Royal Cornwall Hospitals
NHS Trust

Maternity Outcomes Signal System (MOSS) Standard Operating Procedure

V1.0

April 2026

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1. Introduction

1.1. The Maternity Outcomes Signal System (MOSS) (MOSS) was developed by NHS England in response to the East Kent Reading the Signals report

1.2. The report recommended the development of a safety signal system capable of monitoring routinely collected maternity and neonatal outcomes to detect potential declines in safe care in a timely way.

1.3. MOSS operates at trust site level. It is a near-real time safety signal system that supports early detection and rapid responses to potential safety issues in intrapartum care service delivery.

1.4. Safety signal systems are widely used in healthcare and other high-risk industries to monitor outcomes and processes to prompt rapid safety checks and initiate early interventions when unusual patterns occur.

1.5. Examples include children's cardiac services and paediatric intensive care, which use cumulative sum control chart methodology (CUSUM) – a statistical analysis used to detect trends in rare but serious events to improve mortality and morbidity outcomes.

1.6. MOSS applies this approach to maternity with a specific focus on intrapartum care safety.

1.7. MOSS is not a performance management or investigation tool; it is part of a wider critical safety management system (CSMS). Together, these systems are essential tools that help organisations deliver consistently safe care.

1.8. Signals do not necessarily mean that a service is unsafe, but prompt a service-led critical safety check: providing early insights into potential intrapartum care safety issues and enabling rapid intervention to reduce harm.

1.9. MOSS operates within the perinatal quality oversight model (PQOM), ensuring consistent monitoring, support, and escalation across trusts, ICBs, regions, and nationally.

1.10. MOSS was developed collaboratively with pilot trusts, clinicians, service users, and national organisations including MBRRACE-UK, MNSI, NHS Resolution, and NHS England's Patient Safety Team. MOSS has also had input from Dr Bill Kirkup, author of the East Kent report, and Professor David Spiegelhalter, a recognised expert in statistical risk.

2. Purpose of this Standard Operating Procedure

2.1. Moss is a safety signal system. This SOP clarifies the way in which we work within the expectations and methodology of MOSS together clarifying ways in which we will be monitored and respond to queries or concerns.

2.2. MOSS' objectives are:

- Be sensitive and specific to services that deliver intrapartum care by using term outcome measures (term stillbirths and term neonatal deaths up to 28 days) that have a high potential of causation from care and service delivery issues and a low index of causation from known clinical conditions.
- Identify unusual near-real time changes in outcome trends that may indicate declining intrapartum safety.
- Prompt a critical safety check led by the local perinatal leadership team to assess the safety of operational processes on the labour ward, review priorities, and plan early interventions; the perinatal leadership team includes:
  - The obstetric lead (clinical director or head of service).
  - Neonatal lead (nursing or medical).
  - Director of midwifery (or head of midwifery, if none appointed).
  - The operational lead of the maternity service.
- Support rapid escalation through trust, ICB, regional, and national PQOM structures if safety issues are identified.
- Support a positive safety culture.
- Improve outcomes.

Our role, through adhering and following this SOP is to best support the meeting of the objectives above.

3. Ownership and Responsibilities

3.1. Role of the Director of Midwifery

The Director of Midwifery is responsible for:

- Monitoring MOSS monthly and discussing at service level perinatal quality meetings.
- Ensuring MOSS pre-requisites are in place.
- Ensuring that processes are in place for the Perinatal leadership team to complete critical safety checks with staff working on the labour ward.
- Ensuring in all signals that the perinatal leadership team share completed checks with an accountable trust board executive (i.e., Chief Nurse, Chief Medical Officer, or the executive trust board safety champion) for approval.

- Ensure that with all signals, 1 accountable trust board executive approves the completed check within 8 working days.

- Ensure that their Perinatal leadership team shares any completed checks with external peers for review before approval from accountable trust board executives

- Ensures that their Perinatal leadership teams sharing completed check with external peers for review before approval from accountable trust board executives

3.2. Role of the Trust Board

The RCHT Trust Board Executives are responsible for:

- Accountable trust board executives should inform the trust board of safety issues found from critical safety checks, which should be discussed as an agenda item at the next public trust board meeting.

- Trust boards should provide oversight and active engagement to ensure that any plans made to address safety issues make progress and are completed at the required speed.

3.3. Role of Deputy Director of Midwifery

The Deputy Director of Midwifery is responsible for:

- Deputising to lead on completing the checks, monitoring MOSS at least monthly and sharing completed checks with an accountable member of the Trust Boards executive. Accountable trust board executives include the chief nurse, chief medical officer and executive Trust board safety champion.

4. Standards and Practice

4.1. MOSS Methodology

MOSS uses CUSUM methodology, which can analyse rare events, set thresholds and generate signals if trend changes cross these thresholds.

The CUSUM chart in MOSS helps track whether there are more adverse events than expected at a maternity unit. It compares the actual number of events to the number we would normally expect based on national data.

4.1.1. **Signal Levels**

Amber signal (Level 1):

- There is a 95% chance that the increase in events is real and not due to random chance.

