RCPCH Invited Reviews Programme

Service Review

Countess of Chester Hospital NHS Foundation Trust

November 2016

Final copy

RCP H

Royal College of
Paediatrics and Child Health

RCPCH Invited Reviews Programme
November 2016

Published by
Royal College of Paediatrics and Child Health
5-11 Theobalds Road
London WC1X 8SH
020 7092 6000

The Royal College of Paediatrics and Child Health (RCPCH) is a registered charity in England and Wales (1057744) and in Scotland (SC038299)

Contents

Executive Summary

The Royal College of Paediatrics and Child Health (RCPCH) was invited to review the neonatal service at the Countess of Chester Hospital (COCH) following re-designation from level 2 Local Neonatal Unit (LNU) to level 1 Special Care Unit (SCU) in July 2016 due to concerns about increasing neonatal mortality. A number of causes had been postulated but there was no definitive explanation for the trend.

The Review team visited on 1-2 September and met staff and stakeholders including obstetric, network and transport representatives. We were not commissioned to conduct detailed casenote reviews but given the circumstances we recommend that this is initiated immediately prioritising the deaths that were considered unexpected.

We found a cohesive and enthusiastic group of paediatricians and a nursing complement that is well led and supportive. There is good engagement with Operational Delivery Network (ODN) colleagues. Trainees are positive about their experience and the skills they acquire. There is scope for further development of nurses towards specialist or nurse practitioner roles and greater involvement in medical decision making. Recent events have put pressure on inter-team relationships but this is being addressed and morale remains reasonably robust with generally good professional communication between teams.

There are however significant gaps in both medical and nursing rotas. Staffing is sufficient for an SCU caring for infants from 32 weeks gestation, but not for provision of longer term high dependency and some intensive care. Before reinstatement of LNU status staffing levels must improve and personnel issues must be resolved.

The arrangements for investigating neonatal deaths must be strengthened; review findings appear to be reported at several different meetings but it is unclear at which the resulting actions are monitored. Despite sound structures, there seems to be disconnection between the neonatal leadership and the Trust's governance and risk management processes. Reviews highlighted examples of poor decision making, delays in seeking advice and delayed retrieval of infants to tertiary units.

The physical separation of the tertiary centres and lack of tight protocols for transfer to them remains a risk as is the commissioner indecision around integration of the three network transport services, leaving an under-resourced single clinical transport team in Cheshire and Merseyside.

Our report makes recommendations for the unit's operational practice, for Trust management and for the wider ODN, which must be addressed swiftly to enable the unit to reopen as an LNU if that is the intention. In the interim it is important that the skills of existing staff caring for very sick infants are maintained and that the Trust continues to communicate effectively with patients' families and the wider public about the services available.

1 Introduction

1.1 The RCPCH was approached in June 2016 by Mr Ian Harvey, Medical Director to conduct an invited review of the neonatal service at Countess of Chester Hospital NHS Foundation Trust (COCH). The Review team comprised two paediatricians with special interest in neonatology, plus a senior neonatal nurse manager and a lay reviewer. The Trust provided a range of documents for review, and interviews with relevant staff and others as listed at Appendix 2 took place on 1 and 2 September 2016 at the Trust. There were some additional conversations by telephone following the visit and additional documentation received A summary feedback meeting was held with the Chief Executive, Medical Director and Nursing Director at the end of the visit at which the Review team set out some immediate actions which were followed up by letter the next working day. These and further recommendations are included in section 5.

1.2 This report provides an independent critique of the service against agreed terms of reference, taking into account published policy, guidance and standards developed by RCPCH, other professional bodies and the Department of Health, together with the objective operational experience of the Review team drawing on and supported by the resources of the RCPCH. It is the property of COCH through the Medical Director and remains confidential between the Trust and those appointed by the RCPCH to produce the report. However the RCPCH encourages wider dissemination of this report by the Trust amongst those involved in and working with the service.

1.3 The Review team would like to thank all participants for their hospitality and engagement with the process, their openness, and their time.

2 Terms of reference

2.1 The RCPCH will conduct a review of the COCH neonatal unit against standards, evidence and guidance to examine

- Is the service provision compliant with current professional standards?
- Are staffing numbers and competencies appropriate for the acuity of the infants cared for?
- Does the unit have
    - clear and engaged leadership?
    - good team working ?
    - a culture of safety and proactive risk assessment ?
    - sound governance processes?
    - a positive relationship with the neonatal network and transport service?
- To consider concerns about the Neonatal Unit with specific reference to:
    - Are there any identifiable common factors or failings that might in part, or in whole, explain the apparent increase in mortality in 2015 and 2016?
- Are there any areas of concern for which potential development would improve outcomes?

3 Background and Context

3.1 The Countess of Chester Hospital NHS Foundation Trust (COCH) comprises a 600-bed District General Hospital and a 64-bed intermediate care service at Ellesmere Port. The Trust serves a local population of approximately 445,000 people in and around Western Cheshire, Ellesmere Port, Neston and North Wales. The Trust was rated 'good' by CQC in its latest inspection report, published June 2016, which highlighted the accessibility and visibility of the executive team and the positive steps they had taken to improve communication with staff at senior and local level.

3.2 The acute paediatric team comprises seven consultants including one with a special interest in neonatology. Proposals had been approved at the time of the visit to extend this team by two additional consultants (including neonatology and diabetes interests) in order to comply with the RCPCH Facing the Future 2015[1] standards and recruitment is under way.

3.3 Up until 7th July 2016 neonatal provision comprised a 20-cot 'Local Neonatal Unit' (LNU) caring for infants over 27 weeks' gestation. There were 3 Intensive Care (IC) cots, 3 High Dependency (HD) cots, 10 Special Care (SC) and 4 transitional care cots.

3.4 Average occupancy between April 2014 and March 2015 indicated there was overprovision of neonatal and high dependency cots (see table 1). Around 96% of infants are 'inborn', with just over 3000 births a year in the maternity unit. The neonatal unit cared for 406 infants in 2015/16 which represents 13% of deliveries (15% the previous year), a relatively high, but falling admission rate compared with the national benchmark of around 10%.

	IC	HD	Combined IC/HD	SC
COCH	51%	64%	57%	75%
ODN average	67%	87%	77%	81%

Table 1 – occupancy 2015-6 as % of available cots (ref network activity capacity demand report)

3.5 The unit is a part of the Cheshire and Merseyside Neonatal Network, one of three within the North West Neonatal Operational Delivery Network (ODN). Infants less than 27 weeks' gestation are transferred, ideally in utero, to the neonatal intensive care unit at either Liverpool Women's Hospital (LWH) or Arrowe Park hospital (APH), with neonates requiring surgery being cared for at Alder Hey Children's Hospital (AH).

3.6 The Cheshire and Mersey transport team is combined with the 'cot bureau' that co-ordinates availability of specialist cots across and beyond the network, and is run as a separate service out of Liverpool Women's Hospital (LWH). It uses Tier 2 doctors and Advanced Neonatal Nurse Practitioners (ANNPs) rostered from the Liverpool rotation with consultant advice and support during working hours. In 2014 the ODN

[1] www.RCPCH.ac.uk/facingthefuture

developed a business case to combine the three transport services into one centralised, dedicated team based at Liverpool or Manchester, and a decision is awaited on this from NHS England Specialist Commissioners.

