Document Title:	**CORD AND MATERNAL BLOOD SAMPLING**		
Document Reference/Register no:	07044	**Version Number:**	5.0
Document type: (Policy/ Guideline/ SOP)	Guideline	**To be followed by:** (Target Staff)	Midwives, Obstetricians, Paediatricians
Ratification Issue Date: (Date document is uploaded onto the intranet)	29th July 2019	**Review Date:**	28th July 2022
Developed in response to:	Intrapartum NICE Guidelines RCOG guideline		
Contributes to HSC Act 2008 (Regulated Activities) Regulations 2014(Part 3); and CQC Regulations 2009 (Part 4) **CQC Fundamental Standards of Quality and Safety:**			9,12
Issuing Division/Directorate:	Obstetrics and Gynaecology		
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Hospital Sites: (tick appropriate box/es to indicate status of policy review i.e. joint/ independent)	✓MEHT □ BTUH □ SUH		
Consultation:	(Refer to page 2)		
Approval Group / Committee(s):	n/a	**Date:**	n/a
Professionally Approved by: (Asset Owner)	Miss Rao, Lead Consultant for Obstetrics and Gynaecology	**Date:**	23rd July 2019
Ratification Group(s):	Document Ratification Group	**Date:**	25th July 2019
Executive and Clinical Directors (Communication of minutes from Document Ratification Group	**Date:** August 2019	**Distribution Method:**	Trust Intranet/ Internet

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Related Trust Policies (to be read in conjunction with)	04071 Policy for Standard Infection Prevention Precautions 04072 Hand Hygiene Policy 04225 Examination of the Newborn Infant 07074 Postnatal Observations of Babies Born with Prolonged Rupture of Membranes (PROM) and Meconium Stained Liquor (MSL) and Infants of Group B Streptococcus Positive (GBS+VE) Mothers who Received IV Antibiotics in Labour 04265 Fetal Heart Rate Monitoring in Pregnancy and Labour 08014 Fetal Blood Sampling

Document Review History:			
Version No:	**Authored/Reviewer:**	**Summary of amendments/ Record documents superseded by:**	**Issue Date:**
1.0	Hazel Smith		August 2007
2.0	Sarah Moon		July 2010
3.0	Sarah Moon		25th July 2013
4.0	Sarah Moon		August 2016
5.0	Amanda Dixon	Full review	29th July 2019

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1.0 Purpose

1.1 This guideline is designed to aid maternity staff on when it is necessary to take cord and maternal blood following delivery for patients at high risk for antibody isoimmunisation and cord blood gas analysis.

1.2 All staff should perform these techniques in accordance with the Trust's 'Policy for standard infection prevention (register number 04071).

2.0 Equality Impact Assessment

2.1 Mid Essex Hospital Services NHS Trust is committed to the provision of a service that is fair, accessible and meets the needs of all individuals.
(Refer to Appendix B)

3.0 Technique

3.1 Cord blood collection for the purpose of patients at high risk for antibody isoimmunisation should be taken from the fetal side of the placenta, as the blood vessels are easily visible and are also congested.

3.1.2 Cord blood can also be obtained from the cord itself; an additional clamp to facilitate double clamping of the cord should be available at all birth settings. If a cord segment has been double clamped, it prevents the vessels from collapsing.

3.1.3 Cord blood should be obtained using a green needle and 10ml syringe.

3.1.4 Cord blood should always be taken before the blood clots, should the blood have clotted before the sample is taken then the baby would need to be bled by an appropriate member of staff.

3.2 Cord blood taken for the purposes of gas analysis should be taken with pre-heparinised syringes. It is important that once the blood has been taken remove the needle and replace with syringe cap as this helps to delay clotting.

3.3 Two samples should be taken, one from the umbilical artery and the other from the umbilical vein, as single-vessel sampling may lead to inaccurate interpretation of the acid-base measurement. It will also aid the practitioner in determining if the samples have been taken from the same vessel.

3.4 The mother's hospital number will be needed to analyse the results. Should the analyser on Labour Ward be unavailable than there is another analyser available on the Neonatal Unit (NNU).

4.0 Isoimmunisation

4.1 Cord blood should be taken for all babies born to mothers who are:

- Rhesus (D) negative or whose status is unknown;
- Patients found to carry other atypical maternal antibodies antenatally.

