Recognising and responding to deterioration in the pregnant inpatient woman

The New Zealand national maternity early warning system (MEWS) preparation and implementation guide

February 2019

About this guide

This guide helps project leads and teams prepare for and implement a nationally consistent maternity early warning system (MEWS). It sets out the aim of the national MEWS programme, components to implement, available support, and recommended activities during the prepare, implement and sustain periods.

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Introduction

The health of pregnant women can deteriorate for many reasons. At times, the failure to recognise signs of deterioration, escalate care and respond appropriately can cause preventable deterioration. We encourage maternity services and the wider hospital to establish a system for managing the care of pregnant, and recently pregnant (up to and including 42 days later), women who deteriorate while receiving in-hospital care.

A maternity early warning system includes:

- a nationally standardised maternity vital signs chart (MVSC) with an early warning score (or electronic equivalent)
- a localised escalation pathway
- effective clinical governance and leadership
- appropriate clinical and non-technical education
- ongoing measurement for improvement
- an escalation process for a clinician, a woman or her family and whānau to raise concerns
- use of observations of the fetus, where appropriate, as a marker of maternal acute illness to prompt escalations of care.

The Health Quality & Safety Commission (the Commission) will work with hospitals to establish and/or improve their recognition and response systems for pregnant and recently pregnant women. The system we are introducing is called the national maternity early warning system or MEWS.

The initial focus is on getting the clinical, local measurement and governance components of the system in place. Linking these components into the hospital-wide clinical governance group responsible for patient deterioration, which is probably already established, is critical to the success of MEWS in maternity services. It will also help to spread the system across the wider hospital to services caring for pregnant women outside of maternity wards, such as general surgical and orthopaedic wards.

We are asking hospitals to prepare for and implement these improvements between February 2019 and March 2020. We recognise that existing maternity early warning systems vary. For this reason, maternity services and hospitals will differ in the timeframe they need to prepare and implement system improvements and adopt the national MEWS across the entire hospital.

Figure 1: Timeline for preparing for, implementing and sustaining the national MEWS project

Engaging with and involving clinicians, including lead maternity carers (LMCs) and operational and executive staff, is critical to establishing a successful and sustainable MEWS.

Recognising and responding to maternal deterioration is also part of the broader organisational patient safety system so should not be seen in isolation. It interacts with many other organisational and hospital policies, programmes and processes, for example:

- programmes for improving hospital safety after-hours
- clinical orientation and education programmes
- audit, measurement and quality improvement processes
- policies outlining expectations for patient monitoring, clinical communication and documentation.

The case for change

Internationally, and in New Zealand in recent years, maternal morbidity reviews have highlighted opportunities for improvements in systems for recognising and responding to deteriorating maternity inpatients. A literature and environmental scan supported the need for a national MEWS (download it at www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources/publication/3369).

The following evidence and principles contribute to the rationale for a national MEWS.

- Notifications to the Maternal Morbidity Working Group indicate approximately 470 pregnant women each year in New Zealand suffer from severe maternal morbidity resulting in admission to an intensive care unit or high dependency unit.
- Delays in recognising and responding to deterioration are a key theme in the reviews of women who deteriorated due to sepsis. Earlier recognition and/or treatment of these women could have improved their care.[1]
- An estimated 48–76 percent of unplanned maternity admissions to intensive care units and high dependency units are potentially preventable.[2,3]
- Despite mixed evidence of outcome benefits in the literature, maternity early warning systems are already in use in 15 of the 20 New Zealand district health boards (DHBs). These systems vary significantly in the vital signs and other parameters they use for the maternity early warning score, and in their specific trigger thresholds within each parameter.
- Some services record the vital signs of a pregnant or recently pregnant woman on the national adult vital signs chart. This chart does not reflect the physiology of pregnant women, which differs from the physiology of the general adult population. An early warning system with a vital signs chart specifically designed for pregnant women sets tighter parameters and thresholds for identifying specific conditions.
- Standardisation offers potential safety benefits and opportunities to reduce duplication of the effort and resources required for educating the workforce.
- When fully implemented, the national MEWS should promote more equitable outcomes for women. It should ensure women are treated equitably when they receive care in hospital, because their care is tailored in response to their individual clinical need.

[1] Maternal Morbidity Working Group. 2018. *Maternal Morbidity Working Group Annual Report 1 September 2016 to 31 August 2017.* Wellington: Health Quality & Safety Commission.
[2] 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.
[3] Lawton B, MacDonald EJ, Brown SA, et al. 2014. Preventability of severe acute maternal morbidity. *American Journal of Obstetrics & Gynecology* 210: 557.e1–6.

