

Thematic Review of Neonatal Mortality 2015 – Jan 2016

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Attendees:

- S Brearey Neonatal lead
- Doctor V Consultant
- N Subhedar LWH consultant
- E Powell NNU manager
- A Murphy Lead nurse Children’s services
- L Eagles NNU nurse
- D Peacock Quality improvement facilitator

Apologies:

- C Green Pharmacy

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Purpose of Meeting:

There was a higher than expected mortality rate on NNU in 2015. Cases have been reviewed at NNIRG, perinatal mortality review or neonatal review meetings and action plans have been made (See **Appendix 1**). An obstetric thematic review did not identify any common themes or identifiers that might be responsible for the rise in mortality in 2015. The aim of the neonatal meeting was to review the cases again as a multidisciplinary team with an external reviewer and tertiary level neonatologist to assess:

- Were all action points completed
- Any new areas of care improvement
- Any possible common themes
- Discuss if further action is required

Patient electronic record, written notes, radiology images and Meditech entries in addition to previous reviews were available. It was noted by NS that there was a clear and strong governance culture in CoCH which was evident at the meeting and that the number of PMs undertaken was impressive and indicated a willingness to learn and improve.

Summary of mortality cases discussed

Case:	Date of death:	Diagnosis and summary of discussion:	Actions:	Date complete:
Child A	8 th Jun 2015	<p>Coroner's PM: Unascertained Maternal Irrelevant & Sensitive severe hypertension and CVA aged 22. Twin born at 31 weeks gestation initially in good condition. UVC inserted and lying in left lobe of liver. Peripheral long line inserted with a view to remove UVC once long line in situ. Long line reported later as projected over the junction of the innominate vein and SVC</p>	Inquest 23 rd March 16	

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		<p>which is satisfactory position. Registrar that evening felt it required withdrawing a little. Sudden unexpected arrest aged PD Twin also arrested 24 hrs later. Delay in staff debrief. No PM evidence of line or UVC related complication. Crossed pulmonary arteries on PM. Agreement today that line related complication very unlikely to have caused arrest.</p>		
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Themes identified during discussion of all cases

There was no common theme identified in all the cases. One baby had severe HIE and the Trust's rate of HIE in 2015 was low and similar to previous years. One baby had severe multiple congenital abnormalities with a very poor prognosis. One baby had a significant congenital heart disease and probable sepsis. 2 babies (possibly 3 pending PM result) died of sepsis despite timely antibiotic treatment. 2 babies (possibly 3 depending on PM result) the cause of death is uncertain despite having PMs. Themes identified in more than one baby reviewed included:

1. Sudden deterioration

Some of the babies suddenly and unexpectedly deteriorated and there was no clear cause for the deterioration/death identified at PM.

2. Timing of arrests

6 babies (from 9 deaths reviewed) had arrests between 0000 – 0400.

Action: SB and EP to review all these cases focusing on nursing observations in the 4 hours before the arrests. Aim to identify if unwell babies could have been identified earlier. Identify any medical or nursing staff association with these cases.

3. Delayed cord clamping in preterm deliveries

3 babies had delayed cord clamping when hospital guidance says this is only for term babies. There is national recommendations and evidence to support delayed cord clamping in preterm babies but the obstetric, midwifery and paediatric teams have not yet

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been able to ensure adequate temperature control for all preterm babies close to Mum during delayed cord clamping. Hypothermia is associated with increased neonatal preterm mortality. However, there were no cases of severe hypothermia and only one case of mild hypothermia in the cases reviewed.

**Actions: Teams have already agreed and disseminated current policy
Multidisciplinary work to enable safe delayed cord clamping in preterm babies**

4. Ranitidine in preterm babies

NS advised group of increased risk of death in preterm babies given ranitidine. 2 babies in CoCH were given ranitidine. It is still in common usage in most neonatal units and CoCH are unlikely to be an outlier in its use.

Action: NS to send paper re risk of ranitidine in preterm babies. Practice change based on this evidence.

5. UVCs in preterm babies

3 babies had care issues around UVCs. One was used when too low, one was used when too high and one was displaced and came out. NHS England has recently reviewed UVC incidents and BAPM has recently published draft guidance. CoCH guidance could be improved by revising guidance to include correct position and standardising fixation.