4.1.1 Women who are **Rhesus (D) negative** or whose status is unknown should have the maternal and neonatal bloods sent with the completed request for prophylactic anti –D form (white/purple). The form should be labelled with the baby's date of birth, the mother's surname. In addition, complete the clinical details box with the following:

For example:

- Mother's first name/ surname;
- Mother's hospital number;
- Mother's date of birth.
  Separate section on the form for:
- Baby's date of birth and gender;
- Baby's time of birth.

4.1.2 The bottle containing the baby's cord blood sample should be labelled as follows:

- Mother's surname;
- Baby's date of birth;
- Baby's hospital number;
- Record 'CORD BLOOD'.

4.2 Patients found to carry other atypical maternal antibodies antenatally should have the neonatal bloods sent with the completed group and save form (white/red); requesting a group and save and DAT. The form should be labelled with the baby's details as below.

- Baby's name (Infant of);
- Baby's surname;
- Baby's hospital number;
- Baby's date of birth;
- Record if 'cord blood'/ 'venous blood'.

4.2.1 In addition, complete the clinical details box with the following maternal details:

- Mother's surname;
- Mother's first name;
- Mother's date of birth;
- Mother's hospital number;
- Mother's NHS number;
- Antibodies that are known to be present.

4.3 Cord blood for investigating isoimmunisation Group/Direct Antiglobulin Test (DAT)/ Direct Coombs test) and Kleihauer test should be taken with a red topped blood (EDTA) bottle and a blue topped blood (cross-match) bottle. The bottles should have the corresponding

details of each patient (labelling should include 'cord blood' to distinguish them from maternal blood) and be accompanied by the appropriate laboratory form.
(Refer to Appendix A)

4.4 Maternal blood should be taken 30-90 minutes following completion of the third stage of labour to allow for any fetal cells that have entered the maternal circulation at delivery to mix with the maternal blood.

4.5 All four samples are to be sent together, and not separately, to Pathology Reception, Broomfield Hospital. Samples should never be left in the fridge. Remember to document in the patient's healthcare records why and when the blood was taken and date and time that the sample was sent.

4.6 Samples sent out of hours will not usually be tested until the following day unless there are special circumstances for example the patient is out of area and is being discharged or the infant and mother are being transferred to another hospital outside MEHT.

5.0 Other Requests for Cord Blood Sampling

5.1 Investigation for isoimmunisation is not the only indication for taking cord bloods and the patient's consultant or member of her consultant's team may request cord bloods for other reasons.

5.2 Should a patient request that cord blood be taken for stem cell, they should be advised that MEHT do not participate in this procedure but will facilitate an external organisation to undertake the retrieval of the cord blood sample.

6.0 Cord Blood Gases

6.1 Cord blood gases should not be taken routinely except where a baby has any of the following:

- Cardiotocograph (CTG) that was either suspicious or pathological;
  (Refer to'Fetal heart rate monitoring in pregnancy and labour'
  register number 04265)
- Fetal blood sample taken in labour;
  (Refer to 'Fetal blood sampling'; register number 08014)
- Significant meconium stained liquor in labour;
  (Refer to the guideline for the 'Management of meconium stained liquor'; register number 04259)
- Assisted vaginal delivery;
  (Refer to the guideline for 'Operative Vaginal Delivery'; register number 04260)
- Emergency lower segment caesarean section;
  (Refer to the guideline for 'Management of emergency lower segment caesarean section'; register number 04264)
- Poor Apgar assessment at delivery.
  (Refer to the guidelines for 'Neonatal resuscitation'; register number 07074; 'Management of Normal Labour and Prolonged Labour in Low risk Patients'; register number 09079; and 'Calling Paediatric Staff and Obtaining Paediatric Referral'; register number 09113).

6.2 Paired umbilical pH and base excess are recommended when determining plan of care for neonates who were believed to be compromised during labour/delivery.

6.3 It is important to remember to document in the patient's healthcare records the reason for the cord blood gas analysis, when it was taken, the results and subsequent action taken.

7.0 Staffing and Training

7.1 All qualified midwifery and obstetric staff are fully trained to take cord and maternal blood. Maternity care assistants (MCAs) are also trained to perform maternal venepuncture. Regular updates for venepuncture are available from the Practice Development Midwife. Midwifery students may undertake venepuncture and taking cord bloods once they have received the theoretical knowledge and while under supervision of a midwife or obstetrician.

