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Contents lists available at ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

SPECIAL ARTICLE

Establishment of a national severe maternal morbidity preventability review in New Zealand

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ARTICLE INFO

Article history:

Received 18 January 2016

Received in revised form 16 March 2016

Accepted 22 June 2016

Keywords:

Preventability audit

Severe maternal morbidity

ABSTRACT

Severe maternal morbidity (SMM) review is an accepted quality measure to evaluate maternity care standards. Assessment of the potential preventability of SMM enables identification of factors and themes to inform clinical training and policy to improve maternal outcomes. The present report outlines the introduction of a national/regional external case review system using multidisciplinary panels to assess potential preventability of SMM, to assist other health jurisdictions to establish similar processes. Implementation steps are outlined including ethics, engagement with health services, recruitment and training of panel clinicians, identifying and preparing cases, and structuring meetings. More than 100 clinicians from all District Health Boards in New Zealand were recruited to form six panels. From August 2013, each panel met quarterly to review. By August 2015, 374 anonymized cases had been reviewed for potential preventability and practice improvement themes. This process established a quality monitoring tool to quantitate potential preventability of SMM, and identify practice and policy themes that can be reported locally and nationally for quality improvement. To our knowledge, this is the first national SMM preventability review using an internationally validated tool enabling intercountry comparisons. On the basis of this research, the New Zealand Ministry of Health funded the translation of the process to ongoing SMM national preventability review.

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1. Introduction

A case of severe maternal morbidity (SMM) is defined as “a very ill pregnant or recently delivered woman who would have died had it not been that luck or good care was on her side” [1]. Alongside maternal mortality review, SMM audit is widely accepted as a quality measure for evaluating the standard of maternity care [2]. WHO recognizes the importance of addressing maternal morbidity and recommends: 1) baseline assessment (or reassessment) of maternal morbidity, 2) situation analysis, and 3) interventions for improving health care [2]. Assessing the potential preventability of SMM cases enables themes to be identified that can be developed into educational interventions, clinical training initiatives, and policy changes to improve maternal outcomes [3,4].

Globally, maternal mortality and morbidity review is undertaken in various forms and can occur at a hospital, regional, or state level [5,6]. The US Centers for Disease Control and Prevention recommends establishment and standardization of SMM review processes [7,8]. European examples of SMM review include the Netherlands Obstetric

Surveillance System [9] and the Scottish Confidential Audit of Severe Maternal Morbidity [10].

In New Zealand, maternal deaths are reviewed by an external multidisciplinary panel under the Health Quality and Safety Commission. This Perinatal and Maternal Mortality Review Committee reports annually [11], and all maternal deaths are assessed to establish whether any potentially avoidable factors were involved. However, preventability of SMM has not been previously examined in detail in the country; in-depth review of SMM preventability is the obvious next step.

In 2013, following a feasibility study, the Women's Health Research Centre at the University of Otago, Wellington, New Zealand, established a national multidisciplinary, external, anonymized case review process to assess potential preventability of SMM using a validated tool [4,12]. Up to August 2015, 374 cases had been reviewed, and the most common preventable factors identified were clinician related (e.g. delays in identification of high-risk patients and in treatment). The present report outlines the methods, timeline, and tools used to establish a national review, and the challenges and solutions encountered, to assist other health jurisdictions to establish similar processes.

2. Setting

New Zealand is divided into 20 District Health Boards (DHBs) funded by the Ministry of Health to provide health services in their district [13].

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Maternity services are publicly funded, although women can choose to pay for a private obstetrician. A pregnant woman registers with a lead maternity carer (LMC). As of 2013, 81.6% of women booked with a self-employed midwife, 5.5% with an obstetrician, 1.1% with a general practitioner, and 11.8% with public hospital teams [14]. If there are complications, the LMC usually refers the patient to a hospital obstetric team for transfer of care [15].

3. Process

For the implementation of the present case review process, approval was obtained from the national Health and Disability Ethics Committee and local ethics committees (each DHB has its own ethics committee), and through Maori consultation (the indigenous people of New Zealand). Patient consent was not needed because the SMM review process was recognized as an audit.

Globally, different criteria are used to identify cases of SMM [16,17]. The inclusion criteria for the present review were women who were pregnant or within 42 days of delivery who were admitted to an intensive care unit (ICU) or high-dependency unit in New Zealand. Admission to an ICU is used internationally as a proxy for identifying a SMM case [18], has high sensitivity and specificity [17], and will identify approximately 30% of all SMM cases [19,20].

To enable identification and review of SMM cases, recruitment of panel members, and engagement of senior administrators, relationships had to be established with clinicians in each DHB. The lead clinician in every ICU and high-dependency unit was contacted and provided with information about the study and the role of ICUs and intensivists in the review. Once this contact was established, the research team organized a meeting in each DHB with other clinicians from ICUs and maternity and anesthetic departments to inform them about the review process.