Concerns raised

3.7 Since June 2015 the paediatric consultants have become concerned about a higher than usual number of neonatal deaths on the unit, several of them being apparently 'unexplained' and 'unexpected'. Most of these infants had post-mortem examinations; all cases had been reviewed by the mortality and morbidity meeting (M&M) and one had undergone a Root Cause Analysis review, with some also being examined by obstetric secondary review. On 8th February 2016 a half day 'high level' thematic review of ten of the cases took place with the involvement of the ODN clinical lead. A summary internal review of the nursing observations, staffing and junior doctor rotas for the 12 hours before the deaths was then conducted. No definite causal correlation was identified between the various cases; however a number of recommendations (such as new UVC guidance) resulted from the high level review.

3.8 Further in-depth analysis by the neonatal lead in July 2016 examined activity and acuity from June 2015. This included admissions per month, time between deaths, total care days per month, IT care days per month, birthweight and prematurity. This was not a systematic review but concluded that there was higher activity and lower admission birthweight than average during the period corresponding to the increase in mortality. This was not however considered to have been significant enough to explain the increase in mortality.

3.9 The MBRRACE-UK report[2] published in May 2016 provides historical analysis of neonatal mortality and morbidity for births during 2014 and does not show the Trust as an outlier for that period, which makes the recent prevalence more curious. Similarly the evidence from the National Neonatal Audit Programme (NNAP)[3] for 2014 indicates the unit is performing well against those of similar size.

3.10 The Review team agreed that there were no obvious factors which linked the deaths and that circumstances in the unit were not materially different from those which might be found in many other neonatal units within the UK.

3.11 Most of the consultants had been on duty for at least one of the deaths. Following reflection both individually and in discussions the consultants noted that several of the infants had collapsed unexpectedly and had been surprisingly unresponsive to resuscitation, despite the staff following standard protocols in each

[2] https://www.npeu.ox.ac.uk/mbrrace-uk/reports
[3] http://www.rcpch.ac.uk/improving-child-health/quality-improvement-and-clinical-audit/national-neonatal-audit-programme-nnap

case. One surviving infant was mentioned as having needed resuscitation for similar collapses over three nights but subsequently recovered, although the Review team did not see details of 'near misses' such as this. The consultants did not initially consider that there were any links between the episodes of collapse in the infants that died but subsequently they began to note similarities. For example some of the infants displayed a sudden mottling appearing after a few minutes of resuscitation, usually starting on the limbs, and on at least one occasion on the centr l abdomen and chest. The consultants had considered a number of possible causes for this appearance but there remained no definite explanation.

3.12 In response to this allegation and the high acuity and activity on the unit the Medical Director, Nursing Director and Trust Board decided on 7th July to reduce the designation of the service to a Special Care Unit (SCU) caring for infants from a minimum of 32 weeks gestation pending an external review by the RCPCH, and the change appeared to have been handled sensitively and effectively by management with good network and public engagement.

3.13 The staff within the unit had been naturally very distressed by each of the neonatal deaths and were also affected by the actions that had been taken in response to the concerns subsequently identified. The RCPCH was invited to review the investigations of each death and the wider service, including network support and advice, protocols and transfer arrangements, to provide a view on whether there were any contributory factors in the deaths or missed opportunities to take action that could have prevented or mitigated them.

Strategic Future

3.14 In terms of the strategic future of the unit, a Vanguard[4] project is being implemented for Cheshire and Mersey, and the STP[5] process is considering a footprint with links between Wirral and Cheshire, i.e. a longer term link for COCH with APH rather than LWH. This may have implications on the current strong fetal medicine service and obstetrics in general which cares for a relatively high proportion of women with high-risk pregnancies. However the obstetricians remarked that since the temporary reconfiguration there had been minimal impact from their perspective, since women were travelling to other units antenatally when a premature delivery was anticipated.

[4] The Vanguard scheme was announced in the NHS Five Year Forward View and launched in January 2015. The West Cheshire Way 'starting well' scheme is looking at better integrated care for babies for babies

[5] Sustainability and Transformation Plan – developed across organisations and launched in October 2014 to set a blueprint for more integrated working.

4 Findings

Recommendation: Conduct a thorough external, independent review of each neonatal death between January 2015 and July 2016 to determine any factors which could have changed the outcomes. Include obstetric and pathology / postmortem indicators, nursing care and pharmacy input

Recommendation: Ensure there are clear, swift and equitable Trust processes for investigating allegations or concerns which are followed by everyone

4.1 Is the service provision compliant with current professional standards?

No. The team has self-assessed against service standards for a Local Neonatal Unit and is non-compliant on nurse and medical staffing levels, environment and accommodation for parents, support from the community neonatal team and postnatal follow up.

4.1.1 Neonatal care in the UK benefits from a range of clear and consistent service standards developed by the British Association of Perinatal Medicine (BAPM) and adopted by government through NICE Quality Standards, the Neonatal Toolkit and NHS England's Specialised Commissioning specifications for neonatal care (E06) and neonatal transport (E07). These standards guidelines and specifications set out expectations for staffing (numbers and experience), activity, transfer arrangements, environment, governance and patient/parent/carer experience

4.1.2 The designation as an LNU requires medical cover as follows:

- At least seven on-call consultants including at least one neonatal specialist (compliant)
- A Tier 2 rota shared with paediatrics with at least 8 staff (not compliant)
- A Tier 1 rota separate from paediatrics with at least 8 staff (not compliant)

Units with a high proportion of intensive care should have enhanced staffing.

4.1.3 The consultants appeared confident about carrying out neonatal care but they are concerned that they would lose skills if the status of the unit remains at SCU. They are able to actively cool infants for transfer, reaching the target 6 hours and the unit is performing well against peers for the standards measured through the NNAP programme.

4.1.4 Nurse staffing levels are consensus based and calculated as follows

- one nurse to one infant on intensive care
- one nurse to two infants on high dependency care
- one nurse to four infants on special care.

All nurses should have undertaken NLS
Compliance is monitored on a network basis through the Badger Net returns
Across the network nurse staffing is 27% below target, at COCH it is 21% according to a recent network audit

4.1.5 The paediatrics team has self-assessed against the 2015 'Facing the Future' standards for acute paediatric care, and stated compliance with all standards except the first – consultant presence at times of peak activity. There are ward rounds at 5pm weekdays and weekend mornings contributing to compliance with the 14-hour consult review standard. There has been a 'hot week' system since 2008-9, but a single consultant is insufficient to safely cover both the paediatric and neonatal wards. The business case for additional consultants (see 3.2) will address this.

4.1.6 In terms of environment the unit is well located, being adjacent to the paediatric ward and maternity unit, but its design reflects its age. The rooms are small, with cots placed too close together, making nursing more of a challenge, and lighting is inadequate. There is insufficient storage space resulting in many pieces of equipment being stored in corridors. Direct visibility from one area to another is poor, and infants are moved regularly to accommodate acuity – an extra risk in the system. There is a £3m fundraising appeal towards rebuilding the unit adjacent to the current facilities. A light, bright parents' suite was opened recently with support from the Chester Childbirth Trust.