7.2 Staff wishing to obtain a password for the blood gas analyser should contact the Labour Ward Manager on extension 3056 for training.

8.0 Professional Midwifery Advocates

8.1 Professional Midwifery Advocates provide a mechanism of support and guidance to women and midwives. Professional Midwifery Advocates are experienced practising midwives who have undertaken further education in order to supervise midwifery services and to advise and support midwives and women in their care choices.

9.0 Infection Prevention

9.1 All staff should follow Trust guidelines on infection prevention by ensuring that they effectively 'decontaminate their hands' before and after each procedure; and when taking bloods, utilise an Aseptic Non-Touch Technique (ANNT).

10.0 Audit and Monitoring

10.1 Audit of compliance with this guideline will be considered on an annual audit basis in accordance with the Clinical Audit Strategy and Policy (register number 08076), the Corporate Clinical Audit and Quality Improvement Project Plan and the Maternity annual audit work plan; to encompass national and local audit and clinical governance identifying key harm themes. The Women's and Children's Clinical Audit Group will identify a lead for the audit.

10.2 The findings of the audit will be reported to and approved by the Multi-disciplinary Risk Management Group (MRMG) and an action plan with named leads and timescales will be developed to address any identified deficiencies. Performance against the action plan will be monitored by this group at subsequent meetings.

10.3 The audit report will be reported to the monthly Directorate Governance Meeting (DGM) and significant concerns relating to compliance will be entered on the local Risk Assurance Framework.

10.4 Key findings and learning points from the audit will be submitted to the Clinical Governance Group within the integrated learning report.

10.5 Key findings and learning points will be disseminated to relevant staff.

11.0 Guideline Management

11.1 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

11.2 Quarterly memos are sent to line managers to disseminate to their staff the most recently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.

12.0 Communication

12.1 A quarterly 'maternity newsletter' is issued to all staff to highlight key changes in clinical practice and will include a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly. Midwives that are on maternity leave or 'bank' staff have letters sent to their home address to update them on current clinical changes.

12.2 Approved guidelines are published monthly in the Trust's staff newsletter that is sent via email to all staff.

13.0 References

National Collaborating Centre for Women's and Children's Health (2014) Intrapartum care: care of healthy women and their babies during childbirth. NICE. December. available on the NICE website at https://www.nice.org.uk/guidance/cg190

Percival, P. (2003) Jaundice and Infection IN FRASER, D. and COOPER, M. (Eds.) Myles Textbook for Midwives – 14th edition. Churchill Livingston: London, England.

McDonald, S. (2003) Physiology and Management of the Third Stage of Labour IN FRASER, D. and COOPER, M. (Eds.) Myles Textbook for Midwives – 15/16th editions. Churchill Livingston: London, England.

Appendix A

Group/Direct Antiglobulin Test (DAT)/ Coombs test) and Kleihauer Test

Indirect Antiglobulin Test (IAT)/ Coombs test	Screens maternal blood for antibodies, a negative result shows an absence of antibodies or sensitisation to major blood group antigens
Group/Direct Antiglobulin Test (DAT)/ Coombs test) test	Screens for maternal antibodies on the surface of fetal red blood cells
Kleihauer test	Detects fetal haemoglobin and estimates the number of fetal cells in a sample of maternal blood

Appendix B: Preliminary Equality Analysis

This assessment relates to: Cord & Maternal Blood Sampling/07044

A change in a service to patients		A change to an existing policy	**X**	A change to the way staff work	
A new policy		Something else (please give details)			

Questions	Answers
1. What are you proposing to change?	Full Review
2. Why are you making this change? **(What will the change achieve?)**	3 year review
3. Who benefits from this change and how?	Patients and clinicians
4. **Is anyone likely to suffer any negative impact as a result of this change?** If **no**, please record reasons here and sign and date this assessment. If **yes**, please complete a full EIA.	No
5. a) Will you be undertaking any consultation as part of this change? **b) If so, with whom?**	Refer to pages 1 and 2

Preliminary analysis completed by:

Name	Amanda Dixon	**Job Title**	Lead Midwife Acute Inpatient Services	**Date**	July 2019