Recording of Physiological Observations in Maternity using the Maternity Early Warning Score Chart (MEWS).

Reference No.: IP/03:24/M6

Contents

1. Introduction

It is recognised that pregnancy and labour are normal physiological events; however, observations of vital signs are an integral part of care.

There is a potential for any woman to be at risk of physiological deterioration and this can not always be predicted. There is also evidence that there is poor recognition of deterioration in condition. MBRRACE-UK Saving lives: Improving Mothers' Care, 2021.

Maternity early warning scoring systems improve the detection of life threatening illness.

2. Purpose and Outcomes

The early detection of severe illness in mothers remains a challenge to all professionals involved in their care.

The MBRRACE report 2021, continues to report that health care professionals fail to identify warning signs of impending collapse.

The relative rarity of such events combined with the normal changes in physiology associated with pregnancy and childbirth compounds the problem.

Regular recording and documentation of vital signs will aid recognition of any change in a woman's condition. The use of MEWS charts prompts early referral to an appropriate practitioner who can undertake a full review, order appropriate investigations resuscitate and treat as required.

Frequency of MEWS Observations is determined by:

- Risk Status
- Diagnosis
- Reason for admission
- Initial observations on admission

Patients attending to a triage area should be placed on 4 hourly observations initially. This will then be amended accordingly if there are abnormal findings.

An individual plan of care should be made by the obstetric registrar (ST3 or above) on admission within the hospital, which should specify the frequency of physiological observations and where they are documented. If medically fit for discharge and remaining on the postnatal ward for neonatal reasons, the frequency of observations will be determined by the midwife.

3. Abbreviations

CMACE	-	Centre for Maternal & Child Enquires *(previously CEMACH)*
CMACH	-	Confidential Enquiry into Maternal & Child Health
MBRRACE	-	Mothers and Babies: Reducing Risk through Audit and Confidential Enquiries
MHHR	-	Maternity Handheld Records
MEWS	-	Early Warning Score
ECU	-	Obstetric Enhanced Care Unit
NICE	-	National Institute for Clinical Excellence
PAU	-	Pregnancy Assessment Unit
PDC	-	Pregnancy Day Care

4. Documentation

Please ensure all assessments and individual plans of care are documented clearly in the appropriate records which may include some or all of those listed below;

- medical records
- maternity handheld records
- maternity clinical system special instructions page

5. Key Responsibilities & Duties

Multidisciplinary involvement is essential from senior grades of obstetrician, anaesthetist, nurses, medical doctors, midwife and other professionals as indicated.

- Observations must be charted by the midwife/nursing/ support staff and escalated as necessary using the Algorithm on the back page of the MEWS
- Management plans will be formulated following a joint review by midwifery, obstetric, nursing, medical doctor and anaesthetic teams (as required).
- These plans will include appropriate medical review from outside the maternity service where an acute change / deterioration in condition occurs.
- In the event of Maternal collapse initiate basic life support and call cardiac arrest team. (Refer to Obstetric Emergencies Guideline *Click here for link*)

6. Use of MEWS

Women on the Obstetric consultant led care pathway for their pregnancy, who are admitted as an inpatient (antenatal or postnatal) to an acute hospital setting require a minimum of twice daily physiological observations. These are to be recorded on the MEWS chart. See attached chart (Appendix A).

Women who are admitted to the obstetric ECU will have their observations recorded on the ECU chart and will commence the MEWS chart prior to transfer to the antenatal or postnatal ward.

Women who have had an operative procedure and are transferred from the recovery room will have their last set of observations documented on the MEWS chart prior to transfer.

7. Observations

Women should retain the same MEWS chart when moving from one clinical area to another so that physiological trends can be observed.

A full set of observations are required as a minimum twice daily, these include:

- Respiratory rate
- Oxygen saturations
- Pulse rate
- Blood pressure
- Temperature
- Neurological response

7.1 Respiratory rate

Respiratory rate is the most sensitive indicator of deteriorating physiology and must be recorded in all women every time a full set of observations are taken.