4.1.7 BAPM standards suggest that an annual report should be prepared for each neonatal unit. This provides an opportunity to bring together key issues and analysis and put it to the attention of senior management and network / commissioners. No such report had been produced for COCH due, presumably, to pressure of activity so this valuable opportunity for influence had been lost.

Recommendation: An annual report should be prepared for the unit which is disseminated to the Board and Network stakeholders

4.2 Are staffing numbers and competencies appropriate for the acuity of the infants cared for?

No. The paediatric service (including neonates) struggles to fill its Tier 2 (middle grade) posts and medical staffing numbers are inadequate for a Tier 2 LNU, although sufficient for a Level 1 SCU. The reported quality of teaching and training for doctors is, however good across the paediatric service.

4.2.1 Although the unit is on-paper compliant at consultant level, the high level of activity of the paediatric service means there are only two scheduled consultant ward rounds per week on the neonatal unit, yet five on the paediatric wards. This would not meet training requirements or RCPCH and BAPM guidance for a Local Neonatal Unit. The appointment of two further consultants (see 3.2) in 2017 is an extremely positive and forward thinking decision which will enable a dedicated consultant of the week for the neonatal unit. These appointments should be in place before the network and unit consider returning to Level 2 status[6].

[6] Subsequently the Review team ahs been advised that only one appointment is being recruited.

Recommendation: The two additional consultant appointments must be in place before any consideration can be given to possible redesignation as a Level 2 LNU

4.2.2 The investigation reports from the infant deaths showed a pattern of insufficient senior cover and a reluctance to seek advice. The consultants reported visiting every day, and being available on site 9am-5pm, perhaps by supervising work on the postnatal ward and teaching. Given th e acuity of the unit (pre 7th July) there should have been a greater level of consultant presence on the ward.

Recommendation: Strengthen procedures for involvement of more senior advice and develop guidelines for consultant availability to the neonatal unit

4.2.3 At Tier 2 the seven North West rotation training posts (across paediatrics and neonates) are hard to fill. At the time of the visit there were 5.5 WTE with a long-term locum, but there had been as few as 3.5 WTE on the rota and rarely a full complement. Slots are frequently covered by locums who apparently vary in their capability. The Review team heard that the mechanisms for securing locums is not clear, nor monitored by the budget holder and the Trust has had to pay over the capped rates at times to secure them. The oncall consultants will occasionally cover Tier 2 gaps by being resident, with colleagues usually willing to provide on-call support.

4.2.4 The Review team was not aware of any strategic plans to stabilise the Tier 2 rota, such as development of ANNPs or appointment of specialty grade doctors, despite an annual agency cost of around £125k. In one of the cases the nurses had expressed concern about the capability of the locum registrar whose agency had previously been advised not to offer the doctor to the Trust again. The nurses took steps to ensure the consultant was aware but it was not clear to the Review team that the locum recruitment process was sufficiently robust for such a situation not to recur and no learning / action was documented for this case.

Recommendation: All unfilled rota gaps (and transport problems) should be recorded through DATIX and risk assessed at a senior committee such as the Divisional Governance Committee

4.2.5 At Tier 1 there are nine WTE doctor across paediatrics and neonates, providing a separate rota in each of the two areas between 9am-9pm weekdays and 9am-5pm weekends, with one available overnight. The BAPM guidance states that Tier 1 rotas should be European Working Time Directive compliant and have a minimum of eight staff who do not also cover general paediatrics so this staffing level is insufficient for a Level 2 LNU.

4.2.6 The Tier 1 doctors reported feeling well supported by nurses, particularly when they are called to gain experience assisting at a birth. The midwives and neonatal nurses can cannulate, and, 'know when to do things and know the patients well' according to the junior doctors.

4.2.7 There are four (<3WTE) Advanced Paediatric Nurse Practitioners who cover 12 hour shifts in the assessment unit supporting the Tier 1 rota, and many of the maternity team are trained to cover newborn examinations (NIPE) There are however no ANNPs at either Tier 1 or Tier 2 level. The neonatal network strongly supports development of these roles – there are 15 at LWH, 4 at APH, and several others within other LNUs, often practising as educators to maintain their skills

Recommendation: Develop a strategic plan for sustainable recruitment to the Tier 2 rotas through development of nurse practitioner or other roles and review the protocol for locum assessment.

4.2.8 There is a robust foundation training strategy, which includes some simulation scenarios but it is considered to be better provided through direct teaching. COCH has received good feedback about the technical ability of trainees – and the opportunities to develop experience in decision making.

4.2.9 Medical handovers are lengthy but thorough and apparently provided a good learning experience, evidenced by the GMC trainees' survey. More formal teaching sessions take place on Wednesday and Thursday mornings. The Grand Round on Wednesdays provides an opportunity for the hot week consultant to prepare a full review of the cases to be discussed, including test reports and social issues.

4.2.10 Nurse staffing levels are frequently less than the recommended levels; there was a 21% shortfall in 2014-5. There are always two Band 6 and two Band 5 nurses on shift but these are often covered by long term agency staff. The CQC indicated that neonatal nurse staffing was of concern, requiring the Trust to:

> *"Ensure staffing levels are maintained in accordance with national professional standards on the neonatal unit and paediatric ward"*

but the detail of what this meant was not available in the public domain and no other concerns were raised in their report. The nurses on the unit were also supporting transitional care in the maternity unit and administration of antibiotics for infants from Cestrian Ward which depleted their availability for sick infants in the LNU

4.2.11 In terms of acuity, network data[7] available to the team had indicated that COCH has a significantly higher proportion of late gestation admissions (over 37 weeks) than other local units - 10.73% compared with 5.69% average for the 22 units, and this had been raised for several years. The 2015-6 data available in October showed the figure had fallen to 7.8%, lower than two other units in the region. A number of possible reasons for the higher level had been suggested including the transitional care arrangements, differences in obstetric approach, reluctance to discharge, low thresholds to transfer in or inexperienced medical staff but the increasing trend towards the network norm was commendable and monitoring should continue.

[7] ODN activity and demand data 1st January 2014-31st March 2015

4.2.12 The Network had concluded that too many IC days were occurring outside the NICUs than recommended in the BAPM 2014 standards. There is a longer term network plan to reduce the number of IC-cot-days in LNUs.

4.2.13 Given that the unit will have been running for some months at Level 1 before any reinstatement of the IC cots, the staff must be supported to maintain their intensive care skills. This could be by temporary rotation to a Level 3 unit or simulation scenarios. Given nurses attend larger tertiary centres when undertaking the ITU specialist neonatal course as 'students' this should be feasible but requires a robust yet supportive HR system to ensure honorary contracts and paperwork are in place.

Recommendation: The organisation should ensure maintenance of skills of neonatal nursing and medical team to ensure that return to level two can be safely managed. Rotation of staff to level three units should be explored

4.3 Does the unit have clear and engaged leadership and good team working?
Yes, generally but there were some areas where communications could be strengthened

4.3.1 The Review team found extremely positive relationships amongst the various teams that contribute to the neonatal unit. The consultants appeared to be a cohesive group who were proud of the unit and how well they worked together, for example in developing and agreeing clinical guidelines. The senior nurses were very strong as a team and provided appropriate challenge to the medical staff and support to nursing colleagues. The more junior nurses and doctors all spoke highly of the atmosphere on the unit and the accessibility of other staff to assist with questions and clinical advice. The neonatal / paediatric team was reported by other Trust staff to have 'far fewer problems than others' and seem to get on well with each other and the nurses.