- Embedding local policy that confirms usage criteria (eg, frequency of observations) and implementing the national MEWS should make unconscious bias and human error less likely in health care. This should also promote more equitable outcomes.
- Developing localised escalation pathways aligned to a standardised tool to recognise deterioration is an opportunity for interdisciplinary collaboration. Health professionals can work together to develop response systems that are timely, consistent and clinically appropriate.

The Commission has been working with DHBs to improve their adult (non-maternity) recognition and response systems through the patient deterioration programme. We recommend that they align the MEWS with this existing resource and that teams work together in a hospital-wide approach.

Please note that the New Zealand adult early warning score (NZEWS) differs from the maternity early warning score in some ways. See *The New Zealand national maternity early warning system (MEWS) maternity vital signs chart user guide (MVSC user guide)* in the MEWS compendium for more information.

National MEWS aim

The Maternal Morbidity Working Group has developed a nationally consistent, standardised approach to recognising and responding to the acute deterioration of pregnant, or recently pregnant (up to and including 42 days later), inpatient women. It has worked in collaboration with key stakeholders to develop a system that is fit for purpose and operates effectively in New Zealand maternity settings.

The aim of the MEWS is to reduce:

- harm through using a consistent process across the country
- duplication of effort across multiple DHBs.
- the number of pregnant and recently pregnant women admitted to intensive care units and high dependency units
- the length of stay of pregnant and recently pregnant women in intensive care units, high dependency units and the maternity service.

Figure 2: Model of maternity early warning system requirements

As Figure 2 illustrates, system requirements for the MEWS are:

1. **organisational structure** – clinical governance and leadership
2. **accountability/mandate** – clearly delineated lines of accountability for monitoring and improving the system, and a national mandate for implementation
3. **education** – clinical education that targets the skills and knowledge required to effectively recognise and manage acute maternal deterioration in a speciality- and role-specific manner
4. **associated clinical practice** – identifying associated clinical practices such as communication, referral pathways and interdisciplinary teamwork
5. **tool development** – adopting the national MVSC, including clear parameters
6. **localised escalation pathways** – developing local escalation pathways that allow appropriate clinical escalation and are aligned with the section 88 referral guidelines[4]
7. **measurement and monitoring** – measuring the system with the ability to collect and collate this information and report on findings locally, regionally and nationally, to ensure effective implementation and sustainability
8. **information technology enablers** – that help with measurement and data collection, and provide an interface between electronic vital signs systems and the national maternity clinical information system.[5]

[4] Ministry of Health. 2012. *Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines).* Wellington: Ministry of Health.
[5] Also known as 'Badgernet' or the 'National Maternity Record'.

Critical groundwork for successful implementation

We are asking all hospitals to have the following in place before they begin implementing the MEWS.

- Establish or confirm strong governance arrangements. The maternity governance group must take responsibility for developing and monitoring local policy and implementation, including guidance on criteria and frequency of vital sign observations. The governance group is also responsible for ensuring the organisation has the staffing and other capability to implement the MEWS.
- Establish a project team, including an executive sponsor, as an allocated human resource for preparing and implementing MEWS. The project team should include:
  - midwifery, obstetric and obstetric anaesthesia leads
  - champions across all disciplines, for example, midwifery educator, maternity quality and safety coordinator
  - identified resource for auditing and monitoring
  - quality improvement advisory input, for example, a representative from the wider hospital quality improvement team
  - administrative support
  - communications support.
- Include one or more maternity members on the hospital-wide clinical governance group responsible for patient deterioration. This group has clinical leaders accountable for ongoing oversight, sustaining and improving the wider hospital recognition and response system. Once the MEWS is embedded in maternity services, spreading it across all hospital services will involve the wider adult recognition and response team.
- Develop an agreed project charter that includes what will be implemented, the approach that will be taken, who will be involved, a data measurement and collection plan and strategies for engaging key stakeholder groups.
- Develop a localised escalation pathway that the appropriate clinical governance group(s) agree to.
- Educate staff and LMCs on the national MVSC, early warning score and localised escalation pathway.
- Have a measurement plan in place to monitor the system, to ensure women are receiving equitable care (ie, care that is tailored to their individual clinical need), and equal escalation and response, regardless of their age, ethnicity and language.
- Bundle all equipment into one ‘go-to’ piece as a more efficient approach for midwifery and nursing staff (eg, a blood pressure machine that has an attached saturation probe, cuffs and thermometer). This should be in line with the ‘releasing time to care’ programme.