Respiratory rate is the best marker of a sick woman and is the first observation that will indicate a problem or deterioration in condition.

Respiratory rate is a mandatory observation.

7.2 Pulse rate

Tachycardia is highly indicative of an unwell woman. Normal range for pulse is 71-112bpm. From 48hr postnatally, normal range changes to 58-98bpm.

Pulse rate can be monitored via a saturation probe on the finger. If abnormal, this should be confirmed manually.

Cautions

- If the woman is peripherally shut down in cases of haemorrhage the pulse oximetry probe will not detect the pulse accurately.
- Pulse properties such as volume and regularity can not be assessed
- Nail varnish affects wave form accuracy

7.3 Blood pressure

Use of the correct cuff size for the woman is vitally important for the accuracy of recordings of blood pressure especially in the obese woman.

	Width [cm]	Length [cm]	Arm circumference cm]
Normal	12.0-13.0	23	Up to 33
Large adult	12.5-13.0	35	Up to 42

If triggering for BP review (as per chart), doctor (ST3 and above) to review and consider anti-hypertensives as per 'Pre-eclampsia and eclampsia, hypertensive disorders' guideline *Click here for link*.

Please note that falling BP should be regarded as a late sign of deterioration (peri mortem) as pregnant women can lose up to 30-40% of their circulating blood volume before showing obvious signs of shock.

Cautions

Saving Babies Lives Version 3 states that electronic BP monitoring is recommended for maternal observations. Only devices which have been approved for use in maternity patients should be used. In areas where this is not possible, manual BP measurements should be taken.

7.4 Temperature

- Normal parameters should range between 36.2º C and 37.2º C. Maternal pyrexia in labour (38.0°C once or 37.5°C on two occasions 2 hours apart) will require review. Always consider underlying causes. Temperature below 36.2º C needs to be treated with caution as this may be an indicator of acute sepsis.

7.5 Additional Concerns

Additional concerns	
If one or more of these additional concerns are present, consider: 1. Increasing the frequency of observations to a minimum of every 30 minutes 2. Escalate in line with a low-medium level of concern even if MEWS less than 2 3. Where MEWS is greater than 2 raising the level of concern to the next category.	Healthcare professional concerned Woman/family concerned Significant additional therapies (e.g. Oxygen) Increased pain (+/-or analgesic requirement) Significant vaginal bleeding Reduced urine output Decreased level of consciousness/responsiveness

Episodes of confusion or disorientation should be treated with concern and reported to appropriate level obstetrician /anaesthetist immediately.
Possible causes: Hypotension, Sepsis, Hypoxia, Hypoglycaemia, Drug or Substance induced, cerebral causes such as pre-eclampsia, psychiatric illness.

7.6 Oxygen Saturation

- Normal ≥ 95% on air
- If on O_2 therapy record percentage of O_2 in use [%] in the medical records

7.7 The Fluid balance chart

This should be employed in the following circumstances:

- Post operatively: this must record the peri-operative fluids administered: refer to anaesthetic sheet, and be included in the verbal hand over by the anaesthetist.
- Women receiving IV fluids must have a fluid balance chart
- Post partum haemorrhage of more than 500mls
- PET - refer to guideline *Click here for link*
- Women who are catheterised

When the fluid balance chart is in use it should be accurately filled in with both measured input and output. The optimum urine output is 1ml/kg/hr the minimum urine output 0.5ml/kg/hr

All fluids to be prescribed by the doctor on this sheet, except in the case of blood / blood products. Please refer to Trust blood transfusion prescription chart.

8. Documentation on the MEWS chart

All relevant information must be filled in. The chart must have patient identity completed.

Observation sheet:

- Date and time of observation taken to be recorded in small box at top of page
- All observation parameters must be completed unless requested otherwise by medical / anaesthetic team in medical notes.