4.3.2 There were, however, some historical issues around senior level decision making. Some nurses reported that external escalation was not always as timely as it could have been, and nurses did not feel empowered to participate. Although the nurses work to a relatively traditional model, they reported that they will support escalation more "vigorously" depending upon which consultant or locum is on duty. This is not uncommon on a LNU but there should also be a process to ensure that any training needs identified are addressed and that these training needs, until addressed, are recognised as a systemic risk. Relationships are starting to improve although recent events around the reconfiguration had damaged relationships between senior nursing staff and the consultants and this may need active intervention to restore trusting working relationships.

Recommendation: Establish a short term group to examine nurse involvement in decision making, guideline development and transport liaison

4.3.3 The Occupational Health (OH) team appeared to be proactive and all staff knew whom to contact even if they chose not to use the service. The OH team includes nursing and part time (1PA) medical support with a mental health nurse within the team. They offer staff support, counselling and debriefing and 'drop in' 2-3 times a year to departments, more often when they are advised of concerns as was the case with the neonatal unit. Whilst patient deaths affect everyone, the neonatal nursing and medical teams appeared to manage support within their own group rather than accessing OH support.

4.3.4 When an infant has died the nurses reported that the notification and paperwork arrangements run smoothly and effectively, allowing them more time to spend with the family. There is an encrypted distribution email template, a pack of guidelines explaining what to do, close links with the palliative care teams at LWH and AH and good resources from the Network.

4.3.5 Following an incident, there is a team debrief organised almost immediately to reflect on the situation and provide support and learning. Several staff stated they would appreciate another debrief at a time when other unit staff who had cared for the infant were able also to attend.

4.3.6 There is no specific palliative care lead or bereavement support but there are good links with SANDS[8]. Some staff have completed bereavement training and all can signpost parents to good local voluntary groups.

Recommendation: Include a unit-wide debrief for neonatal deaths on the unit to include all grades of clinical staff who cared for the infant

4.3.7 Leadership at senior Trust level appeared to be somewhat remote from the day to day issues taking place in the unit, and representation on key decision making network groups was sometimes at very high level with delays in feeding back to the operational team. The consultants described feeling that they are 'victims of our own success', being 'at arm's length' and not 'on the radar' with respect to the executive team although there are links through the governance arrangements in terms of reporting and incident management.

Recommendation: There should be a 'Children's Champion' on the Board. One of the executive directors should have a specific remit to support the neonatal nursing and medical team until the enquiry and subsequent management action plan is completed

4.3.8 Nurses reported that although they often use agency colleagues on shifts they are usually regular placements and know the unit and staff well. The ward nurses explained that the unit is a very positive place to work with encouragement and opportunities for hands on experience and support. Although the ward can be really busy, 'everyone

[8] Stillbirth and Neonatal Death Society

wants everyone to progress', but the nurses felt that there had been a dip in morale since the changes and information about the temporary reconfiguration had not been shared, even with the Band 6 nurses who had to manage the enquiries from anxious parents over the weekend following the announcement. Mention of installing CCTV on the unit without explanation had unsettled the nursing team further although the Unit Manager had strived to reassure them.

4.3.9 Trainees reported the unit as being an excellent place to work with a positive team culture and smooth functioning compared with other locations they had experienced. The GMC survey results for paediatrics however indicated dissatisfaction with induction feedback and regional teaching. There is a good working team and good relationships with nurses and doctors. Handovers are clear with good supervision and the consultant apparently always calls the junior doctor on call at night before going to bed. Consultants were reported to be 'hands on supportive' and approachable.

4.3.10 Since the temporary redesignation, staff reported feeling calmer and more confident and morale/sickness has improved. The pressure has reduced and the unit is operating more in line with BAPM staffing standards. The consultants also reported that in the two months since the change infants have been sick but recovered as expected.

4.4 Does the unit have a culture of safety and proactive risk assessment and sound governance processes?

Partly. There are processes in place including structured governance meetings and feedback to staff which were acknowledged positively by CQC. There did not however appear to be sufficient 'join up' between the neonatal unit, obstetrics and the Trust's risk management system to deal proactively with the increased mortality.

4.4.1 The Trust has a clear policy for reporting incidents which sets out the process, reporting and governance arrangements. Although the Trust divisional structure (since 2010) splits women's services and maternity (planned care) and children's services (emergency care), there is a monthly Women's and Children's Care Governance Board (W&CCGB) chaired by a consultant obstetrician which considers all incidents, reports, research, publications, updated policies and causes for concern. Attendance is not high (in May 2016 only 7 out of 20 members attended) but when not quorate members cover for each other. Minutes are circulated widely. This group feeds into a Quality and Safety and Patient Experience Committee and risk issues can also be considered by the Corporate Director's group. The Urgent Care Governance Board[9] also covers neonatal services but does not explore issues in depth.

4.4.2 The unit is proud of its safety arrangements, citing the '4 'P's checks before intubation and the implementation of actions following the enquiry into a neonatal death in March 2014. The twice-daily handovers were described as being 'comprehensive' although the handover information was not seen by the Review team. There is a daily 'Safety Huddle' with the shift leader. The neonatal lead emails a monthly 'Neonatal

[9] From January 2016. Until November 2015 this was the Urgent Care Divisional Board

Incidents' one-page briefing to all staff in the unit detailing any incidents, learning and updates. This was mentioned by several staff as being very useful and informative.

Incident reporting

4.4.3 If an incident meets criteria a Serious Incident panel is established within two days chaired by the Medical Director and Director of Nursing. An 'SBAR' report is prepared and the recommendations from the panel are reviewed at the Governance Board and Divisional meetings. There is a formal system of 'Level 2' Root Cause Analysis for internal Trust reviews run by the Risk Manager but this is relatively new and was used in only one of the index cases.

4.4.4 The deaths are reviewed, using case notes, initially by the neonatal lead, senior nurse and the quality facilitator and a report regarding any learning and actions required is completed. Deaths and near misses which are not SI are reviewed at the perinatal Mortality and Morbidity (M&M) panel which is chaired by the Fetal Medicine Consultant and meets around 5 times a year. The meeting does not include the risk midwife, or any external adviser. The M&M death review report template has been updated and improved since February 2016 following the neonatal death review and includes brief findings and actions/learning arising from the incidents together with the names of those present. Minutes from the M&M are circulated to all the paediatric consultants and senior nurses on the neonatal unit for dissemination, but responsibility for follow up of findings and implementation of lessons learned is not clearly documented, largely lying with the neonatal lead.

4.4.5 Two of the cluster of deaths were not reported; the current policy indicates that not all deaths need to be submitted as DATIX, if they are 'expected deaths', and in 2015-6 only 10 of the 13 deaths were reported as incidents on the neonatal incidents summary. The definition of 'expected' was not available but presumed to be that used in safeguarding /child death panels and it was not clear who is responsible for DATIX entry. Other areas in the hospital report well but the neonatal unit have for some time apparently been less systematic in reporting.