Where hospitals and maternity services are using electronic vital signs systems like Patientrack and/or the national maternity clinical information system, we ask them to implement the national MEWS score within these systems. They will still need to have the paper-based national MVSC available in case of electronic system interruptions.

The national patient deterioration programme and the MEWS test sites both found that the following four factors were important for successful implementation.

Clinical engagement	Improvements will have an impact on the way that clinicians recognise and respond to deterioration in pregnant women. Make clinicians aware of the proposed changes, give them the opportunity to share their concerns and listen to them. Use data and stories to overcome initial scepticism and disengagement. Bring discussions back to the crucial rationale for the changes: they are about patient safety. Clinicians must take this reason on board so that they buy in to the MEWS and so that you can 'take the team' with you through the initial implementation period.
Clinical governance and leadership	Recognition and response systems require a whole-of-hospital approach for sustained improvement. A strong clinical governance group is needed to ensure that the system is adequately supported and functioning successfully. It is essential that maternity has representation on the hospital-wide patient deterioration clinical governance group in the DHB for support and guidance. Having strong and visible clinical leads for midwifery, obstetrics and anaesthesia will help with reaching agreements, resolving issues and raising awareness. Midwifery educators played a significant role in the MEWS test sites and will form a key role in any future implementation. Obstetric leadership will also be essential to ensure medical staff are well-orientated to their roles and responsibilities within the MEWS. Shift champions can help staff in their clinical areas and are important to support staff.
Measurement	Measuring helps teams and clinical governance groups understand how successful the implementation is and identify areas for quality improvement. The process and outcome measures are included in the measurement guidance. Teams will need to develop a measurement plan to identify how they will collect data for these measures.
Clinical and quality improvement capability	Clinical governance groups need to ensure recognisers and responders have the right capabilities for managing acute deterioration in the maternity inpatient. Building quality improvement capability within teams helps with implementing improvements and understanding how to use the data collected.

Tools, guidance and support for hospitals

Tools and guidance

Specific tools and guidance have been developed to help you prepare for and implement the clinical, local measurement, and governance components of the MEWS. Table 1 summarises these tools for each component of the MEWS.

Table 1: Maternity early warning system components with supporting tools and guidance

System component	Supporting tools and guidance
Recognition National maternity vital signs chart (MVSC) with maternity early warning score (or electronic equivalent)	• MVSC master version (editable pdf) • MVSC user guide • Escalation mapping tool • Factsheet − the eight vitals
Response Localised escalation pathway	• Factsheet for project teams − capabilities • Factsheet for clinicians − sepsis • Factsheet for clinicians − hypertension • Factsheet for clinicians – supplemental oxygen • Factsheet for clinicians − clinical communication tools
Clinical governance A strong clinical governance group is needed to ensure that the system is adequately supported and functioning successfully	• Recommendation that a maternity representative is included on the hospital-wide patient deterioration clinical governance group • Clinical governance recommendations, including maternity clinical governance to have MEWS as a standing agenda item • MEWS example policy
Education Clinical and non-technical education of recognisers and responders to acute deterioration in the maternity inpatient	• MEWS education (PowerPoint) and eLearning module • Factsheet for senior clinicians and clinical leads • Factsheet for midwives • Factsheet for clinicians − FAQs • MVSC educational poster
Measurement Agreed measures, collection processes, reporting to clinical governance and operational management and feedback mechanisms to wards and other areas	• Measurement guidance • Audit form • Case review • Data collection tool (Excel spreadsheet)

Additional materials are available to support initial implementation, including:

- project charter template
- current system assessment template
- stakeholder assessment template
- countdown to launch posters
- two stickers to aid clinical documentation, one for escalation and the other for response by the rapid response team.

All of these tools are available in the MEWS compendium (hard copy), in the zip file provided and on the Commission website (www.hqsc.govt.nz/mews).

Support for hospitals

Our support to you will include:

- an initial regional learning workshop
- opportunity to buddy with a previous test site – let us know if you would like to take up this option
- monthly teleconferences via Zoom
- on-site visits, email and phone support as required
- tools and guidance to help you prepare for and implement the MEWS (this compendium)
- national clinical expertise and advice for clinical leads and teams.