From 48hrs post birth, the pulse rate is recorded in the separate purple box. Specify the date and time to commence this.
Ensure the MEWS total score is calculated and recorded on the chart.

8.3 Escalation Process

		Score				
		2	1	0	1	2
Vital Sign	Respirations Breaths/min	<=6	7-8	9-21	22-24	>=25
	SpO_2 Oxygen saturation (%)	<=92	93-94	>=95	-	-
	Temperature °C	<=35.6	35.7-36.1	36.2-37.2	37.3-37.4	>=37.5
	Pulse Beats/min	<=62	63-70	71-112	113-121	>=122
	Pulse (from 48 hours post birth) Beats/min	<=50	51-57	58-98	99-107	>=108
	Systolic blood pressure mmHg	<=93	94-100	101-135	136-144	>=145
	Diastolic blood pressure mmHg	<=56	57-61	62-88	89-96	>=97

Thresholds and triggers

- The grade of medical team member indicated as the primary contact for each level of clinical concern is a guide and may need to be adapted depending on the local skill mix within that care setting or organisation

Level of concern	Low	Low-medium	Medium	High
MEWS	0-1	2-4	5-7	8 or more
Primary escalation & response (Use SBAR framework)		Review by midwife in charge	Urgent review by midwife in charge	Immediate review by midwife in charge
		Request review by ST1/2 or equivalent	Urgent review by ST3+ or equivalent and consultant made aware of plan Consider anaesthetic review	Immediate review by ST3+ or equivalent, consultant and anaesthetic team Consider review by outreach team
Medical review timing		Within 30 minutes	Within 15 minutes	Immediate
Minimal vital signs recording until medical review/ongoing plan	Continue with current observation frequency	Reassess observations within 30 minutes & document ongoing plan	Reassess observations within 15 minutes & document ongoing plan	Continuous observations
Secondary contact		ST3+ or equivalent	Consultant or equivalent	Clinical outreach team or equivalent

- When the primary team member(s) contacted is unable to attend or fails to attend within the expected time for the level of clinical concern, escalation to the secondary contact is required
- The secondary contact would be expected to attend within the initial medical review timing, calculated from the documented time of primary escalation
- The section **pulse (from 48 hours after birth)** cut-offs should be used for all women from 48 hours after birth. The time and date from which these values should be used should be entered on the front of the chart.

Please note that where the MEWS form states 'MIDWIFE in CHARGE' this may be the SENIOR NURSE/ NURSE in CHARGE.

- Triggers will be identified by observations plotted in either a yellow or red box.
- Once a trigger is highlighted the escalation algorithm must be acted on and clearly documented in the patient record.
- In the case of an acute change / deterioration in condition appropriate medical review should be sought immediately.
  An MDT review, consisting of midwives, obstetricians and anaesthetists should be completed. This may be with nursing/other medical staff as appropriate.

There should be clear lines of communication between midwives/nurses, referring clinicians and

clinicians outside the maternity service. Escalation of the abnormal observations as per the chart should be documented in the notes and should be communicated during handover. When referring a woman, all the relevant information about her including her current observations should be provided.

Contacts in maternity for advice and escalation:
The maternity flo coordinator is contactable for advise at all times.
The obstetric registrar is available for escalation and advice.

Contact	Number	Time of availability
Flo coordinators for maternity	07379078561	24/7
Labour ward RDH	Internal 85140	24/7
Labour ward QHB	Bleep 310	24/7
Labour ward red phone RDH	Internal 85268	24/7
Labour ward red phone QHB	01283 593173	24/7
Pregnancy assessment unit RDH	01332 785 796	24/7
Maternity assessment unit QHB	01283 593 038	24/7
Obstetric registrar RDH	Bleep 8100 Bleep 2206	9AM - 9PM weekdays or 9AM - 5PM weekends Outside of these hours
Obstetric registrar QHB	Bleep 621	24/7

