

# Maternity Early Warning System



## Factsheet for midwives

While most childbearing women move through pregnancy, birth and postpartum in a healthy way, the physiology of pregnancy creates many possibilities for clinical deterioration. Early recognition and response are crucial to achieve good outcomes for the unwell woman. At times, the failure to recognise deterioration, escalate care and respond appropriately can cause preventable harm. To address this, we are encouraging maternity services, and the wider hospital, to establish a system for managing the care of pregnant, or recently pregnant (up to and including 42 days later), women who deteriorate while receiving care in hospital.

Recognition and response systems should include:

- a nationally standardised maternity vital signs chart (MVSC) with an early warning score (or electronic equivalent)
- localised escalation pathway documented and readily accessible
- effective clinical governance and leadership
- appropriate clinical and non-technical education
- ongoing measurement for improvement
- an escalation process when a clinician, a woman, or her family and whānau have concerns.

Engaging with and involving clinical (including lead maternity carer (LMC) midwives), operational and executive staff is critical to establishing a successful and sustainable maternity recognition and response system.

### Background

Already 15 of the 20 district health boards (DHBs) are using a local version of maternity early warning scores. The local early warning score charts vary significantly in the vital signs and other recordings they include, and in the specific trigger thresholds within each parameter. Having a national maternity early warning system (MEWS) has potential benefits.

- Standardisation may improve safety and reduce duplication of the effort and resources required to educate the maternity workforce.
- It encourages collaboration between disciplines in developing local escalation protocols that are aligned to a standardised tool for recognising deterioration and are timely, consistent and clinically appropriate.

About 470 pregnant women each year in New Zealand suffer from severe maternal morbidity resulting in admission to intensive care units or high-dependency units. An estimated 48-76 percent of unplanned maternity admissions to these units were potentially preventable.<sup>1</sup> Reviews of women who deteriorated as a result of sepsis have found that delays in recognising and responding to deterioration are a key theme and that earlier recognition and/or treatment of these women could have improved their care.

## What is the maternity early warning system (MEWS)?

The MEWS consists of a nationally standardised MVSC (or electronic equivalent) with an early warning score and a localised escalation pathway.

### Scope

You should begin using the MVSC for any pregnant, or recently pregnant ( $\leq 42$  days), woman who is assessed as needing or admitted requiring repeat observations of vital signs. Do not use the chart for routine intrapartum care. In the rare situation where a woman is identified with pre-existing or emerging concerns during labour (eg, known cardiac condition or emerging sepsis), you may use it to supplement the partogram. Women who require intensive or high-dependency care do not require the MVSC. Women who are well and healthy, and under primary maternity care should plan the frequency of observations with their LMC midwife, who documents them in the care plan or clinical record (as usual).

The escalation and response systems that your area establishes will follow a mandatory pathway for getting help from progressively more senior and appropriately skilled responders as a woman's condition deteriorates. These systems make it possible to intervene early, prevent adverse outcomes, reduce severe maternal morbidities – such as needing a blood transfusion, admission to an intensive care unit, or stroke – and foster a clinical culture of routinely calling for help when needed.<sup>2,3</sup>

## What is my role?

Midwives have an important role in identifying deterioration early and escalating care during pregnancy and after birth. We strongly encourage you, as an LMC midwife, to use the MEWS when indicated for the women in your care. We encourage you to plan the frequency of observation requirements in partnership with the woman and document them clearly in the care plan or clinical notes. Where women have complex conditions during pregnancy, labour or birth that require in-hospital stay, they will need closer monitoring and assessment through the MEWS.

If anyone else identifies deterioration, they will communicate with the LMC midwife. If the situation is acute, requiring an emergency response, the LMC midwife should be called and updated, and emergency transfer of clinical responsibility will occur if required.<sup>4</sup>

## How does it work?

### Maternity vital signs

A core vital sign set to establish a total MEWS score includes:

- respiratory rate (RR)
- oxygen saturation determined by pulse oximetry ( $SpO_2$ )
- supplemental oxygen administration
- body temperature (temp)
- systolic blood pressure (SBP)
- diastolic blood pressure (DBP)
- heart rate (HR)
- level of consciousness (LOC).

You use the core vital sign set to calculate a total MEWS score. Note that both systolic and diastolic blood pressure are involved in this calculation. The vast majority of situations require a full set of eight vital signs every time to generate a MEWS score. However, in the following situations – initial management of hypertensive diseases, iron infusion, intrathecal opiates or patient-controlled analgesia – where repeated respiratory rates are required, it may not be necessary to take all the vital signs each time. When these observations taken between routine full sets of recordings are being recorded, it is not possible to calculate a MEWS total. In these situations record an 'EX' for exemption instead of a score in the MEWS total box on the MVSC. If any of the observations taken between routine full sets of recordings is in the pink or blue zones, this should still trigger activation of the escalation pathway. (Use of 'EX' only applies within maternity services.)

### **Total MEWS score**

In both pregnant and non-pregnant women, early warning scores help to identify acute illness and deterioration. You calculate the total MEWS score based on the core vital sign set. The score increases the further a woman's vital signs are from the normal range. Higher scores are linked with increased morbidity and mortality.

Because pregnancy involves physiological changes and because both systolic and diastolic blood pressure are important, the early warning score must be specifically designed for women who are pregnant or have been pregnant in the last 42 days and who are assessed as requiring repeat vital signs observations.