The clinical leads are: Dr Suzanne Esson, Obstetrics and Gynaecology Consultant at Canterbury DHB, Dr Matthew Drake, Specialist Anaesthetist at Auckland DHB together with Maternity Specialist (Midwife) Dr Leona Dann at the Commission. The clinical leads can provide advice to DHB clinical leads and teams and present at relevant maternity meetings and grand rounds or equivalent. Midwife Fiona Coffey provides midwifery advice on behalf of the New Zealand College of Midwives.

The other members of the national programme team are:

- Emma Forbes, Senior Project Manager – project management and measurement guidance
- Anna Lee, Programme Coordinator – project coordination and support.

Email us at mews@hqsc.govt.nz and your email will be forwarded to the most appropriate team member.

Steps for implementation

In this section, we've grouped activities under the main implementation steps: plan; prepare; count down; and implement and sustain. You may already have made progress in one or more of these areas – if so, review the activities below to make sure you have covered everything.

1. Plan what you will do and how you will do it

☐ Establish the project team and executive sponsor(s)

Consider what skills, networks and knowledge you need to complete the project, such as:

- quality improvement
- data analysis
- organisational networking and strategic leadership
- project management
- clinical knowledge and leadership from both ward and responder perspectives.

Make sure the project team includes representatives from different staff groups (including LMCs and quality improvement) who can actively contribute to the project. Assign team members specific activities to lead and contribute to. You may need to establish smaller working groups to tackle specific issues this work highlights. Consider how long the project team will be in place and how to support them.

Having one or more executive sponsors raises the profile of the project and communicates to other staff that the project is a priority for your organisation. Confirm with your executive sponsor(s) what dedicated time the team and other staff can commit to participate. Find out what other support and resources are available, such as through your communications team.

☐ Agree project oversight and project progress reporting

Work with your executive sponsor(s) to agree project oversight and reporting lines. You may already have a related committee or group that you can fit the project into, such as the Maternity Quality and Safety Programme. You will need to link project oversight to ongoing maternity service clinical governance as a standing agenda item. Reporting progress raises the profile of the work you are doing and keeps you focused on what needs to be done and when. It also allows you to raise risks, challenges and issues where you need help.

☐ Align the project to your organisation's aim

Aligning the project to your organisation's aim, values and strategic plan helps you engage with senior members of your organisation. You can communicate how your project relates to and benefits your organisation.

☐ Know your starting point

Your organisation may have already established components of the MEWS. Document what you currently have and what processes are working well or need improvement in the 'current system assessment template' in the MEWS compendium.

Find out what data your organisation already collects about women's deterioration, who uses it, where it is reported and what it is used for. This could include data from audits, national minimum data set reports, complaints, adverse event reporting, intensive care data, transfers to other hospitals and global trigger tool reviews.

Does the data tell you what you need to know about your system from a process, outcome and balancing perspective?[6] For instance, consider the following questions.

- What are the rates of rapid response team calls to maternity (per 1,000 admissions)?
- How often are urgent calls made for severely unwell women and how timely are the responses?
- What is the rate of unplanned transfers from maternity services to higher levels of care (eg, intensive care or another hospital)?
- Is your current escalation pathway used as intended?
- Do you have the right team members responding to escalation?

☐ Agree what you are trying to accomplish

It's important to know what you want to accomplish. You may wish to develop a driver diagram[7] as a starting point – your quality improvement advisor can help you with this. With your team, create a clear statement of your aim. This helps with confirming the scope of your project. You may need to clarify the terms and definitions that you use so that your team and organisation share a common language. We recommend using a quality improvement approach and having support from a quality improvement advisor in your DHB. See Appendix 1 for more on a quality improvement approach.

☐ Agree how you will know that you have been successful

Develop and agree how you will measure successful and sustainable implementation with your team. Creating agreed outcome and process measures will also help you monitor implementation and track improvements in the system. There are some measures we want you to collect and report at various stages. Your organisation may want further measures collected to inform local evaluation and improvement. Review the *measurement guidance*, *case review*, *audit form* and *data collection tool*, and develop a measurement plan within your project charter.

☐ Confirm what you will be implementing, as well as when and how you will implement it

Get agreement on what you will be implementing, how you will implement it, what you need to have in place, who will do it and when you need to start preparing staff. Set a realistic launch date. Build in preparation time to:

- engage with clinicians to develop your local escalation pathway
- provide education about using the system – this is essential to ensuring everyone understands why your organisation is using it and to achieving team buy-in and successful change management
- consider whether responders may need extra clinical education to give them the right capabilities for managing acutely deteriorating women.