Critical Care Outreach Team Contacts:

- at RDH CCOT is available everyday 8am until 9pm
- at QHB CCOT is available everyday 8am until 6pm

9. Training

The expectations in relation to staff training as identified in the maternity service's training needs analysis regarding the recognition of acutely ill pregnant women

The expectations in relation to staff training as identified in the maternity service's training needs analysis regarding maternal resuscitation

10. Monitoring Compliance and Effectiveness

Monitoring requirement	Use of the MEWS in relation to the severely ill pregnant woman will be audited to comply with the agreed minimum requirements from all care settings (hospital and home deliveries).
Monitoring method	Retrospective case note review by a multidisciplinary team

11. References

MBRRACE-UK 2021. Saving Lives, Improving Mothers' Care. London.

National Institute for Clinical Excellence, Clinical Guideline NG133, Hypertension in Pregnancy: Diagnosis and Management. NICE, April 2023.

Saving Babies' Lives Version 3, NHS England, June 2023.

Maternity Early Warning Score (MEWS)

Hospital sticker with patient details

MEWS score 0 1 2	A score for each vital sign is required at each entry													
	DATE / TIME													DATE / TIME
Respirations Breaths/min	>=25							2							>=25
	22-24							1							22-24
	18-21														18-21
	13-17							0							13-17
	9-12														9-12
	7-8							1							7-8
	<=6							2							<=6
$Sp0_2$ Oxygen saturation (%)	>=95							0							>=95
	93-94							1							93-94
	<=92							2							<=92
Temperature °C	>=37.5							2							>=37.5
	37.3-37.4							1							37.3-37.4
	36.8-37.2							0							36.8-37.2
	36.2-36.7														36.2-36.7
	35.7-36.1							1							35.7-36.1
	<=35.6							2							<=35.6
Pulse Beats/min	>=131							2							>=131
	122-130							2							122-130
	113-121							1							113-121
	99-112														99-112
	86-98							0							86-98
	71-85														71-85
	63-70							1							63-70
	<=62							2							<=62
Pulse - from 48 hours post birth ONLY Beats/min Date & time to commence monitoring:	>=108							2							>=108
	99-107							1							99-107
	85-98														85-98
	71-84							0							71-84
	58-70														58-70
	51-57							1							51-57
	<=50							2							<=50
Systolic blood pressure mmHg	>=175							2							>=175
	160-174							2							160-174
	145-159							2							145-159
	136-144							1							136-144
	121-135														121-135
	111-120							0							111-120
	101-110														101-110
	94-100							1							94-100
	77-93							2							77-93
	61-76							2							61-76
	<=60							2							<=60
Diastolic blood pressure mmHg	>=110							2							>=110
	97-109							2							97-109
	89-96							1							89-96
	80-88														80-88
	70-79							0							70-79
	62-69														62-69
	57-61							1							57-61
	<=56							2							<=56
MEWS TOTAL															**MEWS TOTAL**

Additional concerns - Please see overleaf for additional concern table. If one or more additional concern is present, consider escalation and review.														
Healthcare professional concerned														
Woman/family concerned														
Significant additional therapies (e.g. Oxygen)														
Increased pain (analgesic requirement)														
Significant vaginal bleeding														
Reduced urine output														
Altered level of consciousness/responsiveness														

Monitoring frequency														**Monitoring**
Escalation of care YES/NO														**Escalation**
Initials														**Initials**

Refer to back page for thresholds and triggers

Maternity Early Warning Score (MEWS)

Taking the total MEWS score generated, escalate according to the threshold and trigger table.

