

<b>MANAGEMENT OF MECONIUM STAINED LIQUOR</b>	<b>CLINICAL GUIDELINES</b> <b>Register no 04259</b> <b>Status: Public</b>
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<b>Consulted With</b>	<b>Individual/Body/Committee</b>	<b>Date</b>
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## 1.0 Purpose

- 1.1 The aspiration of meconium into the lungs during intrauterine gasping or when the baby takes its first breath, can result in a life-threatening disorder known as meconium aspiration syndrome (MAS) and this accounts for 2% of perinatal deaths. The aim of this guideline is to reduce the incidence of meconium aspiration syndrome (MAS).

## 2.0 Equality and Diversity

- 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.

## 3.0 Definition of Meconium Stained Liquor (MSL)

- 3.1 MSL is the passage of meconium by a fetus in utero during the antenatal period or in labour.
- 3.2 15-20% of term pregnancies are associated with MSL, which in the vast majority of labours is not a cause for concern.

## 4.0 Definition of MSL

- 4.1 **Non-significant** MSL is defined as a thin yellow/greenish tinged fluid; containing **non-particulate meconium**
- 4.2 **Significant** MSL is defined as:
- Dark green or black amniotic fluid that is thick and tenacious
  - Meconium stained amniotic fluid containing lumps of meconium.  
(Refer to Appendix A for MSL flow chart)

## 5.0 Recommendations on Management of MSL before Birth

- 5.1 Continuous external fetal monitoring (EFM) should be advised for patients with significant meconium-stained liquor which is defined as either dark green or black amniotic fluid that is thick or tenacious or any meconium-stained amniotic fluid containing lumps of meconium.  
(Refer to Appendix A for MSL flow chart)
- 5.2 Continuous EFM should be considered for patients with **non-significant** meconium-stained liquor depending on a risk assessment which should include as a minimum; their stage of labour, volume of liquor, parity, the fetal heart rate (FHR) and where applicable transfer pathway.  
(Refer to Appendix A for MSL flow chart)

## 6.0 Risk factors for Meconium Aspiration Syndrome (MAS)

- 6.1 Risk factors for MAS are as follows:
- Particulate/thick meconium

- Abnormal fetal heart rate pattern, particularly fetal tachycardia, absence Accelerations and/or late decelerations
- Umbilical artery pH of < 7.15
- Apgar score < 7 at 5 minutes
- Meconium found in the trachea
- Oligohydramnious

## 7.0 When Significant MSL is Identified

- 7.1 Commence continuous electronic fetal heart rate monitoring using a cardiotocograph (CTG).
- 7.2 Consider applying a fetal scalp electrode if there is any difficulty picking up the fetal heart rate abdominally.
- 7.3 Inform the obstetric registrar/consultant on call for review and a plan of management.
- 7.4 Inform the patient and her partner and agree a plan of care/management.
- 7.5 Take maternal bloods for group and save and full blood count (FBS).
- 7.6 Ensure the delivery room is equipped with resuscitation equipment and preferably have a resuscitaire in the same room as the mother. If this is not possible have wall suction and oxygen available and have ready a resuscitaire in the delivery room or nearby to avoid any unnecessary delay in resuscitation.
- 7.7 If significant meconium is present, ensure that:
- Healthcare professionals trained on fetal blood sampling are available during labour and
  - Healthcare professionals trained in advanced neonatal life support are readily available for the birth
- 7.7 In cases of delayed labour use syntocinon with caution following careful interpretation of the CTG by the obstetric registrar.
- 7.8 Inform the paediatric senior house officer (SHO) regarding the presence of **significant** MSL and of any concerns with the CTG.
- 7.9 If the fetal heart rate becomes abnormal consider:
- Obtaining a fetal blood sample
  - Prepare for imminent delivery
- (Refer to the guideline for fetal heart rate monitoring in pregnancy and labour'; register number 04265)
- 7.10 In the presence of abnormal CTG or fetal blood sample (FBS) inform the paediatric registrar.  
(Refer to the 'Guideline for fetal blood sampling'; register number 08014)
- 7.11 Take a sample of blood from the cord to ascertain the venous and arterial PH levels, as this will help the paediatrician in further management.