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[6] Langley G, Moen R, Nolan K, et al. 2009. *The Improvement Guide: A practical approach to enhancing organizational performance.* (2nd edn). San Francisco, CA: Wiley Imprint.

Process measures are used to measure whether an activity has been accomplished and can be leading indications of whether the outcome measure is likely to be impacted**.**

Outcome measures are used to measure the performance of the system, they relate directly to the aim of the project and provide evidence that changes made are having an impact at the system level.

Balance measures monitor that there is no negative (unintended consequence) from the project.

[7] Langley et al (see note 6). A driver diagram describes the theory of improvement and is a tool to help organise ideas. Update it as the project progresses and new information becomes available.

The MEWS will need to be available across the whole hospital. In this way, pregnant women in the emergency department and other clinical areas, such as an orthopaedic ward, will have their observations recorded on the MVSC. The escalation pathway is appropriate for those areas as well as maternity wards.

You may choose to implement your system using a staged approach to roll-out such as in maternity wards before the whole hospital. Alternatively, you may choose to implement across your whole hospital(s) at the same time. With the latter approach, you may be able to use organisation-wide communication tools and strategies to help with implementation. However, you will also need to consider the resources and time needed to adequately train and support clinicians in using the new system.

Whatever implementation approach you take, you will need to work with the adult patient deterioration team and clinical governance group to learn what worked well for their implementation and to get their support for using MEWS outside of maternity wards. The NZEWS and the MEWS scores differ in some ways, which clinicians will need to understand once a hospital is using MEWS outside of maternity.

Having local champions who can help staff in their clinical areas during preparation and implementation is important to success.

☐ Do a stocktake of your existing clinical equipment

Bundle all equipment into one 'go-to' piece as a more efficient approach for midwifery and nursing staff (eg, a blood pressure machine that has an attached saturation probe, various size cuffs and thermometer). Also ensure you have sufficient equipment for each clinical area. This should be in line with the 'releasing time to care' programme.

☐ Build in sustainability

Consider at this planning stage how you will sustain the changes you introduce over time. Ongoing clinical leadership and governance structures for the system are critical, as project teams are generally short term, focusing on initial implementation. Remember to consider how your champions will continue their roles. We suggest using the NHS Sustainability Model[8] to guide your planning. This will help you identify areas where you need to focus for successful and sustained system improvement.

☐ Know who you need to engage with to accomplish your goal

Engaging with staff and other stakeholders such as LMCs will be crucial to the success of the implementation. Below is a three-step process you can follow with your project team.

1. Identify who your stakeholders are. Consider how you engage with women, their families and whānau. Identify the key clinical groups. Do you know how many in each group you have? Do you know how you can best access members of these different groups (eg, do they have key meetings where you can present and seek input into your work)? Which staff groups outside of the implementation areas will be affected? For example, emergency or intensive care nurses and doctors, members of the resuscitation team and allied health workers should be aware of MEWS and how to escalate care. Occasional visitors to maternity wards such as physicians and anaesthetists should also be aware of MEWS and its associated escalation pathway. Midwife and nurse educators, switchboard

[8] NHS Institute for Innovation and Improvement. 2010. *Sustainability Model and Guide*. Coventry: University of Warwick. URL: http://webarchive.nationalarchives.gov.uk/20160805122021/http://www.nhsiq.nhs.uk/media/2757778/nhs_sustainability_model_-_february_2010_1_.pdf (accessed 13 February 2019).

staff and stock control staff will support its implementation. Think about operational and senior management groups that you need to engage with.

2. Assess how much influence these groups have on the success of the project and how much interest they have in it. Use the *stakeholder assessment template* in the MEWS compendium for this step.
3. Once you have assessed the groups, identify champions who can help you (high impact and high interest) and those groups you need to directly engage with to increase their level of interest and involvement (high impact and low interest).

☐ Agree how you will engage with staff and other groups

Now that you've agreed who you need to engage with, work out how you will do this. Every member of the project team has a part to play in this work. Look at existing staff meetings, networks or communication pathways such as grand rounds, departmental meetings, existing teaching and in-service education sessions, and LMC liaison meetings. Use a mixture of formal meeting presentations and informal discussions.

Consider how to frame the messages to influence and engage staff. Developing an elevator pitch (a three-minute project summary) could help with this. Think about who will be the right people to do the engagement. An enthusiastic peer or champion may need to speak with some groups. Direct peer-to-peer engagement within the same staff group is often required to effectively communicate your key messages. Ask your communications team to help you reach the wider staff group through the intranet or existing newsletters.