Red signal (Level 2):

- There is a 99% chance that the increase is real. After a red signal, the system resets so it is sensitive to future increases in events and can signal quickly.

4.2. MOSS Thresholds

- The national average number of events is calculated on a 3-year rolling basis from recent data.
- The expected number of events for each trust site is calculated based on the number of births at the site.
- An ‘increase in events’ is defined as at least twice the expected number.
- The CUSUM keeps adding the difference between actual events and expected events over time.
- When this total passes the amber or red threshold, a signal is generated.

4.3. MOSS Monitoring

Trust site maternity teams should check MOSS (and the MBRRACE-UK Real Time Data Monitoring Tool at least monthly for discussion at perinatal quality meetings.

4.4. MOSS Testing

This is required to maintain an awareness of outcome trends and preparedness for a response, particularly when outcomes are close to crossing signal thresholds.

4.5. MOSS Psychological Safety

The process must operate in a culture of openness and trust, enabling staff to share information without fear of blame.

4.6. MOSS - Addressing known and emerging safety themes

Perinatal leadership teams should be addressing themes from reports and feedback with trust board oversight - see ‘assumed knowledge/processes in place’ in Annex1.

This should include but not necessarily be limited to themes from:

- Conclusions of previous MOSS critical safety checks.
- Maternity and Newborn Safety Investigation (MNSI) quarterly reports.
- NHS Resolution annual claims scorecard.
- Annual Patient Safety Incident Report Plan (PSIRP).

- MBRRACE-UK real time data monitoring tool.

4.7. MOSS Escalation Pathways

The critical safety check is a rapid, structured review of intrapartum care operations led by the perinatal leadership team, co-produced with staff working in these areas and approved by an accountable executive member of the Trust Board

- Define rapid communication pathways to complete the critical safety check within 8 working days. (If a signal is received over the weekend, the timeline starts from the next working day).

4.8. MOSS Peer Review

Level 2 signals, an external peer must be selected to check and challenge the completed critical safety check within 8 working days from the signal.

External peers must be from outside the trust and can include ICB or regional colleagues involved in perinatal quality oversight or maternity improvement advisors (where a trust is already entered onto the Maternity Safety Support Programme).

- This is particularly relevant to communication between perinatal leadership teams, labour ward staff, accountable trust board executives and external peers (with level 2 signals).

- The check should be agreed/approved face to face or virtually where possible.

- After completion and approval: Share with ICBs and regions for oversight and support where a safety issue is identified. ICBs/regions can stand down if a check does not conclude there is a safety issue.

4.8.1. Annex 1: Critical Safety Check

There are 4 sections to complete the critical safety check

Assumed knowledge/processes in place: The perinatal leadership team should complete the ‘pre completion information’ prior to the critical safety check: Focussing on the activity of your intrapartum service over the last 3 months.

4.8.1.1. Section 1 – template covers site details and includes:

- Were any of the events in MOSS that occurred over the last 3 months unavoidable?

- Are the pre-requisites for implementing MOSS in place.

- Have you completed a critical safety check previously for a signal that has occurred within the last 3 months?

4.8.1.2. Section 2 - template covers key safety elements of your intrapartum service and Safety culture - conversations with staff and service users:

- Are the perinatal leadership team, accountable Trust Board executives and staff (on labour ward, triage and birth centre) working well together?
- How do you measure your leadership culture and how frequently is this done? What actions have you taken?
- What have service users/MNVP Leads fed back that they feel could be improved?
- Feedback from your walkarounds and conversations with staff.
- Are you achieving safety timelines for these care pathways? (Triage, IOL, Categories 1and2 Caesarean Section).
- Are you achieving regular multi-disciplinary team (MDT) communication of known and/or emerging risk factors on the labour ward?
- Huddles meeting NHSI guidance?
- Structured handover process in the labour ward, such as SBAR or equivalent.
- Are your teams carrying out appropriate risk assessment and escalation?
- Compliance with element 4 of the current version of the Saving Babies' Lives Care Bundle.
- Achieving 90% of attendance in each relevant staff group (as per MIS).
- Fetal monitoring training.
- Multi-professional maternity emergencies training.
- Neonatal resuscitation training.
- Is there a stable workforce offering safe and effective care during labour and birth?
- Have staff been redeployed or non-clinical midwifery staff (e.g. managers / specialist midwives) utilised to meet minimum midwifery safe staffing levels as per your Trust safe staffing policy?

- Have there been obstetric staffing shortfalls impacting on safe care delivery?

- Have there been any anaesthetic staffing shortfalls as per RCoA guidance impacting on safe care delivery?

4.8.1.3. Section 3 - Is there any additional information that accountable Trust Board executives should pay attention to?

- Use this section if there is anything not captured above that you feel executives should pay attention to, explaining potential safety issues in your intrapartum service over the last 3 months.

4.8.1.4. Section 4 – Conclusion from this critical Safety Check – is used to summarise the outcome for accountable Trust Board executives.

