Neonatal care – extended examples of quality improvements implemented in trusts and health boards following PMRT review ordered by type of clinical improvement area

The issue with care identified	Service improvement(s) implemented
Neonatal prenatal planning for high risk babies Intrapartum and postnatal management plans for a baby made in the antenatal period were not communicated to the neonatal team in a timely manner, leading to missed opportunity for monitoring of the baby and/or missed arranging for investigations required for the baby e.g. using cord blood for genetic testing	Development of a Joint Obstetrics and Neonatal Calendar that is shared between the Obstetrics and Neonatal team: High risks cases requiring significant neonatal intervention at birth are logged in calendar when the date for caesarean section or IOL is made; calendar can be viewed and edited by both teams. Weekly review of the calendar and these cases to ensure that both teams are aware of upcoming high risk cases and anticipate NICU admission and management Development of SOP to ensure consistency in documenting of these plans in EPR and training of staff to familiarise with access and availability of these plans in the EPR
Intubation on labour ward Unable to intubate a small preterm baby on delivery suite. The ETT* tube used did not fit an introducer.	Purchased a supply of ETT tubes which do fit introducers. We also have purchased a portable video laryngoscope for use on labour ward/theatres, in addition to having them on the NICU.
Delayed cord clamping Lack of delayed cord clamping due to resuscitation kit being unable to reach the baby and so unable to provide inflation breaths with cord attached.	Sourced and purchased long purple ventilation tubing to be able to provide intermittent positive pressure ventilation (IPPV).
Neonatal thermoregulation Many babies transferred from delivery suite are cold on arrival in the neonatal unit *(Multiple survey respondents reported this issue)*	Warm care bundle implemented for neonates to improve thermoregulation Completed the QIP for normothermia bundle on the NICU *(Multiple respondent reported a version of this QI action was implemented)*
Recognition of anaemia Poor recognition of pale babies, especially if they are mixed race	New guideline developed to introduce measuring baby's haemoglobin at resuscitation.
Poor resuscitation documentation Poor documentation of delivery room resuscitation.	In collaboration with the resuscitation department, a new, carbon-copied version of the resuscitation pro forma was implemented.
Resuscitation of extremely preterm babies at by ambulance staff Extremely preterm ($23^{+1)}$ baby born at home and resuscitated by the paramedics with masks they have available. Temperature was unrecordable when they arrived in A&E.	Ambulance staff offered training and equipment needed for bag mask ventilation of extremely preterm babies; simulation training was carried out in A&E Ambulance team members were invited to the review meeting

Poor documentation at resuscitation Poor documentation at resuscitation leading to many responses in response to the PMRT questions during the review of 'unable to say'	Resuscitation pro forma amended and scribe allocated, debrief after the resuscitation event to confirm management undertaken. End of life care bundle captures all aspects of PMRT required.
Management of neonatal hypotension Management of hypotension in babies with hypoxia ischaemic encephalopathy (HIE) and persistent pulmonary hypertension of the newborn (PPHN) is inconsistent; lack of consensus on which inotropes to use	Reviewed guideline for HIE to have an early echo. Increased the number of staff who can do the echo.
Management of extremely preterm infant Concern about the extreme preterm mortality rate in the first 72 hours in the trust/health board	Management in the first 72 hours reviewed and changes implemented: maximising the impact of management during the 'golden hour', increased frequency of clinical reviews, increased regular parental updates, paying greater attention to physiological details, ensuring staff follow the minimal handling principles, introduction of early expressed breast milk (EBM), and early referral to allied health professionals.
Unplanned extubations Unplanned extubations were noted across a series of reviews	An initial audit was completed to identify any particular issues we needed to address. After the audit a QI project was commenced which included the introduction of a new ETT fixation device, airway risk assessment, education and training sessions especially around handling and moving of intubated babies. The QI project saw a reduction of the rate of unplanned extubations by 50%.
Location of management of infants Neonates older than 44weeks PMA are often still cared for on NICUs but may best be looked after in PICUs.	Reviewed and strengthened the referral processes to early engagement with the quaternary services to ensure there are clear pathways for babies needing ongoing respiratory support or lung thermal volume measurement (LTV). They also advise on appropriate sedation, feeding and nutrition when there are delays in transferring babies to PICU**. Have established an invitation to the referral centre's Respiratory MDT to discuss complex cases being managed on the NICU
Neonatal transfer from home Poor communication between the ambulance service, A&E, maternity services and the NICU when a sick neonatal needed to be transferred from home and admitted to NICU.	A joint Guideline for neonatal transfer was developed between the ambulance services, A&E, NICU and maternity services Improved signs and directions for London Ambulance Staff - stating clear A&E entrance for small babies compared to children.
Neonatal transfer from home Poor communication between the ambulance service, A&E, maternity services and the NICU when a sick neonatal needed to be transferred from home and admitted to NICU.	Neonatal staff attend A&E Morbidity and Mortality monthly meetings to teach the A& E junior doctors about neonatal care. Regular teaching to NICU staff about the key findings from the annual PMRT Report

*ETT - endotracheal tube; ** PICU – paediatric intensive care unit