You will need to conduct engagement activities throughout preparation and implementation. The messages you give may change to reflect the progress you have made. Consider what data (eg, audit data, case review findings, and outcome measures) you should report to different groups and in different forums (eg, at medical rounds, or at ward or mortality and morbidity meetings). Use the *factsheet for senior clinicians and clinical leads* and the *factsheet for midwives* to support your engagement work.

☐ Document agreements

Bring all the agreements you have made into the *project charter template* in the MEWS compendium (or use your own organisation's project charter template). This will help guide your work.

2. Prepare to implement the national MEWS

☐ Establish clinical governance for your system

Review the *clinical governance recommendations*. Identify what you need to do to establish the ongoing clinical governance group for your MEWS – you could make it part of the terms of reference for an existing maternity clinical governance group, or you may want to establish a new group. Your MEWS should be part of the organisation-wide patient safety system and the governance group for the adult recognition and response programme.

The maternity governance group should take responsibility for developing and monitoring local policy and implementation, as well as guidance on criteria and frequency of vital sign observations. The governance group is also responsible for ensuring the organisation has the staffing and other capability to implement the MEWS. The maternity clinical governance group will need its terms of reference to outline its reporting expectations and structures. This includes expectations for reporting data back to clinicians using the system, and up to groups with organisational oversight such as the wider hospital patient deterioration clinical governance group, the clinical board, the executive team and the DHB board.

☐ Agree your local escalation pathway by completing the escalation mapping tool

Work through the *escalation mapping tool*. This helps you decide what level of response is required for each level of clinical abnormality that different MEWS score ranges represent. If you have different types of hospitals within your DHB, they may need different escalation pathways to reflect the time needed to transfer women to a higher level of care. You may need to develop local variations to your escalation pathway for specialist areas such as emergency departments.

Find multiple opportunities to discuss the proposed escalation pathway with different clinical groups so that they understand the implications for their work. Once your clinical governance group(s) has (have) agreed the escalation pathway, add it to the MVSC. See the *MVSC user guide* for instructions on how to do this.

☐ Assess the challenges and opportunities for the MEWS

Changing your current recognition and response system will bring both challenges and opportunities. With the team, brainstorm what these could be. Think about how staff currently interact with the system and the team cultures, processes and responses that underpin actions. Identify what you will do to maximise the opportunities and address the challenges, especially in spreading MEWS beyond maternity areas.Use the list below to prompt exploring the challenges, opportunities and actions in your organisation:

- women
- staff – midwives, nurses and medical staff
- LMCs
- non-maternity clinical areas
- environment
- processes
- tasks
- time to respond
- team culture
- communication and documentation
- education
- equipment and resources.

☐ Update your local policies

Do a stocktake of policies that relate to your maternity early warning system. Review and update the policies to reflect the national MVSC with national MEWS score, modification rules and escalation pathway. Use the *MEWS example policy* as a guide. This is an opportunity to reduce the number of policies if you can combine documents. Consider how MEWS policy links with the adult patient deterioration policy or equivalent.

☐ Update your existing clinical documentation

If you already use a specific vital signs chart for maternity, consider where you will document the parameters that are not included on the MVSC. This is an ideal opportunity to review clinical paperwork and where possible to amalgamate it, eliminate duplication and remove obsolete documentation. Reducing paperwork and making what remains more relevant will be a real positive outcome of the project for staff.

☐ Do a stocktake of your existing vital signs charts

Make sure you have enough stocks of your current chart to use until you launch. Arrange with the person who manages the printing to stop further production of your current chart. Find out when you need to have the new version of the chart to your printer, so stocks will be ready for launch. Agree the date and time when you will make these new stocks available to areas and remove old stock. Discuss the new chart launch date with clerical staff putting together notes bundles for upcoming admissions.

☐ Communicate your project to the organisation

Share what you are doing with the wider organisation and create opportunities for staff to provide feedback. This will raise awareness, generate interest in the project and make it visible at all levels of the organisation. Consider including items in internal communications and reports to the DHB board and senior level groups. Engage with your communications team for ideas on launching the system, such as having key messages on screensavers, posters and lanyards.