4.9. Escalation of MOSS critical safety check in the PQOM - Maternity unit level

4.9.1. A MOSS signal occurs at a trust site.

4.9.2. An automatic email notification is immediately sent to all registered trust, ICB and regional MOSS users within the parent geographical footprint of the trust site that signalled.

4.9.3. The perinatal leadership team completes the MOSS critical safety check within 8 working days (if a signal is received over the weekend, the timeline begins on the next working day). By the end of this, they must:

- [in level 2 signals only] have shared the completed check with an external peer for check and challenge (for example, maternity improvement advisor if trust is enrolled onto the Maternity Safety Support Programme, or an ICB or regional colleague with a remit over perinatal quality).

- [in all signals] have the completed check approved by an accountable trust board executive (that is: chief nurse, chief medical officer or executive trust board safety champion).

4.9.4. If the MOSS critical safety check does not identify any safety issues, the perinatal leadership team shares the completed and approved check with ICB (ICB executive with responsibility for maternity and neonatal services and director of quality) and regional colleagues (regional chief nurse, midwife, obstetrician, medical director and their deputies) for awareness only.

4.9.5. If the MOSS critical safety check does identify safety issues, the perinatal leadership team shares the completed and approved check with ICB colleagues for oversight and regions for awareness, or regional colleagues only if oversight responsibilities have been transferred (see important note in section 4 of the standard operating procedures).

4.9.6. This section may use more relevant wording and is used to provide details and information describing the practices, systems, and processes staff are expected to follow in order to comply with the procedural document.

4.10. MOSS Governance

Model region blueprint - Transition period

As set out in the Model region blueprint (NHS Futures login required to access), NHS England regions will now have responsibility for performance management and oversight of maternity and neonatal services, rather than the integrated care boards.

ICBs and regions will be in a period of transitioning these responsibilities until the end of the 2025/26 financial year.

Alignment with the perinatal quality oversight model – Roles, responsibilities, and escalation routes should follow the PQOM.

4.11. Escalation of MOSS critical safety check in the PQOM- Trust ICB Regional and National levels

4.11.1. Trust board level

An accountable trust board executive should inform the trust board of safety issues found from critical safety checks, which should be discussed as an agenda item at the next public trust board meeting. Safety issues should be overseen by trust boards as recommended in the MOSS critical safety check.

4.11.2. ICB level

ICBs should provide oversight, support and escalation of safety issues identified from the MOSS critical safety check, until the transition to regional performance management oversight has happened. ICBs may escalate to regional colleagues as necessary.

4.11.3. Regional level

Regions should provide oversight, support and escalation of safety issues identified from the MOSS critical safety check, which should be discussed at the regional perinatal quality meetings. Regions may escalate to national colleagues as necessary.

NHS England » Maternity Outcomes Signal System (MOSS) standard operating procedures.

4.11.4. National level

The national team should provide oversight and support of escalated safety issues, which should be discussed at National Perinatal Surveillance Group meetings.

The National Perinatal Surveillance Group (NPSG) meets every 6 weeks and is the highest escalation point.

- Sharing intelligence, monitoring organisations and tracking outcomes.
- Reviewing escalated issues and determining further actions, such as referral to the Maternity Safety Support Programme.

4. Dissemination and Implementation

This document will be disseminated to all relevant midwifery and obstetric staff and will be stored on the trust document library.

5. Monitoring compliance and effectiveness

This is reported externally to NHSE and will be monitored by them when a MOSS alert occurs.

6. Updating and Review

This SOP will be reviewed every three years.

7. Equality and Diversity

8.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

8.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Maternity Outcomes Signal System (MOSS) Standard Operating Procedure V1.0
This document replaces (exact title of previous version):	New Document
Date Issued / Approved:	April 2026
Date Valid From:	April 2026
Date Valid To:	April 2029
Author / Owner:	Trudie Roberts, Interim Deputy Director of Midwifery
Contact details:	01872 254794
Brief summary of contents:	A SOP to outline MOSS, a safety signal system capable of monitoring routinely collected maternity and neonatal outcomes to detect potential declines in safe care in a timely way.
Suggested Keywords:	MOSS, Safety system, signal, escalation.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Maternity Guidelines Group
Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming consultation and ratification:	Michael Cross
Links to key external standards:	None
Related Documents:	NHS England » Maternity Outcomes Signal System (MOSS) standard operating procedures.
Training Need Identified:	No

Information Category	Detailed Information
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical / Midwifery and Obstetrics

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
April 2026	V1.0	Initial issue	Trudie Roberts, Interim Deputy Director of Midwifery

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus six years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Quality and Equality Impact Assessment (QEIA) Form

The QEIA process allows RCHT to monitor the impact of changes to its policies and services, ensuring that nobody is unduly disadvantaged.

Please ensure you have completed a Quality and Equality Impact Assessment (QEIA) using this link to complete the form:

E11 QEIA Policy.

For guidance, please see the QEIA Essentials – Quick Reference Guide or contact as required below:

Equality, Diversity and Inclusion guidance, please contact: rcht.inclusion@nhs.net.

Quality Governance guidance, please contact Jillian Tozer: jillian.tozer3@nhs.net