4.4.6 Until early 2016 there was a Risk and Patient Safety Lead but the role was re-designed when she left the Trust (around the time of the CQC visit) and the post of Risk Midwife was established and filled in May. Children's' risk was covered by a Risk Facilitator from Urgent Care but the Risk Midwife subsequently covered neonatal risk.

4.4.7 Some of the deaths were reported on the Risk Register and the Review team noted some were recorded with 'green - low risk of harm' status.

4.4.8 The review of deaths carried out by the (neonatal lead) consultants that, together with two additional deaths, triggered the unit's reconfiguration in July 2016 did not use a recognised RCA process nor did it involve the governance lead/risk manager. The staffing grid in particular was not validated. The Risk Manager has conducted a more

systematic review of staffing on duty at the time of the deaths and the shift before but this only includes clinical staff, not cleaners and others with access.

4.4.9 The RCPCH review team recommends that the death / near miss reviews process requires further strengthening to involve the risk management team systematically and follow corporate process. All deaths should be raised as an SI, the case reviewed promptly by paediatrician, risk midwife, neonatal nurse and obstetrician and then either stood down or investigated formally. Investigation could be internally or with external input if there are serious concerns. There should be a clear forum for ensuring recommendations are actioned. The decision to stand down a case should also be formally reviewed at the Women's and Children's Governance Board or Quality and Safety and Patient Experience Committee, and a mechanism for informing the CCG of all deaths (perhaps linked to the obstetric reporting) should be identified. This process including the involvement of an external adviser is in line with the recommendations of the RCOG's 'Each Baby Counts' report[10].

Recommendation: Strengthen the response to neonatal death/near miss investigations to normalise the reporting culture, include risk and governance staff, involve a wider group including maternity and external scrutiny demonstrate completion of actions and clarify senior management oversight

4.4.10 The paediatric and neonatal team has worked hard to build and review a large number of practice and system guidelines. They appear to be systematically updated by the consultants, sometimes as a result of situations and incidents with a process monitored by the Divisional Governance meeting. Many of the clinical guidelines reflect NICE guidance, reference APH or Alder Hey or are developed from policies in place at LWH and this should be explicitly encouraged with those relating to stabilisation and transfer clarifying network liaison and governance responsibilities to minimise risk of confusion at handover particularly in an emergency situation. There was some uncertainly over the engagement of nursing staff with guideline development, although joint authorship was noted on some.

Recommendation: All neonatal guidelines should be developed in conjunction with the network and tertiary service for consistency of care in emergencies.

Data, Activity and risk monitoring

4.4.11 Nurses complete a daily summary on Badger but use paper notes until discharge. Concerns were expressed that the different systems for care, incident and death reporting do not communicate and data differs between them. The Badger neonatal system and the Medictech hospital system appear to have different arrangements for recording and reporting details about term admissions, discharges and infant deaths, and the MBRRACE study requires different data again. This has caused some tension between neonatal and audit/clinical governance staff which needs to be resolved.

[10] See https://www.rcog.org.uk/eachbabycounts

Recommendation: An agreed mechanism for data recording, management and reporting across the IT systems including noting M&M case review reports and CDOP notifications should be devised and implemented systematically

Guidelines for the investigation of newborn infants who suffer a sudden and unexpected postnatal collapse in the first week of life (BAPM 2011)

Summary of recommendations

- Infants who suffer a sudden and unexpected cardiorespiratory collapse within the first week of life should be recognised as having an increased risk of congenital anomaly or metabolic disease as an underlying cause for their collapse

- All infants who suffer a sudden and unexpected cardiorespiratory collapse within the first week of life should undergo comprehensive investigation to determine the underlying cause.

- Such an investigatory process will involve interdisciplinary liaison to maximise diagnostic yield whilst minimising unnecessary tests for the child.

- A detailed history of the family and situational events is essential and should be obtained by a senior member of medical staff

- All infants who die from such collapse should be notified to a Coroner/Procurator Fiscal

- All infants who die should undergo post mortem performed by a perinatal pathologist

- A detailed multi-professional case review should follow the investigation of any unexpected infant death

4.4.12 The Review team was concerned that it was only when the data was formally reviewed by the analyst did management realise how busy the unit was; this had not been raised as a risk since the neonatal team had just continued to work harder.

4.4.13 Not all of the cases underwent a post mortem despite this being recommended in BAPM 2011[11]

Obstetric risk management

4.4.14 The obstetricians were confident in their ability to manage high risk pregnancies including twins and triplets to later stages of gestation, and where cots and appropriate safe staffing are available it is preferable for families to be able to stay locally following delivery. The obstetrics team had expressed concern about four of the deaths, particularly, which were discussed at the perinatal M&M meeting and found to have no

[11] http://www.bapm.org/publications/documents/guidelines/SUPC_Booklet.pdf

antenatal indicators of concern. The Review team was however concerned at whether there were sufficient staff for the LNU to care for triplets, for example, albeit post 34 weeks.

4.4.15 There are 5-15 stillbirths/year, and around 6 neonatal deaths a year are discussed jointly between obstetricians and paediatricians at the perinatal M&M. This joint meeting sometimes includes a pathologist representative from the three based at Alder Hey. The Risk Manager / QI lead receives notes of the meeting but does not attend. The obstetricians were pleased to report to the Review team that there had been no stillbirths since 15th October 2015.

4.4.16 Obstetric investigations follow a pathway of first an obstetric primary review – looking at the data, then a secondary MDT review taking one case all the way through pregnancy and delivery. The neonatal incident review group may ask the obstetric team to conduct a second stage review, and they report together at the perinatal meeting. The templates used for the reviews are different and do not follow a corporate Root Cause Analysis approach at this stage.

4.4.17 In the light of the increased number of stillbirths and neonatal deaths during 2015, the obstetricians established a panel to consider 15 cases which had all undergone or were due multidisciplinary review. The panel involved external professional oversight and also monitored progress against actions. These included recommendations on CTG interpretation, PROM management, delayed cord clamping, DATIX for still births and advising patients of the risks of shoulder dystocia. There was a clear action plan which was followed up and dates of completion were reported.

4.4.18 Recently there has been neonatal unit attendance at the labour ward 'huddle' enabling sharing of concerns about patients antenatally. Information including scans and plans is also sent by letter to the neonatal lead, the GP and any others clinically involved in case of unexpected delivery.

Recommendation: The obstetric and paediatric incident review processes should follow similar, systematic methods as set out above

4.4.19 There is currently no nationally-agreed template or guidance on conducting perinatal mortality and morbidity reviews in obstetrics and neonatology. The perinatal mortality tool being produced by the RCOG 'Each Baby Counts' programme[12] and ongoing findings from the MBRRACE[13] programme may assist.

Safeguarding arrangements.

4.4.20 The Board lead is the Director of Nursing who chairs the bi-monthly Safeguarding Strategy Board. The Named nurse and Doctor attend the LSCB and the Named Doctor is also the Designated Doctor for child deaths and attends the Child Death Overview

[12] see www.RCOG.org.uk/eachbabycounts
[13] https://www.npeu.ox.ac.uk/mbrrace-uk

Panel. The locality was reported to have a high level of Domestic Abuse and substance misuse.

4.4.21 The Review team was impressed by the processes and links made by the Link Health Visitor, who ensures engagement of families and supports professionals in health and social care to work effectively together.

Child death process.

