypertensive emergency). Second,

epidemiologic studies using administrative datasets inherently lack the granular and qualitative data necessary to access the narratives behind SMM events, comprehensively examine the temporal sequence of events leading to SMM, analyze the interplay between clinical and social determinants of health, and assess specific elements to address to prevent SMM events going forwards. Finally, the perspectives of affected individuals, families, and the health care team cannot be obtained through administrative databases. These limitations can be addressed through the establishment of a survey-based enquiry on cases of SMM, to complement ongoing epidemiologic studies.

The United Kingdom established its Obstetric Surveillance System (UKOSS) in 2005. UKOSS is a nationwide, anonymized, online, case-reporting system.<sup>5</sup> The UKOSS centralized study team sends monthly requests for notifications to nominated individuals in each maternity unit in the country. Once an SMM subtype is identified as having occurred, a data collection form is provided to collect anonymized information on individual SMM events (including a description of clinical and social risk factors, management strategies, and outcomes). The study leads

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subsequently analyze the case report forms, summarize key findings, and issue recommendations that are disseminated widely to effect change in practice. This method has allowed UKOSS to gather granular data on over 50 conditions since 2005. For instance, having identified eclampsia as a leading cause of SMM in the United Kingdom, UKOSS gathered nationwide data on all cases of eclampsia for a year and identified important facts about this preventable condition.<sup>5</sup> This study highlighted that almost 80% of women with eclampsia had experienced preeclampsia symptoms in the week prior to the event.<sup>5</sup> Moreover, among women with preeclampsia and eclampsia, only 6% had received magnesium sulfate for seizure prophylaxis.<sup>5</sup> Understanding the symptomatology of affected patients and distinguishing prophylactic from therapeutic use of magnesium sulfate would not have been possible using administrative data alone. Since the initial publication of these findings, a reduction in deaths from eclampsia has been observed in the United Kingdom. Importantly, UKOSS has enabled rapid implementation of surveillance on the impacts of the pandemic on pregnancy-related outcomes. The efficiency and success of UKOSS' methods has prompted other countries to develop national obstetric survey systems that are part of the International Network of Obstetric Survey Systems.

Canada would benefit from a similar reporting system to complement ongoing surveillance. The UKOSS reporting model would be particularly well suited to Canada's complex health care setting and geography. Data collection at the local level would allow for adequate representation of each unit in national estimates of SMM, irrespective of urban or rural status, or participation in regional/provincial networks and/or databases. This reporting system would reflect the true diversity of the Canadian population, including individuals not usually captured within administrative databases (e.g., persons without health care insurance coverage) and would represent a wide range of practice settings and providers involved in maternal care. Moreover, a changing list of conditions to survey reflecting local priorities would ensure timeliness of the reported data. A participatory approach at the grassroots level, facilitating the engagement of local stakeholders in maternity units, would

maximize the relevance and applicability of reported findings.

To design and adapt a UKOSS-like reporting model for SMM in Canada, we must first understand the current state of morbidity reporting systems across the country, explore the preferred and most feasible methods for gathering granular data on a national scale, and identify challenges posed by disparate systems of maternity care delivery across and within Canadian provinces and territories. In addition, we must obtain local perspectives on leading causes of SMM to inform the list of conditions to target for surveillance using the obstetric survey system, as well as the type of data elements to be collected. In partnership with Canadian organizations providing care to and gathering data on pregnant women, we will conduct a nationwide feasibility study engaging representatives of maternity units across Canada.<sup>4</sup> This mixed-methods study will identify local surveillance systems for SMM, determine barriers to and facilitators of data collection and sharing, and gain insights on local perspectives about leading causes of SMM. The valuable information gained through this study will be the initial step in the development and future implementation of a Canadian obstetric survey system (CanOSS), with the ultimate goal of preventing both SMM and its long-term consequences.

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