NHS Resolution

# Case story

## Consideration of meconium as a risk factor in labour

Part of NHS Resolution's maternity campaign 2022/25
#ImprovingMaternityOutcomes

Advise / Resolve / Learn

# Early Notification
## Case story guidance

### Background

In Advise, resolve and learn Our strategy to 2025, our second strategic priority is to share data and insights as a catalyst for improvement and our third is to collaborate to improve maternity outcomes. Aligned with these aims we have gathered together learning from our Early Notification Scheme and produced a number of case stories to help support learning from harm identified through claims.

### These resources

Our case stories are illustrative and based on recurring themes from real life events. These experiences have been highlighted and shared with you, to help identify potential risks in your clinical area, promote learning and prevent fewer incidents like these occurring in the future.

### How to use the case stories

There are various ways you may use the case stories, from individual self-directed learning to support continuous professional development to using them in a team environment. The idea is that by learning from the experience of others, maternity unit staff will be able to change their approach to care.

As you read or discuss the examples of incidents that we are sharing we ask you to consider the following:

- Could this happen in my organisation?
- What changes within my organisation or team might I consider after reading the material, including individual practice?
- What information should I share with the team?
- How can I share the learning from this case story?
- Who else needs to know?

### Practical applications

1. Consider the key elements of the case story and through reflection apply the learning to influence your practice in the future.
2. Use this case study as a point of discussion at appropriate multi-disciplinary team meetings, safety huddles, and/or human factor's training.
3. Use this case study to create a multi-disciplinary simulation in the clinical area or on mandatory training.
4. Review your claims scorecard to identify whether there are any themes which relate to this case story and identify where improvements could be made.

## Case story

This case story is illustrative and based on a range of clinical cases. NHS Resolution is sharing the experience of those involved to help prevent a similar occurrence happening to pregnant women and pregnant people, families, and staff.

As you read about this incident, please ask yourself:

- Could this happen in my organisation?
- Who could I share this with?
- What can we learn from this?

## Topic

Meconium as a risk factor in labour

## Key points

- Understand the importance of using a holistic approach towards women in labour and remember that risks can develop and change over time.
- Consideration of appropriate location of birth.
- Remain vigilant to the changing nature of labour, in particular to developing risk factors such as meconium.
- Maternity units should aim to have a culture of psychological safety, so all members of staff feel they are able to escalate any concerns and will be listened to.
- All staff should understand the consent process.

## Maternity story

A 26-year-old woman (Miss P) presented to the maternity assessment centre at 41 weeks gestation due to her experiencing regular and painful contractions. This was her first pregnancy, and she had received routine low risk antenatal care after booking her pregnancy at nine weeks gestation. There had been no obstetric or midwifery concerns throughout her pregnancy and no indication for additional growth scans. Her antenatal care had been in line with national recommendations[1]. Miss P had discussed her birth preferences with her community midwife during the antenatal period, and this included aiming to labour in the birthing pool in the midwife led unit.

The staff in the maternity assessment centre competed a full clinical review of Miss P. This included her observations; she had a blood pressure of 122/78 mmHg, heart rate of 81bpm, temperature of 36.5°C, oxygen saturations 99% in room air and respiratory rate of 16. These were recorded on a modified enhanced obstetric warning score (MEOWS) chart with a score of 0. Abdominal palpation confirmed cephalic presentation, and the symphysis fundal height was measured at 41cm which was plotted on the customised growth chart and showed normal growth

trajectory. The fetal heart (FH) was auscultated for one minute, in between contractions and was normal at 135bpm.

The midwife working in the maternity assessment centre discussed further options with Miss P. She was offered a vaginal examination (VE) due to contractions occurring three in every ten minutes. There was no history of rupture of membranes or any other vaginal loss. Miss P agreed to the VE to help her determine her next choice for ongoing care. The vaginal examination was completed at 16:10 and the cervix was 4cm dilated with bulging membranes, there were no concerns. Miss P was keen to use a pool for her labour, as per her birth preferences. The midwife explained all the findings so far and spoke to the staff in the midwifery-led birthing unit about their capacity.

Shortly after, Miss P was transferred to the midwifery-led birthing unit for her ongoing labour care. Miss P used the birthing pool, and the FH, maternal observations and pool temperatures were monitored, and all were within normal ranges[2]. A repeat VE to assess progress was performed at 20:30. This was performed by a different member of staff due to a shift change. This examination found the cervix to be 6cm dilated with no concerns, the membranes were still intact with bulging membranes.