4.4.22 When an unexpected paediatric death occurs the paediatrician on call contacts the senior investigating officer on site. For neonates the Designated Doctor for Unexpected Child Death is notified directly and he is responsible for advising the Pan Cheshire Child Death Overview Panel (CDOP) administration of all deaths, whether expected or unexpected. There is no automatic rapid response home visit but this is considered, and a meeting to determine next steps is organised within 24 hours.

4.4.23. For the cluster of 13-14 deaths (1 excluded) being considered in this review, not all has been reported to the Pan-Cheshire CDOP, as some were resident in Wales and therefore reported to the Welsh authorities.

4.4.24 The CDOP meets quarterly and has a remit is around learning inter-professional lessons rather than individual case investigation of internal management. The Form B submissions were reported to be very robust, and where possible the CDOP will enlist specialist advice.

4.4.25 The RCPCH Review team was concerned that the CDOP did not appear to be alert to the cluster of neonatal deaths, and for at least some there should have been a Rapid Response Meeting within 5 working days of notification. If the cause of death is not clear than no death certificate can be written and the case must be referred to the coroner. Some CDOPs ask for a copy of the report from M&Ms via the Clinical Risk/Governance team to feed into their panel meetings

Recommendation: The CDOP should consider whether its processes could have detected the cluster of deaths and initiated external review more swiftly

Definition of an unexpected death

Page 85 Working Together to Safeguard Children 2015

12. In this guidance an unexpected death is defined as the death of an infant or child which was not anticipated as a significant possibility for example, 24 hours before the death; or where there was an unexpected collapse or incident leading to or precipitating the events which lead to the death.

13. The designated paediatrician responsible for unexpected deaths in childhood should be consulted where professionals are uncertain about whether the death is unexpected. If in doubt, the processes for unexpected child deaths should be followed until the available evidence enables a different decision to be made.

Parent involvement

4.4.28 The unit has an excellent relationship with families of current and past patients, although the 'Friends and Family' test has not yet been rolled out to the unit. The neonatal unit participates in the FAB network based in Arrowe Park which supports early discharge and provides 'gold standard care at home'

Parents seemed to have accepted the change of status of the unit and there were reported to be no real difficulties with the arrangements for antenatal transfers.

4.5 Does the unit have a positive relationship with the neonatal network and transport service?

Yes, links are good but the transport service and arrangements at LWH are significantly under resourced. This delays transfers and increases the risks for infants and the anxiety of clinical staff. There are a number of ways the service could work better for minimal investment. Although there are strategic plans being developed for reconfiguration of neonatal services across Mersey and Wirral in the longer term these did not adversely affect current relationships or individual or corporate behaviours.

4.5.1 All those the Review team spoke to told us that there are significant capacity pressures on the Cheshire and Merseyside Neonatal Transfer service, which contribute to delays in transferring infants out promptly. Advice available from the tertiary units was sound and easy to access, but out of hours the transport team has no central administrator and calls are directed straight to the clinicians on call who may be undertaking a transfer at the time. In effect there cot bureau service operate office hours only which appears to be in breach of the service level agreement which states

CMNNTS will provide a dedicated medical and nursing transport team 24 hours a day, 7 days a week. A co-located perinatal cot bureau will operate 24 hours a day, 7 days a week in order to identify a cot within the Cheshire & Merseyside Region.

4.5.2 There were several reports that the doctors will wait too long before escalating concerns about an infant, both from junior to consultant and also to the network and when they do seek tertiary level advice, the transport team is not informed sufficiently early to be on 'standby'. Consequently when a decision to transfer is made, there may be further delay as the transport crew and an appropriate vehicle are mobilised. If the team is on another retrieval or undertaking a 'park and ride' [14] surgical engagement then either the transfer must wait or another team mobilised from elsewhere in the network. With the Cheshire and Mersey transport team having no out of hours' administrator to manage the cot bureau function it is incumbent on the referring clinician to identify and mobilise an alternative team. Since the re designation of the unit there were reports that the consultants can spend up to 4 hours trying to find an available cot

[14] this refers to a custom in which the transfer team supports a neonate whilst undergoing surgery – this can tie the team up for up to 7 hours., Following the surgical review this arrangements is being overhauled.

and retrieval team due to the increased demand for transfers. This is an unacceptable waste of senior medical time, and should be raised as an incident on DATIX. Other services in the UK create a 'conference call' so those giving advice and those on the transport team are aware of the status of infants which may require transfer.

Recommendation: Ensure tertiary advice calls include an 'early warning' or conference call to the transport team to enable better planning and deployment of the crews

Recommendation: Arrange for central monitoring and management of transport team enquiries out of hours across the network

4.5.3 Following the case review of a neonatal death in 2014 several changes were made to the transport staffing arrangements. The service now deploys Tier 2 registrars with consultant oversight during weekday daytime, with registrars and ANNPs from LWH covering the service out of hours. There are serious gaps in cover anticipated as Tier 2 rotas become increasingly hard to fill, general trainees have been withdrawn due to inadequate training opportunities, and there are no grid trainees and Clinical Fellows cover the service.

4.5.4 Quarterly reports indicated that no infants were transferred by other teams during 2015-6, but in only 77% of urgent requests in Q4 was the team mobilised within one hour (target 95%). However the target of 3.5 hours to bedside was easily met with over 90% achieved. The transport team uses the NW Ambulance service to provide the emergency vehicle and there is within their protocols for emergency the consideration that an infant in hospital is in a 'place of safety' and may therefore not be prioritised at busy times.

4.5.5 An exception report is apparently prepared on infants whose care has not met the criteria for transport and response time, due to availability either of personnel or vehicle. This data supported a proposal submitted to NHS England in 2015 to combine the three ambulance services and 4 hosts (including the paediatric retrieval service, NEWTS) into one service with two host units and network-agreed guidance and protocols in order to meet the national specification for such services. Further evidence for improving transport availability and streamlining pathways emerged from the neonatal surgical peer review in April 2016. The business case is likely to have been consolidated within the STP and no decision has yet been made.

Recommendation: The NHSE/Network should expedite the decision on the whole-network transport service and centralise the administration out of hours in the interim

Antenatal transfers

4.5.5 Antenatal in-utero transfers out of COCH are usually arranged by midwives, who identify a cot (either through the cot bureau or directly) and work with the consultants to

determine whether the obstetric team is willing to accept the patient. Transfers can be as far as Bolton or Leeds which proves frustrating for the women (and for the accompanying midwives who need to arrange a taxi back) especially if they do not deliver, and return again a few days later. There were reports that LWH can sometimes close without warning. The problem is exacerbated since the reconfiguration in July women between 27-34 weeks' gestation in potential labour need to be redirected.

4.5.6 All nine network units follow the same obstetric process for transfer in utero to LWH, and almost all units have a specialist in fetal medicine, who meets twice a year across the network. Antenatal counselling by the neonatal lead was reported to be very good and saves referring women to the tertiary centre.

Activity and outcomes

4.5.7 COCH is the busiest non-NICU in the C&M network with 4800 cot-days (3773 /79% of which were SC/TC days). Analysis by the network of cot numbers and activity in its annual report had identified COCH as an outlier with over-provision of IC cots and under-provision of SC cots. A paper presented to the Network board based on data from 1st January 2014-31st March 2015 sought to permanently re-designate IC cots to match demand for financial and sustainability reasons. Before the temporary change in July, around 96% of infants cared for in COCH were inborn, keeping families local.