☐ Engage with staff and LMCs at every opportunity

You have identified how you want to engage with staff and LMCs. Use these strategies to share key messages so that you ‘take the team with the project’. As well as planned activities, other opportunities may present themselves. Listen to concerns, suggestions and feedback on what works well. You may set up a dedicated site for staff or LMCs to ask questions about the new system. Members of the project team would be responsible for answering these. Alternatively, you could put up poster boards, such as large sheets of butcher’s paper, for staff and LMCs to provide feedback and anonymously ask questions. It is essential to collate this feedback, report it regularly to the project team and respond to staff about it. You should then answer questions in ward liaison meetings or include the information in education sessions.

☐ Educate staff and LMCs on the new system

We have developed an online *eLearning module* for the MVSC with national MEWS score. This includes specific information for clinicians working in roles as responders. You will need to put this into your organisation’s learning management system and agree how you will encourage and/or require staff to complete the learning. For example, you might include this education in your midwifery emergency study days, in the practical obstetric multi-professional training (PROMPT) education days and in the orientation manual for new staff, doctors and LMCs. Presenting real cases of recognition and management of deterioration

using the MVSC at mortality and morbidity meetings can also be a powerful tool for learning and gaining acceptance for the new system.

Additionally, you may choose to arrange ward-based education sessions. Early implementer sites for the adult recognition and response programme reported that face-to-face teaching offered rewarding opportunities for discussion, feedback and correcting any misconceptions about the system. Decide who will provide the education, develop education materials and include your local escalation pathway. Consider providing communication and teamwork tools during this education, like ISBAR (see the *factsheet for clinicians – clinical communication tools*). One of the project team's roles will be to collaborate with clinical educators and coordinators to find suitable venues, promote the education and enable staff and LMCs to attend.

Review the factsheet for project teams – capabilities. This will help you decide:

- which staff and LMCs will need ongoing education to fulfil their roles as recognisers and/or responders
- how you will orient and educate new staff and LMCs in the future (especially new midwives and nurses, registrars, agency nurses and junior doctors)
- how existing staff and LMCs will receive ongoing education about the MEWS.

3. Countdown to implementation

☐ Final countdown

You can adapt the *countdown to launch* posters, or you may develop your own with your communications department, to inform staff and LMCs of when the new system will begin. You could create posters or lanyards of your escalation pathway to provide reminders in key locations. To see examples, email mews@hqsc.govt.nz.

☐ Report progress to your executive sponsor and project oversight group

Continue to give your regular progress updates to your executive sponsor(s) and project oversight group.

☐ Engage with staff and LMCs at every opportunity

Continue to engage with staff and LMCs about the project and what you are doing.

☐ Communicate your project to the organisation

Continue to share what you are doing with the wider organisation. Make sure people are aware of your launch date. You may choose to mark the occasion with a celebration.

☐ Check staff and LMCs are prepared

Meet with staff and LMCs to make sure they are ready to begin and to answer any questions they have. Check that they have attended education. Check that your ward champions are ready for the launch. Make sure project team members are visible and can answer queries.

☐ Put new MVSC stocks in your agreed area(s)

Put new chart stocks in your agreed area(s) the evening before implementation. Make sure older chart stocks have been removed.

4. Implement and sustain

☐ Launch the MEWS

We encourage you to mark the launch of MEWS in your hospital(s) as this is when your implementation begins. You may have organised a grand round and have posters or other promotional material prominently displayed. Your project team members should be visible and champions available over the various shifts to answer questions and provide support as staff start using the MEWS.

☐ Monitor progress and make small steps of change

Make sure project team members are visible and available to troubleshoot, answer questions and provide support during the initial implementation. Check in with areas regularly to provide encouragement, see how they are going, answer queries, resolve issues and collect information. Work with area champions to help staff in their area. During the testing, sites found it beneficial to have multiple ways of receiving feedback and responding, such as through email and by placing large sheets of butcher's paper in the clinical area with a weekly summary of the feedback and responses to queries. If staff or LMCs have identified change ideas to test through plan–do–study–act (PDSA) cycles, work with them to make changes in small steps until they and your team feel you are ready to spread the change idea further.

☐ **Measure for improvement**

Use the measurement and data collection processes you identified during the preparation period to monitor your progress. Use the *measurement guidance*, *audit form, data collection tool* and *case review*. Give staff regular feedback on how they are doing and use audit results to identify areas to improve. We have examples available if you would like ideas. Let us know if you would like us to visit or if you would like help in reviewing your data electronically.

☐ **Report on progress to your executive sponsor(s) and project oversight group**

Continue to give regular progress updates to your executive sponsor(s) and project oversight group.