The initial plan was to repeat the vaginal examination at 00:30 however Miss P was very concerned that her contractions had reduced and so requested an examination at 23:00. The contractions were now occurring one in every ten minutes and Miss P felt they were less painful. This examination showed the cervix to still be 6cm. An artificial rupture of membranes was performed at this time and meconium liquor was noted to be present. The FH was appropriately auscultated following this examination and was recorded as normal at 139bpm.

The midwife caring for Miss P explained that although meconium can be seen often with a baby that is post-dates, it does raise a concern. They explained to Miss P and her partner that meconium may increase the risk to the baby and therefore recommended continuous monitoring of the FH with cardiotocography (CTG)[2]. Unfortunately, this trust did not offer telemetry or wireless CTG monitoring which meant the pool was no longer recommended. Miss P was keen to remain on the birth centre using the pool as it was helping her with pain control, and she declined to move to the labour ward at this point. The midwife reiterated the risks associated with meconium and why continuous fetal monitoring is recommended. The midwife then requested a review from the obstetric specialty trainee year 5 (ST5)[3] which demonstrated an appropriate escalation of care. The midwife continued to perform intermittent auscultation in the first stage of labour[2], this was performed every 15 minutes as per guidelines with a FH range of 130-140bpm.

The obstetric ST5 doctor attended at 01:00 after being in theatre with another case. The doctor re-explained the same risks as the midwife and discussed various options with Miss P. Miss P agreed to be transferred to the labour ward for continuous fetal monitoring. Miss P was transferred to the labour ward, but this was delayed due to the labour ward room not being ready. The unit had been very busy during the evening. Miss P was moved to the labour ward at 02:30, 90 minutes after being reviewed by the doctor.

A CTG was started at 02:45 and at this time it was noted that there had been missing FH auscultations over the last 90 minutes due to the discussions and transfer. The FH had last been auscultated and documented at 01:15.

The midwife reviewed the CTG at 03:15 and it showed a baseline of 160bpm with reduced variability and decelerations with each contraction. An obstetric review at 03:30 was performed. This included a VE which found the cervix to be 6cm dilated with an occiput posterior (OP) position. The obstetrician recommended delivery by caesarean section due to CTG concerns and labour progression.

Decision for category 2 caesarean section was made at 03:40 and the consent was completed at this time. Miss P was moved to theatre immediately, and spinal anaesthetic obtained by 04:00. Knife to skin was at 04:05, knife to uterus 04:07 and the baby delivered at 04:08. The neonatal specialty trainee year 2 (ST2)[3] was present in theatre. Significant meconium was noted at delivery and the baby made poor respiratory effort despite stimulation with a dry towel. The cord was clamped and cut after 10 seconds, and the baby transferred to the neonatal ST2 doctor.

The 'activity, pulse, grimace, appearance and respiration' (APGAR) score was recorded at one minute of age as one. A neonatal emergency call was activated, and staff arrived two minutes later. Neonatal resuscitation was carried out in accordance with Newborn Life Support (NLS) guidelines[5]; two sets of inflation breaths were given and due to poor chest rise, direct laryngoscopy and intubation occurred. A meconium aspirator was used for tracheal suction. The APGAR score at five minutes was four. The baby was re-intubated at nine minutes of life due to low oxygen saturations; the baby was then transferred to the local neonatal unit. The baby had a birth weight on the 42$^{nd}$ centile.

Cord gas results were:

*Arterial: pH 6.85, Base excess -15.1, Lactate 7.5*
*Venous: pH 7.02, Base excess -11.2, Lactate 6.9*

These results demonstrated evidence of acute on chronic hypoxia.

The baby met criteria for therapeutic cooling, and this was commenced in line with national guidance[6]. Magnetic resonance imaging (MRI) of the brain was performed on day five; this identified a global hypoxic injury what was in keeping with the clinical diagnosis of hypoxic ischaemic encephalopathy (HIE). The baby remained on the neonatal unit for a further ten days receiving feeding support.

The placenta was sent for histology, but no abnormalities were noted.

## Learning points

- Meconium is a risk factor in labour

Meconium is the baby's first bowel movement, and this sometimes passes before the baby is born. It becomes more common when the pregnancy is post-dates, but meconium can be an indication of fetal compromise and therefore it is recommended that the labour is monitored with continuous CTG[2]. Meconium can also be a response to hypoxia and therefore monitoring the labour with continuous CTG allows clinicians to fully assess the wellbeing of the baby.