4.5.8 The network Clinical Effectiveness Group meets bimonthly, chaired by the Network clinical lead and with representation from nursing and medical leads from each unit. Since January 2016 units have been asked to submit to the group a summary of incidents and learning points for noting, and a review of mortality takes place (cross checked against Badger to prompt reports). In May this included two unexplained deaths at other units where infants had suddenly collapsed. It was not clear what action the CEG takes beyond noting the incidents - the minutes did not record progress on completion of action points

4.5.9 The Network's 'table top' review in January of a death in October 2015 was reported to have triggered improved data collection across other units, and another death in December 2015 also exposed inadequate liaison between COCH clinicians and the transport team. There appears to be no formal mechanism or process for joint M&M review across the network for infants who have been transferred between units, and no mechanism to trigger closure of a unit when it has reached capacity.

Recommendation: Clarify between network and commissioners the arrangements for multi-site investigations and timely implementation of actions

Recommendation: The network should develop a policy for temporary closure of a unit to admissions due to capacity concerns

4.5.10 The COCH team works naturally with Arrowe Park NICU and is considering working more closely together (see3.14). Where neonates may require surgery (e.g. swollen abdomen) there is some confusion about the protocol with some clinicians

contacting the surgical team at Alder Hey immediately, and others talking through the situation with the neonatologists in LWH or Arrowe Park first. These pathways were explored in a surgical review in April 2016 which made six recommendations for service providers and five for the network including a communication improvement plan and a single surgical model to reduce confusion and delays.

4.6 Are there any identifiable common factors or failings that might in part or in whole explain the apparent increase in mortality in 2015 and 2016?

4.6.1 The Review team considered carefully the various pieces of evidence and the overview provided of the cases in question The unit took 11% of network admissions but experienced 13% of the deaths in 2015. The consultants had explored a number of factors themselves but not in a systematic way nor following sound governance and root cause analysis processes, and the involvement of the network clinical governance group had been relatively supervisory, working on the summaries of cases rather than examining each in detail .

4.6.2 A number of recommendations have been included in this report which draw out areas of non-compliance with standards or where practice might be improved. To summarise,

- Staffing levels are inadequate; when mapped to the actual activity and acuity of a LNU under the BAPM standards, both from a nursing and a medical perspective.
- Escalation of concerns to tertiary units for advice or transport was sometimes delayed and network agreement to encourage a lower threshold for escalation and discussion is required.
- Most of the infants had undergone a Post Mortem from one of the three perinatal pathologists at Alder Hey but these did not include systematic tests for toxicology, blood electrolytes or blood sugar since the infants died in hospital
- In order to thoroughly examine the issues detailed case reviews of all the deaths (prioritising the unexpected deaths) should be conducted by an independent expert. . The personnel issues cannot be resolved formally until this is completed.

4.7 Are there any areas of concern for which potential development would improve outcomes?

These are set out in the sections above.

5 Recommendations

Immediate – COCH

a) Ensure there are clear, swift and equitable processes for investigating allegations or concerns which are followed by everyone (4.0)

b) Conduct a thorough external, independent review of each unexpected neonatal death between January 2015 and July 2016 to determine any factors which could have changed the outcomes. Include obstetric and pathology /postmortem indicators, nursing care and pharmacy input (4.0)

c) All unfilled rota gaps and transport problems should be recorded through DATIX and risk assessed at a senior committee such as the Divisional Governance Committee (4.2.4)

d) Strengthen the response to neonatal death/near miss investigations to
normalise the reporting culture,
include risk and governance staff,
involve a wider group including maternity and external scrutiny
demonstrate completion of actions
clarify senior management oversight. (4.4.9)

e) The obstetric and paediatric incident review processes should follow similar, systematic methods as set out above (4.4.18)

f) Strengthen procedures for involvement of more senior advice and develop guidelines for consultant availability to the neonatal unit (4.2.2)

Staffing - COCH

g) The two additional consultant appointments must be in place before any consideration can be given to possible redesignation as a Level 2 LNU (4.2.1)

h) The organisation should ensure maintenance of skills of neonatal nursing and medical team to ensure that return to level two can be safely managed. Rotation of staff to level three units should be explored (4.2.13)

i) Develop a strategic plan for sustainable recruitment to the Tier 2 rotas through development of nurse practitioner or other roles and review the protocol for locum assessment (4.2.7)

k) Establish a short term group to examine nurse involvement in decision making, guideline development and transport liaison (4.3.2)

Other – COCH

l) There should be a 'Children's Champion' on the Board. One of the executive directors should have a specific remit to support the neonatal nursing and

medical team until the enquiry and subsequent management action plan is completed (4.3.7)

m) An annual report should be prepared for the unit which is disseminated to the Board and Network stakeholders (4.1.7)

n) Include a unit-wide debrief for neonatal deaths on the unit to include all grades of clinical staff who cared for the infant (4.3.6)

o) An agreed mechanism for data recording, management and reporting across the IT systems including noting M&M case review reports and CDOP notifications should be devised and implemented systematically (4.4.11)

p) All neonatal guidelines should be developed in conjunction with the network and tertiary service for consistency of care in emergencies (4.4.10)

Network and others

q) Arrange for central monitoring and management of transport team enquiries out of hours across the network (4.5.2)

r) Ensure tertiary advice calls include an 'early warning' or conference call to the transport team to enable better planning and deployment of the crews (4.5.2)

s) The NHSE/Network to expedite the decision on the whole-network transport service and centralise the administration out of hours in the interim (4.5.4)

t) The CDOP should consider whether its processes could have detected the cluster of deaths and initiated external review more swiftly (4.4.25)

u) Clarify between network and commissioners the arrangements for multi-site investigations and timely implementation of actions (4.5.9)

v) The Network should develop a policy for temporary closure of a unit to admissions due to capacity concerns (4.5.9)

Appendix 1 The Review team

Dr David Milligan MB BS MD BA DCH MRCP FRCPH was a consultant paediatrician and neonatologist at the Royal Victoria Infirmary and Great North Children's Hospital in Newcastle for thirty years until his retirement in 2013. He was workforce officer for the RCPCH from 1993-7 and chaired the RCPCH programme directors' forum from 2003-6. He has been a network lead and has published research on workforce issues. He has been a member of (non-RCPCH) invited review teams. He was a member of the National Service Framework Implementation group and of the Neonatal Task Force. He has been a paediatric assessor for the National Clinical Advisory Service since 2005 and conducted several peer reviews for CQC and the RCPCH.

Dr Graham Stewart BSc MBChB FRCPCH FRCP(Glasgow) has been a consultant paediatrician with a special interest in neonatology in the West of Scotland since 1994. He has over fifteen years' experience in clinical leadership and management posts. Graham has extensive experience in strategy and service redesign having (amongst other posts) been a member of the NHS Greater Glasgow Child Health Strategy Group for seven years and a member of the Scottish Expert group on Acute Maternity services. Graham is Honorary Senior Lecturer in Developmental Medicine at Glasgow University and a Senior Examiner at RCPCH.