☐ **Educate new staff and LMCs**

Educate staff and LMCs in the ways you decided on during the preparation stage. Early implementer sites for the MEWS found that it was helpful to provide ongoing education, often specific to a vital parameter, during the first three months. Doing audits was an opportunity for one-to-one education as well as deciding what additional education they needed to provide.

☐ **Participate in monthly teleconferences**

This is an opportunity for you to share your progress with other leads, project teams and the national MEWS team, and to look at challenges and potential solutions. We'll send you the information on how to join this network and the agenda.

☐ **Celebrate achievements of the team and the staff in implementing areas**

Take the time to celebrate achievements and the efforts of team members and the staff in the implementing areas. Positive feedback and reinforcement combined with public recognition will help keep everyone motivated and focused.

☐ **Roll out final system elements across hospital(s)**

If you have a staged roll-out approach, prepare for implementing the system elements across your entire hospital(s). Spreading the MEWS will make it an organisation-wide approach, with close working relationships between the maternity clinical governance group and members of the adult recognition and response governance group.

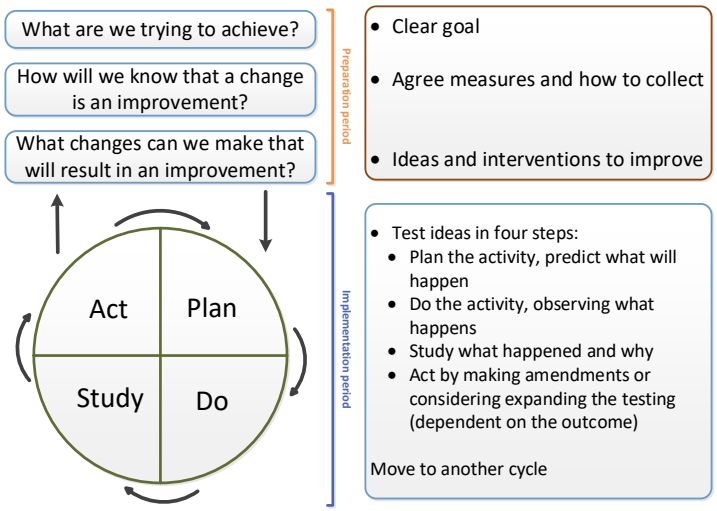
☐ **Hand over to those responsible for the ongoing sustainability of the system**

Meet with the staff who will be responsible for ongoing education, measurement and monitoring of the MEWS. Ensure they are aware of their links with the maternity clinical governance group.

Appendix 1: Quality improvement approach

The Model for Improvement, developed by the Associates in Process Improvement (www.apiweb.org), has been used in many quality improvements for health care organisations. The Model for Improvement is a framework for structured improvement activity to help you achieve your goals and support the spread for wider adoption. It is based on three key questions used with small-scale testing and improvement cycles that are often referred to as PDSA (plan–do–study–act) cycles. As part of your preparation period, you will address the three questions that Figure 3 sets out. During your implementation, you can use the PDSA cycles to test related change ideas.

Figure 3: The Model for Improvement



Source: adapted from Associates in Process Improvement

The following are some tips[9] for doing PDSA cycles effectively.

- Expect the test not to work the first time.
- Start with one patient and one team so that the process can begin with minimum delay. It is easy to observe change and the impact is minimal if it doesn't work.
- Spread slowly. Once it works for one, test with three and then five patients and/or staff. This will help you to resolve issues, building your confidence.
- Work with the willing. Find a team that wants the change to work – they will have the patience and enthusiasm to see it through.
- Use simulation if you are concerned about the impact. This could be as a desk review and/or a walk-through with colleagues.
- Assess whether testing will have an impact on people or processes beyond the area. Include them in the planning and studying stages of the cycle. We've recommended assessing the challenges and opportunities during the preparation period.

Other improvement methods like Lean[10] and Six Sigma[11] are options. Use one of these if your organisation prefers it. Nearly every DHB has quality improvement advisors that you can contact for support and guidance. The national team can also provide support and guidance if you contact us.

[9] Patient Safety First. 2008. The quick guide to implementing improvement. URL: http://webarchive.nationalarchives.gov.uk/20091118133206/http://patientsafetyfirst.nhs.uk/ashx/Asset.ashx?path=/How-to-guides-2008-09-19/Quick%20Guide%201.1_17sept08.pdf (accessed 22 February 2019).
[10] www.lean.org/WhatsLean
[11] www.isixsigma.com/new-to-six-sigma/what-six-sigma