Regulation 28: REPORT TO PREVENT FUTURE DEATHS

NOTE: This form is to be used **after** an inquest.

	REGULATION 28 REPORT TO PREVENT DEATHS **THIS REPORT IS BEING SENT TO:** **1. North West Anglia NHS Foundation Trust**
1	**CORONER** I am Samantha Goward, Assistant Coroner for the coroner area of Cambridgeshire and Peterborough.
2	**CORONER'S LEGAL POWERS** I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and Regulations 28 and 29 of the Coroners (Investigations) Regulations 2013. Coroners and Justice Act 2009 (legislation.gov.uk) The Coroners (Investigations) Regulations 2013 (legislation.gov.uk)
3	**INVESTIGATION and INQUEST** On 14 October 2021 an investigation in to the death of Amelia Barbosa was commenced. Amelia died on 13 December 2020, aged 7 days. The investigation concluded at the end of the inquest on 17 May 2023. The conclusion of the inquest was: **Medical Cause of Death** – 1a Hypoxic Ischaemic Encepalopathy, 2 Placental pathologies: acute chorioamnionitis and delayed vilious maturation **Conclusion** – Died as a result of an acute hypoxic injury in the period immediately before delivery, and which continued during resuscitation, leading to hypoxic ischaemic encephalopathy.
4	**CIRCUMSTANCES OF THE DEATH** 1. In summary, Amelia's mother had a routine pregnancy and was given a due date of 01 December 2020. She attended Peterborough City Hospital at around 1030 hours on 5 December 2020. 2. From very early on, the CTG trace was classified as suspicious on a number of occasions and on some occasions as pathological. Evidence and a report from HSIB confirms that assessment and decision making during this period was appropriate. 3. Due to a failure to progress in the second stage of labour and suspected fetal compromise at around 0240 hours, a decision was made for a Category 2 Caesarean section delivery. 4. The CTG trace was stopped at 0404 hours to enable the Caesarean to take place.

5. As had been anticipated, there was some difficulty due to Amelia's head being impacted, but the Obstetrician and senior Midwife worked together and this was resolved within 4 minutes.

6. Due to difficulties siting a spinal anaesthetic, and Amelia's head being impacted, the time from decision to delivery was 83 minutes. Expert evidence confirmed that, on the balance of probabilities, Amelia suffered an acute hypoxic insult commencing around 10 minutes before her delivery and which was ongoing during resuscitation.

7. At delivery, no APGAR scores were recorded as they should have been. However, based upon the evidence in the notes, I accepted the hypothesis from HSIB that it is likely that her scores were 0 at 1 minute and 1 at 5 minutes.

8. The Midwife took cord blood gases but, as there was no blood in the clamped section of the cord, the blood was taken from a different part of the cord. I heard independent expert evidence from a Consultant Neonatologist that these are not likely to have been reliable as they were taken from close to the base of the placenta rather than the clamped section of cord.

9. The evidence of the Midwife at the inquest was that she felt, and she had since discussed this with colleagues who agreed, that if necessary it was fine to take blood from anywhere in the cord. Both the independent expert and the Trust's own Head of Midwifery, who gave evidence on changes made at the Trust in light of HSIB recommendations, agreed that blood should not be taken from anywhere other than the clamped section of cord. Further, if that was not possible, it must be clearly communicated to the Neonatal/Paediatric team.

10. There were a number of issues identified with the resuscitation and concerns raised by both HSIB and the independent expert, some of which were addressed by the Trust who produced evidence to confirm how these issues had been resolved.

11. However, other issues were identified. One such issue was that the independent expert advised that resuscitation attempts should not have stopped until all reversible causes had been considered and treated. Prior to resuscitation stopping, no blood transfusion had been given. Amelia had been described to be very pale. Her haemoglobin level was later found to be 94. Both the expert and HSIB felt a transfusion should have been given. The treating Registrar also gave evidence that, had he been aware of the issue with the cord blood and another issue relating to the condition of the placenta, he would have given a transfusion. The treating Consultant who gave evidence however disagreed.

12. One of the recommendations from HSIB was for there to be training and feedback to those involved in this case, and others who were not, to learn lessons.

13. There was also difficulty inserting an umbilical venous catheter, which I accept can be difficult even in experienced hands, and the delay in intra osseous access, which was contributed to by the lack of correct equipment on the resus trolley, led to a delay in Amelia receiving adrenaline, fluid volume and sodium bicarbonate. The expert recommended that staff undergo training to improve their skills for obtaining UVC and IO access.

14. While in NICU there was also a delay in Amelia being effectively cooled due to the active cooling machine not working. I was advised that this has now been replaced.

15. Amelia was transferred to Addenbrooke's Hospital where the extent of her injuries were confirmed and she sadly died on 13 December 2020.

5	**CORONER'S CONCERNS** During the course of the investigation my inquiries revealed matters giving rise to concern. In my opinion there is a risk that future deaths could occur unless action is taken. In the circumstances it is my statutory duty to report to you. **The MATTERS OF CONCERN ARE:** 1. While I heard evidence that there has been training for Midwives on how to take cord blood, and I was provided with a copy of a poster that was said to have been in use at the Trust for some time, in April 2023, over 2 years after this delivery, the Midwife gave evidence that she and her colleagues were of the opinion that it was appropriate to take a sample from anywhere in the cord, not just in the clamped area. The expert and the Trust's own Head of Midwifery advised that this was not appropriate. It therefore does not appear that the learning has been passed on to all Trust Midwives and there is a risk that in future cases those treating the baby will be falsely reassured by normal cord pH results which may not be accurate. 2. While I read evidence of some training that had been provided in response to HSIB recommendations for further training on auscultation in addition to saturation monitoring and ECG monitoring during resuscitation, the independent expert also recommended training on UVC and IO access. I am also concerned that there does not appear to have been training in relation to the provision of blood transfusions in such cases to ensure that all potential reversible causes are treated before resuscitation stops. The Head of Midwifery who attended the inquest to advise on issues relating to the recommendations was not in a position to provide evidence on the neonatal position and I have been provided with no evidence by the Trust that these issues have been considered. I am concerned that they require further action.
6	**ACTION SHOULD BE TAKEN** In my opinion action should be taken to prevent future deaths and I believe you (and/or your organisation) have the power to take such action.
7	**YOUR RESPONSE** You are under a duty to respond to this report within 56 days of the date of this report, namely by **15 July 2023**. I, the coroner, may extend the period. Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed.
8	**COPIES and PUBLICATION** I have sent a copy of my report to the Chief Coroner and to the following Interested Persons **1) Amelia's parents** I am also under a duty to send a copy of your response to the Chief Coroner and all interested persons who in my opinion should receive it. I may also send a copy of your response to any person who I believe may find it useful or of interest. The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest.

	You may make representations to me, the coroner, at the time of your response about the release or the publication of your response by the Chief Coroner.
9	**Dated: 19/05/2023**  **Samantha GOWARD** **Assistant Coroner for** **Cambridgeshire & Peterborough**