From August 2013, a designated clinician from each ICU or high-dependency unit—nominated by the lead ICU clinician—kept a record of admissions fulfilling SMM criteria and emailed monthly lists to the research team. The research team followed up with monthly calls to ensure no missed cases. Every person in New Zealand has an individual National Health Index code (NHI number) that allows tracking of health events, hospital admissions, and death of that individual [21]. Once the research team was notified of a case, a study number was assigned. The ethnic origin and deprivation index were matched via NHI by Ministry of Health information data [21] for analysis once the case had been reviewed to minimize bias among the reviewers. The deprivation index in New Zealand gives a range of socioeconomic statuses derived from the national census [22].

Clinical notes were obtained from all care providers involved—hospital staff, primary care providers, and LMCs—after notification of cases had been received. A liaison midwife from each DHB was funded by the study to help to obtain all clinical notes for each case. Hospital notes were ordered via the hospital medical records departments. The liaison midwife contacted the LMC of the case, and any prenatal/delivery/postnatal notes not included in the hospital notes were requested, giving the LMC detailed information explaining the anonymized, non-punitive nature of the review. Clinical notes were checked to ensure all were complete (e.g. operation notes, anesthetic charts, and medication charts present) and were then copied, and original notes were returned to the DHB. The copy was de-identified for patient, clinician names, hospital, and DHB (leaving clinician designation [e.g. “specialist obstetrician,” or “charge midwife”]). Ethnic origin was de-identified to reduce potential bias during case review. Clinical notes were summarized by the author (E.J.M.) or a midwife funded by the study giving the salient points in the continuum of care.

Each case was discussed at review meetings attended by panels of clinicians. The 20 DHBs were organized into two streams—A and B—and cases from each were reviewed by the other to ensure that no practitioner reviewed a case that had been through his/her DHB. This

streaming took into account the size of the DHB, annual number of births, and ethnic origin breakdown (using NZ Ministry of Health 2011 maternal ethnic origin data [23]) so that each stream contained a roughly equal number of births and had similar ethnic origin, rural/urban, and secondary/tertiary hospital mix. Because of the number of DHBs and clinicians involved, each stream was divided into three panels (6 panels in total).

Medical practitioners—midwives and specialists, such as obstetricians, anesthetists, and intensivists—were eligible for panel membership if they had at least 5 years’ full-time clinical experience. Each panel was multidisciplinary with two obstetricians, two anesthetists, one intensivist, and two self-employed and two DHB midwives. Neonatologists and general practitioners were sometimes included. Each panel was a mix of urban and rural, academic and non-academic clinicians. Optimum panel size was 10–15 people. The recruitment of clinicians from each DHB was rolled out across 2 years from early 2013.

The research team used a “snowball” method of recruitment for the panels [24]. At DHB visits, key individuals provided contact details of other clinicians from their specialties. These clinicians were then contacted to ask about interest in attending panel meetings and in this way, panel member recruitment was achieved. Once the panel meetings were underway, interest from other clinicians occurred through word of mouth, as well as articles, conference presentations, and talks given by the research team. Clinicians attended as part of non-clinical work, continuing professional development, or as part of a quality/audit component of their job unless they attended in their own time.

From August 2013, panel review meetings were held quarterly in a central medical school in New Zealand. Most panel members travelled to the meeting by airplane unless they lived locally. Twice a year, new panel members attended a training session the day before the review meeting. This involved presentation of the background to the SMM review including a summary of literature, presentation of data to date, and guidance on confidentiality. Several cases were presented and discussed, which enabled attendees to become familiar with the system, the process of case review, and coming to consensus about potential preventability. The training session gave clinicians the opportunity to meet fellow clinicians from across several DHBs. The aim was to train as many as possible so that attendance at review meetings could be shared.

The panel review meetings lasted 1 day, with 10 SMM cases discussed at each. Each case was presented by a member of the panel. If possible, cases were matched to the expertise of the panel member—e.g. a difficult intubation case was sent to a panel anesthetist, a postpartum hemorrhage after vaginal delivery to a panel midwife, and a case of a surgical complication to a panel obstetrician. Case summaries were couriered to each panel member 2 weeks before the meeting date; individuals presenting a case also received one full set of copied, de-identified clinical case notes. The research team provided a chairperson and a scribe.

This study used the Geller model for assessing potential preventability [25]. This model (Supplementary Material S1) has been shown to be reproducible and feasible, and has been validated, in the New Zealand setting [3,12,26]. Preventability is defined as “any action or inaction on the part of the health care provider, the system, or the patient that contributed to the progression to more severe morbidity” [4]. For example, an initial hemorrhage might not be preventable, but the severity of the progression of hemorrhage might be (i.e. development of hypovolemic shock). The criteria for assessing preventability relate to the continuum of care from point of entry to maternity care to discharge from care. Additionally, the criteria define whether the factor refers to provider (clinician), system, or patient.

Each case was systematically marked for each factor (present or absent) and discussed, and consensus was reached giving an overall assessment of whether the SMM case was potentially preventable or not. Each case was assigned to one of three groups: 1) potentially preventable, 2) not preventable but improvement in care needed, or 3) not preventable. Key themes and action points were identified by

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