Methods: Retrospective review of moderately LBW infants admitted to the SCBU in the Rotunda with birth weights >1800g and < 2500g. Patients were identified using the unit database; further information obtained from chart review where necessary. All infants had temperature recorded on admission.

Results: 340 infants fulfilled the weight criteria. 44% of these were hypothermic on admission: 27% had mild hypothermia (36-36.4°C); 17% had moderate hypothermia (32-35.9°C). No patients had severe hypothermia. The lowest recorded temperature was 34° C. Overall rate of hypothermia in this group: 44% versus 32.4% in infants >2.5kg.

Conclusion: A significant number (44%) of LBW infants weighing 1.8 to 2.5kg admitted to the SCBU had mild to moderate hypothermia. The rate of hypothermia in larger infants (>2.5kg) was 32%. This indicates the need for improving practices to prevent hypothermia in the delivery room and during transfer of LBW infants.

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HEARTLIGHT - DELIVERY ROOM ACQUISITION TIME FOR A NOVEL FOREHEAD HEART RATE SENSOR FOR NEWBORN RESUSCITATION

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Background: Approximately 10% of newborn babies require some form of resuscitation at birth. Heart rate (HR) is one of the best indicators of effective resuscitation and is currently assessed with a stethoscope. However, this is not continuous, can interrupt resuscitation and is calculated incorrectly in 20-30% of cases. Pulse oximeters, attached to limbs, are not designed for monitoring HR and are unreliable in low perfusion states frequently observed in sick newborn infants. Use of a forehead HR sensor would be advantageous allowing quick placement, continuous monitoring and improved reliability in low perfusion states.

Aims: Develop a user friendly, quick and reliable forehead HR sensor for use in newborn infants requiring delivery room resuscitation.

Methods: We have developed a forehead HR sensor (HeartLight), utilising patented reflectance photoplethysmography technology, to detect changes in pulse volume with a rapid acquisition time. The HeartLight can be sited within ten seconds. Following development in the NICU, we examined the acquisition time of the HeartLight sensor in the delivery room in term newborn babies (birth weight 3263±486g, n=16). Time to acquire a reliable signal was measured from the time the sensor was activated.

Results: Median time to obtain the first two consecutive pulsations was 1.8 seconds (IQR 1.4-8.0s) and first ten consecutive pulsations was 13.2 seconds (IQR 4.4-50.8s).

Conclusion: The HeartLight sensor may offer a simple, quick and continuous way to monitor the newborn HR during delivery room resuscitation. HeartLight is currently undergoing further development and clinical trials in preterm deliveries.

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VARIATION OF DELIVERY ROOM RESUSCITATION PRACTICE IN THE UK

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Background: Advances in neonatal intensive care have improved outcomes for term and preterm infants. Delivery room (DR) management of newborn infants remains basic although recent advances include the use of air for resuscitation, plastic wraps/bags for temperature preservation, DR CPAP and pulse oximetry. No data exist on DR management of newborns in the UK.

Aim: Establish current DR management of newborn infants in the UK.

Methods: A telephone/email/postal survey of DR management in UK neonatal units during 2009. 192 units were surveyed and 171 (89%) responded (65 Level III and 106 Level II/I units). Comparisons were made between level III (intensive care) and level II/I units (high dependency/special care).

Results: There were differences in DR management with level III units using significantly more ventilation devices with PEEP (95% vs 88%, P< 0.05) and delivery room CPAP (43% vs 16%, P< 0.0001). Significantly more level III units commenced resuscitation in air (49% vs 30%, P=0.01) and fewer used 100% oxygen (12% vs 40%, P< 0.0001). The use of pulse oximeters (III=23% vs II/I=12%), plastic wraps/bags (III=97% vs II/I=96%), DR surfactant (III=92% vs II/I=83%) and elective intubation of preterm infants (III=83% vs II/I=73%) were not statistically different.

Conclusions: These important data highlight significant variance of DR management for newborn infants in the UK with level III units adopting a more evidence-based practice. Furthermore, these data differ markedly from those reported in other developed countries. These discrepancies between resuscitation guidelines, DR management and poor evidence-base need urgent attention.

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OUTCOME OF LIVEBORN INFANTS WITH CONGENITAL DIAPHRAGMATIC HERNIA IN A TERTIARY NEONATAL UNIT

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Background and aims: The incidence of congenital diaphragmatic hernia (CDH) is approximately 1 in 3000 with reported survival of 60-70%[1]. The aim of this study was to review management and outcome of all live born babies with CDH delivered at Birmingham Women's Hospital from January 2000-December 2009.

Methods: Retrospective case-note review of babies with CDH identified by their clinical diagnosis code. Trust audit department approval was obtained.

Results: 60 live newborns with CDH were identified. Median gestational age at birth was 39 weeks (range 33-42 weeks). The median birth weight was 2970g (range 1080-4090g). There were 35 boys (58%). 53 cases were left sided. 3 babies died in delivery suite despite active resuscitation. 18 babies died on the neonatal unit despite full intensive care. 6 were referred for ECMO(5 of these survived). 33 babies were transferred to PICU but 3 babies died before surgery (1 unknown). 29 babies had surgery and 2 died post-surgery. The 30 day surgical survival rate was 93%. 32 babies are alive to date (1 unknown).

Conclusion: In our experience, 35% of babies died in the immediate neonatal period. Transfer for ECMO has been a recent practice with 83% survival. 30 day surgical survival was 93%. However, the overall survival of a live born baby with CDH was 53%. Therefore, when counselling parents in the antenatal period, it is important to quote all figures rather than surgical survival alone.

[1] Robinson PD, Fitzgerald DA. Congenital diaphragmatic hernia. Paediatric Respiratory Reviews 2007:8:1526-0542

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A SURVEILLANCE STUDY OF SUDDEN UNEXPECTED POSTNATAL COLLAPSE WITHIN THE UNITED KINGDOM

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Background: Sudden and unexpected collapse (SUPC) of a well newborn infant is a rare event which carries high risk of mortality and neurodisability. Where no underlying disorder is found there are associations with prone position, breast-feeding and primigravid status.

Objective: To ascertain the population incidence of SUPC in term infants ≤12 hours old and describe associated factors.

Methods: Cases were referred through the British Paediatric Surveillance system over a 13 month period. Data was collected on maternal and infant characteristics. Infants included were≥ 37 weeks, had Apgars ≥8 at 5 minutes and collapsed within 12 hours.

Results: There were 44 cases reported, an incidence of 0.05/1000 live births. Twelve infants died. In 6 cases no cause was found. In 16 there was an underlying abnormality. Of the remaining 22, the clinical/pathological diagnosis was airway obstruction during breast-feeding or in prone position. In 16 (73%) of these the mother was primigravid and was unattended in all but three. In 16 (73%) the mother was sedated or receiving spinal anaesthesia. Approach to investigation of