		Score				
		2	1	0	1	2
Vital Sign	Respirations Breaths/min	<=6	7-8	9-21	22-24	>=25
	Sp0$_2$ Oxygen saturation (%)	<=92	93-94	>=95	-	-
	Temperature °C	<=35.6	35.7-36.1	36.2-37.2	37.3-37.4	>=37.5
	Pulse Beats/min	<=62	63-70	71-112	113-121	>=122
	Pulse (from 48 hours post birth) Beats/min	<=50	51-57	58-98	99-107	>=108
	Systolic blood pressure mmHg	<=93	94-100	101-135	136-144	>=145
	Diastolic blood pressure mmHg	<=56	57-61	62-88	89-96	>=97

+

Additional concerns	
If one or more of these additional concerns are present, consider: 1. Increasing the frequency of observations to a minimum of every 30 minutes 2. Escalate in line with a low-medium level of concern even if MEWS less than 2 3. Where MEWS is greater than 2 raising the level of concern to the next category.	Healthcare professional concerned Woman/family concerned Significant additional therapies (e.g. Oxygen) Increased pain (+/-or analgesic requirement) Significant vaginal bleeding Reduced urine output Decreased level of consciousness/responsiveness

Thresholds and triggers

- The grade of medical team member indicated as the primary contact for each level of clinical concern is a guide and may need to be adapted depending on the local skill mix within that care setting or organisation

Level of concern	Low	Low-medium	Medium	High
MEWS	0-1	2-4	5-7	8 or more
Primary escalation & response (Use SBAR framework)		Review by midwife in charge	Urgent review by midwife in charge	Immediate review by midwife in charge
		Request review by ST1/2 or equivalent	Urgent review by ST3+ or equivalent and consultant made aware of plan Consider anaesthetic review	Immediate review by ST3+ or equivalent, consultant and anaesthetic team Consider review by outreach team
Medical review timing		Within 30 minutes	Within 15 minutes	Immediate
Minimal vital signs recording until medical review/ongoing plan	Continue with current observation frequency	Reassess observations within 30 minutes & document ongoing plan	Reassess observations within 15 minutes & document ongoing plan	Continuous observations
Secondary contact		ST3+ or equivalent	Consultant or equivalent	Clinical outreach team or equivalent

- When the primary team member(s) contacted is unable to attend or fails to attend within the expected time for the level of clinical concern, escalation to the secondary contact is required
- The secondary contact would be expected to attend within the initial medical review timing, calculated from the documented time of primary escalation
- The section **pulse (from 48 hours after birth)** cut-offs should be used for all women from 48 hours after birth. The time and date from which these values should be used should be entered on the front of the chart.

Documentation Control

Reference Number: IP/03:24/M6	**Version: 4**		**Status:** **FINAL**	
Version / Amendment	Version	Date	Author	Reason
	1	Oct 2009	Lorraine Purcell, Risk Coordinator	To support the introduction of an Early warning score system for maternity services, in line with CEMACH recommendations
	2	May 2011	Maternity Guidelines Group	Review
	3	Aug 2015	Maternity Guidelines Group Lorraine Purcell, Risk coordinator	Review
	3.1	Mar 2021	Maternity Guidelines Group	Safety reviewed awaiting National guidelines. Safe to use until 01/01/2022. No changes made.
	4	December 2023	Miss J Rowley - Consultant Obstetrician	Review
Intended Recipients: All staff with responsibility for caring for maternity patients				
Training and Dissemination: Cascaded electronically through lead sisters/midwives/doctors; Published on Intranet, Article in Business unit newsletter; emailed via NHS.net				
To be read in conjunction with: Maternal Collapse (C9)				
EIRA (Equality Impact Risk Assessment) **stage one completed :** n/a				
Consultation with:				
Business Unit sign off:	24/11/2023: Maternity Guidelines Group - Miss A Joshi - Chair 04/12/2023: Maternity Governance / CD - Mr R Deveraj			
Notification Overview sent to TIER 3 Divisional Quality Governance Operations & Performance: 19/12/2023				
Implementation date:	25/03/2024			
Review Date:	December 2026			
Key Contact:	Joanna Harrison-Engwell			