7.12 Explain the findings to the woman and inform her about what to look out for and who to talk to if she has any concerns.

## 8.0 Neonatal Management

8.1 The paediatric senior house officer (SHO) should be requested to attend prior to the delivery of the baby.

8.2 **At delivery** - The incidence of perinatal distress arising from **non-significant** meconium-stained liquor is very rare (0.3-1%). Therefore, in cases where there is a normal CTG (where continuous monitoring is indicated) and normal liquor volume with **non-significant** meconium staining, the presence of a paediatrician is not always necessary. A second midwife should however be present at the time of delivery.

8.3 Keep baby warm as a cold baby can develop respiratory distress syndrome (RDS).

8.4 **Significant** MSL or liquor of any colour where there is oligohydramnios (with or without abnormal CTG) request paediatric attendance.

8.5 In the case of a well 'active' baby, no further resuscitation should be required.

8.6 The upper airways should only be suctioned if the baby has significant or tenacious meconium present in the oropharynx.

8.7 If the baby has depressed vital signs, laryngoscopy and suction under direct vision should be carried out by a healthcare professional trained in advanced neonatal life support. For resuscitation of the non-vigorous baby refer to the guideline for the 'Resuscitation of the Newborn'; register number 07074).

8.8 If there has been **significant** meconium staining and the baby is in good condition, the baby should be closely observed for signs of respiratory distress. These observations should be performed at 1 and 2 hours of age and then 2 hourly until 12 hours of age. (Refer to Appendix A for MSL flow chart)

8.9 Observations to be performed are as follows:

- General wellbeing
- Chest movements and nasal flare
- Skin colour including perfusion, by testing capillary refill
- Monitor oxygen saturation levels at 1, 2 and 4 hours of age. If the saturation levels in air is persistently <95 the paediatric SHO/ registrar on call should be informed. (Refer to Guideline for the 'Postnatal Observations of Babies Born with Prolonged Rupture of Membranes (PROM) and Meconium Stained Liquor (MSL)'; register number 07074)
- Feeding
- Muscle tone
- Temperature
- Heart rate
- Respiration

8.10 If there has been **non-significant** meconium staining, the baby should be similarly observed (refer to point 8.7, omitting oxygen saturation monitoring) by the healthcare

professional at 1 and 2 hours and should be reviewed by a paediatrician if the baby's condition causes concern at any time.

(Refer to Guideline for the 'Postnatal Observations of Babies Born with Prolonged Rupture of Membranes (PROM) and Meconium Stained Liquor (MSL)'; register number 07074)

(Refer to Appendix A for MSL flow chart)

## 9.0 Points to Consider in the Presence of MSL

9.1 The passage of meconium is rare before 38 weeks gestation, therefore consider the following if there is apparent meconium present in the preterm infant:

- Listeriosis
- Bile staining secondary to bowel obstruction

9.2 The presence of meconium with evidence of an infection can be a lethal combination. Meconium is known to inhibit the normal amniotic fluid bacteriostatic qualities thus promoting bacterial growth.

9.3 Current research indicates that **non-significant** meconium should be treated as clear liquor, with no need for gentle suctioning of the oropharynx at delivery.

## 10.0 Meconium Stained Liquor in the Community Setting

10.1 When meconium-stained liquor (MSL) occurs at home or in the Midwife-led Units the following factors must be considered before a decision is reached as to whether it is necessary to transfer the patient into the Consultant-led Maternity Unit.

10.2 The clinical situation should be reviewed for risk factors such as a smaller than average baby.

10.3 The risk of a baby developing respiratory distress syndrome (RDS) is very low in the presence of **non-significant** meconium stained liquor (0.3-1%). However continuous electronic fetal monitoring (EFM) should be considered depending on the risk assessment which should include as a minimum their stage in labour, volume of liquor, parity, the fetal heart rate and where applicable the transfer pathway.  
(Refer to Appendix A)

10.4 Time factor: if delivery is thought to be imminent, it may be safer to plan delivery in the community. In such situations and when there is concern for the safety of the baby, the midwife should ensure that an ambulance is called in case urgent transfer is required. There should always be two midwives present for delivery.