Meconium can also have implications for the baby's recovery. A condition called meconium aspiration syndrome can occur, when the baby inhales meconium before being born. This can result in needing specialised neonatal care following delivery.

- Location of birth

As discussed above, meconium can be a sign of fetal hypoxia or compromise and therefore it is recommended to commence continuous CTG monitoring. It is important to consider where this should happen for the women and baby to be safe. As per NICE guidelines, meconium is an indication for transfer to obstetric led care[4].

- Fetal Monitoring

There was a period of time when intermittent auscultation was not performed due to discussions and transfer of the mother. It is important to prioritise fetal monitoring to ensure fetal wellbeing. In situations like this, asking for assistance from another member of staff may aid with the workload.

- Delay

There were several delays noted within this case story. These include starting the CTG 3 hours 45 minutes after the meconium was noticed. Reasons for this included awaiting an obstetric review and delay in transfer to the labour ward. It's important to consider if there are other colleagues who you could escalate to. Does the labour ward coordinator know? Is the obstetric consultant available?

- Maternal choice

In this case story, the mother initially declined to move from the midwifery-led unit due to wanting to continue using the pool. It is vital to ensure clinicians provide adequate counselling and information for individuals to make informed decisions. When decisions include declining care, documentation must be clear and detailed about the risks and options explained. A woman can decline a treatment or intervention offered to her, and this must be respected by clinicians. However, as per the GMC, if the treatment or care would not serve the patient's needs, then a clinician should not provide it. However, the clinician must explain their reasons to the patient and explore other options that might be available, including their right to seek a second opinion.

- Neonatal resuscitation

There has been a recent change to guidelines regarding neonatal resuscitation when meconium is present[5]. Evidence suggests that meconium aspiration is an event that occurs prior to delivery and therefore suctioning after delivery does not impact the outcome. Suction should be used if required due to airway obstruction to aid ventilation.

## Considerations for your hospital

- Is there clear guidance for management of women who present with meconium-stained liquor?
- Is meconium part of the initial risk assessment when determining the recommended location for labour?
- Is there written information available for women regarding what meconium in labour can mean to support their decision making?
- Do you have guidance in your hospital about neonatal attendance at birth when meconium is present?
- Are clinicians aware of how to escalate their concerns and seek support when a woman chooses not to follow recommendations in relation to risk factors?
- Are clinicians aware of the GMC Decision making and Consent guidance[8]? This provides advice in situations where a patient asks for treatment or care that the clinician does not think would be in their clinical interests.

## What has happened as a result?

This case story is illustrative. If a similar case were to occur in real life, then it would be referred to NHS Resolution's Early Notification Scheme. NHS Resolution's in-house, specialist teams will review all available information about the care received, to decide whether there is any evidence of substandard care which could potentially result in compensation.

The expertise of NHS Resolution is used to proactively assess the legal risk and provide early support to families where liability is established.

NHS Resolution supports an open, transparent discussion between clinicians and families following adverse events[9]. The scheme is also designed to improve the experience for NHS staff by time limiting the need for protracted involvement in the legal process and rapidly share learning.

It is very important to note that no amount of money is comparable with the loss of a child or a child living with lifelong neurological injuries. Where poor outcomes occur as a result of deficiencies in care, NHS Resolution aims to resolve all such claims or cases fairly and as quickly as possible.

The current compensation cost to the NHS for a baby who has long term severe brain injury is around £13.8 million. The human costs to the babies, families and clinical teams involved are immeasurable.

## Resources:


1. National Institute for Health and Care Excellence Antenatal Care August 2021
2. National Institute for Health and Care Excellence Fetal monitoring in labour December 2022
3. British Medical Association. Toolkit for doctors: Doctors' titles explained. June 2024
4. National Institute for Health and Care Excellence Intrapartum Care September 2023
5. Resuscitation Council UK Newborn resuscitation and support of transition of infants at birth Guidelines May 2021
6. Therapeutic Hypothermia for Neonatal Encephalopathy | British Association of Perinatal Medicine: December 2020
7. NHS England: Saving babies' lives: version 3: July 2023
8. GMC. Professional standards: Decision making and consent. November 2020
9. NHS Resolution Saying Sorry June 2017 Saying Sorry

NHS
Resolution

8th Floor
10 South Colonnade
Canary Wharf
London, E14 4PU
Telephone 020 7811 2700
Fax 020 7821 0029
Email nhsr.safety@nhs.net

Arena Point, Merrion Way
Leeds LS2 8PA
Telephone 0113 866 5500

**www.resolution.nhs.uk**

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