Action: Revise UVC guidance once BAPM draft guideline finalised

Other suggestions for improving practice

1. CESDI grading system

Introduce CESDI grading system for all future mortality reviews as already used in network mortality meetings.

2. Resuscitation drugs proforma

Staff have highlighted difficulties recording resuscitation drug administration now that electronic prescribing is used. A draft sheet to record resuscitation drugs has been proposed and will be shared with neonatal network.

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3. Simulation training

Simulation training is becoming more popular in many neonatal units with use of sim babies and sim centres. The paediatric department should look to start simulation training for nursing and medical staff on a regular basis. This will need investment in equipment and training of trainers.


4. HERO score on NNU

HERO score calculates a measure for heart rate variability which is displayed on monitors and can be used to assist clinical staff in predicting clinical deterioration. Some evidence that its use reduces mortality

Summary Action Plan

Outstanding Action	Lead	Update	Completion Date
Delayed cord clamping policy: Confirm with staff that this is not current hospital policy for preterm babies.	Brearey Brigham Grimes	Completed All staff informed	Feb 2016
Revise UVC guideline to include standardised fixation policy and specification for T8/T9 optimal position as per BAPM draft guidance	Brearey Farmer	Awaiting ratification of BAPM draft guidance before revision of CoCH policy.	Dec 2016
Ranitidine in preterm babies – revise guidance based on evidence.	Brearey	All consultant paediatricians informed of evidence of risk. Department to discuss best way to alert prescribers to potential	Completed.

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		risk. SB to share with neonatal network	April 2016
Complete a neonatal hyperglycaemia policy	Brearey	To appoint a trainee doctor with this task in March 2016	Sep 2016
Continuing to emphasise to trainee doctors of the importance of following early sepsis guideline at inductions and teaching.	Brearey Doctor ZA		Ongoing
Discussion with midwifery team re introduction of pulse oximetry in NEWS charts.	Brearey Grimes		Dec 2016
Discussion regarding Pharmacist cover on NNU as inappropriate advice given	Green Brearey		April 2016
Transport problems reviewed by neonatal network. Alternatives to Cheshire and Merseyside Transport team to be circulated to staff.	Powell	Staff notified and poster on NNU with process	Complete
Antibiotic policy discussed at network level. ? Align policy with APH.	Brearey Webster		Dec 2016
SB and EP to review all these cases focusing on nursing observations in the 4 hours before the arrests. Aim to identify if unwell babies could have been identified earlier.	Brearey Powell	Only one case identified possible delay in starting second line antibiotics earlier based on nursing observations. 1 Action below has come from	Complete  Observations prior to collapse review.docx

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Identify any medical or nursing staff association with these cases.		this review	
Every A4 section of obs charts should have patient details, a date and time – to assist reviewing scanned Evolve records.	Powell Farmer		Dec 2016
Introduce CESDI grading system for all future mortality reviews as already used in network mortality meetings.	Brearey		April 2016
Develop a resuscitation drugs proforma to assist with record keeping during resuscitations.	Brearey	Second draft completed and under review	
Develop a neonatal simulation training programme	Doctor V Farmer		March 2017
Consider adopting Hero score on NNU monitors	Brearey		March 2017

S Brearey
2nd March 2016

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APPENDIX 1: Neonatal Mortality January 2015-January 2016

NEONATAL MANAGER: Eirian Lloyd Powell

Baby's name	DOB	Gest	Review	Reason for admission	DOD & AGE	Cause of death	Staff allocated	Staff on duty
<p>Child A</p> <p>Child A</p> <p>Con: MS</p> <p>Resus: RJ</p>	<p>Child A 06/15</p> <p>20.31hrs</p>	31/40	 <p>PERINATAL MORBIDITY AND MOF</p>	PREM	<p>08/06/15</p> <p>21.00hrs</p> <p>(PD)</p>	Maternal I&S	Care handed to Lucy Letby at 20.00hrs	<p>Caroline Bennion(RN)</p> <p>Nurse T</p> <p>Mary Griffith (RN)</p> <p>Lisa Walker (NN)</p> <p>Liz Marshall (NN)</p>

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