10.5 In the presence of **significant** MSL, every effort should be made to transfer the patient to Consultant-led Maternity Unit for delivery if it is safe to do so and the birth is unlikely to occur before transfer is completed.

10.6 If the midwife has any concerns with the baby's condition once delivered, arrange transfer to Consultant-led Maternity Unit for paediatric review.

10.6 If the baby is born in good condition at birth, in the presence of **non-significant** MSL at either the MLU or home birth; the midwife should perform observations on the baby outlined in points 8.7 and 8.8. The midwife should also advise and give the patient the

patient information leaflet regarding **non-significant** meconium stained liquor and the relevant contact telephone numbers, should the patient have any concerns.

(Refer to Appendix A and B)

- 10.8 In the community setting and MLU's, the neonatal discharge examination can be performed from 6 hours following birth by the N96 midwife; where the baby is born in good condition in the presence of **non-significant** MSL and where the initial observations following birth are within normal realms.  
(Refer to point 8.7, 8.8 and Appendix A, C)  
(Refer to the 'Examination of the Newborn'; register number 04225; 'Mandatory training policy for Maternity Services (incorporating training needs analysis. Register number 09062)

## **11.0 Staffing and Training**

- 11.1 All midwifery and obstetric staff must attend yearly mandatory training which includes skills and drills training, including neonatal resuscitation  
(Refer to 'Mandatory training policy for Maternity Services (incorporating training needs analysis. Register number 09062)
- 11.2 All midwifery and obstetric staff are to ensure that their knowledge and skills are up-to date in order to complete their portfolio for appraisal.

## **12.0 Supervisor of Midwives**

- 12.1 The supervision of midwives is a statutory responsibility that provides a mechanism for support and guidance to every midwife practising in the UK. The purpose of supervision is to protect women and babies, while supporting midwives to be fit for practice'. This role is carried out on our behalf by local supervising authorities. Advice should be sought from the supervisors of midwives who are experienced practising midwives who have undertaken further education in order to supervise midwifery services. A 24 hour on call rota operates to ensure that a Supervisor of Midwives is available to advise and support midwives and women in their care choices.

## **13.0 Infection Prevention**

- 13.1 All staff should follow Trust guidelines on infection prevention by ensuring that they effectively 'decontaminate their hands' before and after each procedure.
- 13.2 All staff should ensure that they follow Trust guidelines on infection prevention. All invasive devices must be inserted and cared for using High Impact Intervention guidelines to reduce the risk of infection and deliver safe care. This care should be recorded in the Saving Lives High Impact Intervention Monitoring Tool Paperwork (Medical Devices).

## **14.0 Audit and Monitoring**

- 14.1 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.

- 14.2 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.
- 14.3 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.
- 14.4 Key findings and learning points from the audit will be submitted to the Clinical Governance Group within the integrated learning report.
- 14.5 Key findings and learning points will be disseminated to relevant staff.

## **15.0 Guideline Management**

- 15.1 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.
- 15.2 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.
- 15.3 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet and filed appropriately in the guideline folders. 'Spot checks' are performed on all clinical guidelines quarterly.
- 15.4 Quarterly Clinical Practices group meetings are held to discuss 'guidelines'. During this meeting the practice development midwife can highlight any areas for further training; possibly involving 'workshops' or to be included in future 'skills and drills' mandatory training sessions.

## **16.0 Communication**

- 16.1 A quarterly 'maternity newsletter' is issued and available to all staff including an update on the latest 'guidelines' information such as a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly.
- 16.2 Approved guidelines are published monthly in the Trust's Focus Magazine that is sent via email to all staff.
- 16.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.
- 16.4 Regular memos are posted on the guideline notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

## **17.0 References**

Resuscitation Council (UK) (2010) Newborn Life Support Provider Manual, London.

**Meconium-stained Liquor Flow Chart**