Possible scores for each core vital sign parameter range from 0 (normal range) to 3 (grossly abnormal). You add together the individual scores for each core vital sign parameter to calculate the total score. The total MEWS score can trigger escalation of clinical care and review by a senior clinician. The system also allows for a single vital sign parameter to trigger escalation with extreme deviation from the normal range scoring high enough to trigger escalation.

### **Escalation pathway**

The escalation pathway outlines the actions to take when a total MEWS score, or a single parameter score, indicates the woman is deviating from the normal range. The escalation pathway outlines a tiered clinical response to increasingly abnormal MEWS scores. The rapid response team becomes involved if a woman reaches the threshold for this level of care.

### **Monitoring plan**

A monitoring plan sets out the requirements for frequency of vital sign monitoring and any observations in addition to the core observation set. The lead clinician and/or clinical team with overall responsibility for the woman's care agree to the plan and include it in the woman's clinical record.

### **Rapid response team**

The rapid response team includes doctors and nurses with skills in critical care. They attend when critical physiological deterioration is recognised and provide immediate bedside clinical support 24 hours a day, seven days a week. For maternity patients, this care may also include consulting with or directly involving midwives and relevant medical (obstetric, physician or anaesthetic) staff.

Working with your local maternity service in the early stages of establishing the site-specific escalation process is crucial to develop a responsive system. Developing local escalation pathways requires representative leadership from all clinicians involved in the care of deteriorating women (who may include local representatives from the New Zealand College of Midwives and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists). Escalation pathways must be women-focused, respect midwives' autonomy, and identify when obstetric or other specialist input is needed.<sup>5</sup>

Maternity recognition and response systems are not only about clinical responses to deterioration. Their effectiveness depends on underpinning structures for clinical governance.

Clinical leaders with accountability for governance of the system will need to consider issues such as relationships with LMC midwives, resourcing and sustainability, clinical communication and education, measurement and evaluation, and quality improvement.

Effectively implementing this system, so it leads to improved outcomes for women, relies on achieving a culture of care where it is routine for all clinicians to seek, and receive, timely advice from appropriately skilled responders.<sup>6</sup>

## Where can I get more information?

Your local maternity service will have a project team involved in establishing the national MEWS. Check with the national MEWS programme team for contact details for the local maternity service.

The clinical leads for the national MEWS programme team are:

- Gail Austin, maternity specialist (midwife) Health Quality & Safety Commission
- Dr Leona Dann, patient safety specialist Health Quality & Safety Commission
- Dr Matthew Drake, clinical lead obstetric anaesthesia
- Dr Suzanne Esson, clinical lead obstetrics.

Please email your query to [mews@hqsc.govt.nz](mailto:mews@hqsc.govt.nz) and we will forward it to the most appropriate team member.

## Information of special relevance to midwives

Midwives identify risk factors for early deterioration and prompt careful monitoring of the woman,<sup>7</sup> such as suspected retained products of conception, prolonged rupture of membranes, and post manual removal of placenta.

Physiological changes related to pregnancy can mask early indicators of deterioration.<sup>8</sup> If you are concerned about a woman's condition, record a full set of observations and activate the local escalation pathway as appropriate.

The referral guidelines support a clear pathway to transfer clinical responsibility in an emergency and emphasise the importance of effective communication between all clinicians and the woman, her family and whānau.<sup>9</sup>

Partnership is a founding principle for maternity care in New Zealand. As the midwife, your relationship with the woman may help you recognise acute altered mental state early and seek an early response.<sup>10</sup>

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- 1 Sadler LC, Austin DM, Masson VL, et al. 2013. Review of contributory factors in maternity admissions to intensive care at a New Zealand tertiary hospital. *American Journal of Obstetrics & Gynecology* 209: 549.e1–7.
  - 2 Parfitt S, Bogat M, Hering S, et al. 2017. Sepsis in obstetrics: clinical features and early warning tools. *American Journal of Maternal/Child Nursing* 42(4): 199–205.
  - 3 Mhyre J, D'Oria R, Hameed A, et al. 2014. The maternal early warning criteria: a proposal from the national partnership for maternal safety. *Journal of Obstetric Gynecologic & Neonatal Nursing* 43(6): 771–9.
  - 4 Ministry of Health. 2012. *Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines)*. Wellington: Ministry of Health.
  - 5 Martin R. 2015. Midwives' experiences of using a modified early obstetric warning score (MEOWS): a grounded theory study. *Evidence Based Midwifery* 13: 59–65.
  - 6 Banfield P, Roberts C. 2015. *The early detection of maternal deterioration in pregnancy*. The Health Foundation Inspiring Improvement.
  - 7 Parfitt S, Bogat M, Hering S, et al. 2017. Sepsis in obstetrics: clinical features and early warning tools. *American Journal of Maternal/Child Nursing* 42(4): 199–205.
  - 8 Shields L, Wiesner S, Klein C, et al. 2016. Use of maternal early warning trigger tool reduces maternal morbidity. *American Journal of Obstetrics & Gynecology* 214: 527.e1–6.
  - 9 Ministry of Health. 2012. *Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines)*. Wellington: Ministry of Health.
  - 10 National Clinical Effectiveness Committee. 2014. *Sepsis Management National Clinical Guideline 6*. Dublin: Department of Health.