As clinical director in RHSC Yorkhill, Graham supported services in change, using organisational development to help teams move forward. He has been involved in several service redesign and reconfiguration projects including merging of paediatric and maternity units. In 2011 Graham led his Board's review team looking at the children's services of Western Isles Health Board and the consequent report was favourably received and he participated in and led a number of RCPCH Invited Reviews.

In 2014 Graham became medical advisor to the New Children's Hospital project board contributing to the successful opening of the Royal Hospital for Children in Glasgow in June 2015.

Alex Mancini is a senior neonatal nurse with over 25 years' experience working across a range of neonatal units. She has been recently appointed as the Pan London Lead Nurse for Neonatal Palliative Care, focusing on developing the training and education of staff across the London region and the development of services. Prior to this, Alex was the Matron and Lead Nurse for Neonatal Complex, Palliative & Bereavement Care at Chelsea and Westminster Hospital providing practical and emotional support for families and staff, and has been instrumental in developing local and national guidelines, including robust complex and palliative care pathways.

Alex has wide experience in development of standards and guidelines and has been a member of national working parties in Palliative care, as well as many years of management experience in a range of senior nursing / Matron roles. Her education

work has included significant experience in teaching staff, particularly around supporting colleagues and families who are caring for neonates with complex comorbidities.

Alex is an invited expert member of the Riverside Research Ethics Committee and the Clinical Ethics Advisory Group at Guys and St Thomas's in London and sits on the ICPCN's (International Children's Palliative Care Network) Expert Advisory Group. She is a clinical advisor to the Ombudsman and has reviewed a rage of cases and services through that role. For the last five years, Alex has helped develop and organise the National Neonatal Palliative and End of Life Care conference and she is a facilitator for Child Bereavement UK (CBUK)'s national educational workshops. Alex is an invited guest lecturer at Kings College, London and London South Bank Universities, and is currently completing her MSc in Complex and Palliative Care for Neonates, Children and Young People at Coventry University and has published several papers.

Claire McLaughlan is an independent consultant with a particular interest in performance management and the remediation, reskilling and rehabilitation of healthcare professionals. As a former Associate Director of the National Clinical Assessment Service, Claire developed the NCAS Back on Track services for dentists, doctors and pharmacists in difficulty. Over the last 8 years Claire has worked with nearly three hundred organisations and practitioners to 'make a difference' before irreparable damage was done to patients and the public, practitioners, and organisations. Claire trained as an intensive care nurse (although is no longer registered), and is also a non-practising barrister. Before joining NCAS Claire was Head of Fitness to Practise at the Nursing and Midwifery Council.

Sue Eardley joined RCPCH as Head of Health Policy in January 2011 and now leads the Invited Reviews programme for the College. Sue originally trained as an engineer /project manager in the oil and gas industry but changed career when the first of her three children arrived. Sue spent 13 years as a non-executive and then Chairman of an acute hospital trust in south London, alongside a range of voluntary activities including national and local involvement in user representation and as a Council member of the NHS Confederation. Sue led groups contributing both management and user input to the DH England Maternity National Service Framework and chaired her local MSLC for four years. Before joining the RCPCH Sue spent six years full time heading up the Children and maternity strategy team at the Healthcare Commission and then CQC, overseeing strategy, design and delivery of all inspections and reviews in England of maternity, child health and safeguarding.

Additional support was provided by Dr Nicolas Wilson, consultant neonatologist from Whipps Cross hospital, London.

Appendix 2 Information sources and reference documents

A2.1 The following groups of staff were interviewed during the review on 1st and 2nd September 2016

- Board level Directors including the Chief Executive
- Consultant and Trainee Paediatricians
- Service management, business performance and occupational health staff
- Transport, network and deanery representatives
- Safeguarding Children representatives
- Nurses, Nurse Practitioners and Neonatal nurses
- Clinical Services Manager
- Clinical Governance and risk management representatives
- Obstetrics and Gynaecology consultants
- Midwives
- Parent representatives

A.2.2 The following standards apply to or are referenced in the review

Categories of Care (BAPM 2011) sets out the definitions of intensive, high dependency, special and transitional care for neonates.

Specialist Neonatal Care Quality Standard (NICE 2011) addresses care provided for babies in need of specialist neonatal services including transfer services. Specialist neonatal services are those delivering special, high dependency, intensive or surgical care to babies. Compliance will be measured by collection of data against the Neonatal National Quality Dashboards

Service standards for hospitals providing neonatal care 3rd edition (BAPM August 2010) defines medical and nursing staffing levels and links closely with the NICE and DH documents and Quality Standard and Toolkit.

Toolkit for High Quality Neonatal Services (DH 2009) includes eight principles for high quality neonatal services and a framework to assist commissioners. The principles cover the major areas of activity within the neonatal care pathway and aim to provide standardization in neonatal care:

The BLISS Baby Charter and Family Centred Care (BLISS 2015) provides a framework for units to examine key aspects of their service provision and to help staff make family centred care a reality

Service Specifications for neonatal critical care and transport for England set out the requirement for services commissioned by NHS England and cover intensive high dependency and special care.

The MBRRACE-UK study (May 2016) reports on perinatal mortality and morbidity across the UK

Service standards for hospitals providing neonatal care 3rd edition (BAPM August 2010) defines medical and nursing staffing levels and links closely with the NICE and DH documents and Quality Standard and Toolkit.

Toolkit for High Quality Neonatal Services (DH 2009) includes eight principles for high quality neonatal services and a framework to assist commissioners. The principles cover the major areas of activity within the neonatal care pathway and aim to provide standardization in neonatal care.

The BLISS Baby Charter and Audit Tool (BLISS 2012) provides a framework for units to examine key aspects of their service provision and to help staff make family centred care a reality

Service Specifications for neonatal critical care and transport for England set out the requirement for services commissioned by NHS England and cover intensive high dependency and special care.

The MBRRACE-UK study (May 2016) reports on perinatal mortality and morbidity across the UK

A2.3 Documents were provided by the Trust relating to the following areas:

- Cheshire and Mersey Neonatal transport service performance data
- Neonatal network reports and strategic plans
- Service overview and team structures
- Staffing details, job plans, rotas and training records
- Deanery trainee survey reports
- List of departmental policies and protocols including incident reporting
- Details of neonatal death reviews - M&M, RCA and tabletop reviews
- Activity data
- Risk register and incident summaries

Appendix 3 – List of Abbreviations

AH – Alder Hey Children's Hospital
ANNP – Advanced Neonatal Nurse Practitioner
APH – Arrowe Park Hospital
BAPM – British Association of Perinatal Medicine
BLISS – Charity for neonatal services and families
CCG – Clinical Commissioning Group
CDOP – Child Death Overview Panel
COCH – Countess of Chester Hospital
CQC – Care Quality Commission
HD(U) – High Dependency (Unit)
IC – Intensive Care
LNU – Local Neonatal Unit
LWH – Liverpool Women's Hospital
M&M – Morbidity and Mortality (meeting)
NHSFT – NHS Foundation Trust
NICE – National Institute for Health and Care excellence
NICU- Neonatal Intensive Care Unit
NNAP – Neonatal Audit Programme administered by the RCPCH
ODN – Operational Delivery Network
O&G – Obstetrics and Gynaecology
SC(U) – Special Care (Unit)
STP – Sustainability and Transformation Plan
WTE – Whole Time Equivalent