Introduction: Early discharge from maternity wards is currently the most common practice; however this places newborns at a higher risk for early readmission. While jaundice is referred as the most frequent reason, feeding problems and infection have also been cited. Early readmissions of newborns previously considered healthy may reflect an inadequate assessment of risk factors and therefore a negative indicator of quality of care.

Objective: To determine the causes, frequency and risk factors of early readmission of newborns, previously discharged from Hospital de São Bernardo (HSB), Portugal. Assess the impact of policy changes in readmission outcomes.

Methods: Retrospective study including all neonates born in the maternity of HSB, who were readmitted up to 28 days of age. The selected patients had gestational ages between 34 and 41 weeks and were born between January of 2008 and December 2012. All neonates with extended prior hospitalization due to illness were excluded.

Results: A total of 9347 babies were born during this period and, of these, 134 (14.3/1000) newborns were readmitted. The mean gestational age was 38 weeks, while only 11% were preterm; the mean birth weight was 3134 g, with a male gender predominance of 58%. The main reason for readmission was jaundice (38%); of these 45% were admitted within the first week and 90% were exclusively breastfed. Other main reasons for readmission were infection (28%) and feeding problems including dehydration (23%). Most infections were sepsis, urinary tract infection and omphalitis. Most newborns with feeding problems were readmitted within 2 weeks, 70% of these were exclusively breastfed and 41% also had associated dehydration.

Conclusion: As demonstrated in previous studies, most reasons for neonatal readmission, such as jaundice or feeding problems are possibly preventable causes for hospitalization, highlighting the importance of a correct pre-discharge evaluation and adequate follow up.
Neonatal Outcomes of Late-Preterm Infants – A Five Year Retrospective Study

Isabel Periquito, Victor Neves, Luís Caturra
Department of Pediatrics, Hospital de São Bernardo, Portugal

Introduction: Late-preterm infants, defined by birth at 34 through 36 6/7 weeks’ gestation, are physiologically and metabolically immature and have a significantly higher risk of morbidity and mortality. This results in prolonged hospital stays and increased hospital readmissions, which, associated to an increase in late-preterm births in the last decade, should lead to a better knowledge of this particular subgroup.

Objective: To identify neonatal outcomes, including morbidity, mortality and risk factors, of late-preterm infants born in Hospital de São Bernardo (HSB), Portugal.

Methods: We retrospectively analyzed all neonates with a gestational age between 34 and 36 6/7 weeks’ gestation, born in the maternity of HSB between January of 2008 and December of 2012. All neonates born and immediately transferred to a neonatal intensive care unit (NICU) in another hospital were excluded.

Results: In this study 533 infants were included, of a total of 9347 infants born in the maternity of HSB during this period, corresponding to 5.7% of all births. The median birth weight was 2530 g, with a male gender predominance of 54.2%. The main adverse outcomes were hyperbilirubinemia (25.1%) and feeding problems (7.7%). A total of 40 neonates (7.5%) had type II respiratory distress syndrome (RDS), 1.7% had type I RDS needing surfactant and 4.9% needed ventilation (3.9% CPAP and 0.9% invasive ventilation). The mean duration of hospitalization due to illness was 8 days. A total of 13 (24/1000) neonates were readmitted to the unit. There was no mortality, but 2.3% were transferred to an NICU in another hospital.

Conclusion: The main comorbidities in our study are consistent to what has been previously identified in other literature. Identifying the main adverse outcomes and which particular subset of patients has a higher risk may help reduce hospitalization stay and neonatal complications.
Fetal Hemodynamic and Early Neonatal Course in Bichorionic Biamniotic Twins

Olena Riga¹, Anastasia Senatorova¹, Alena Boychenko¹, Irina Kondratova¹, Irina Vasilyeva²
¹Pediatrics and Neonatology, Kharkiv National Medical University, Ukraine
²Gynecology, Kharkiv Regional Hospital, Ukraine

Background: The multiple pregnancies are associated with pathology of early neonatal period.

Objective: Was to investigate umbilical artery (UA) blood flow and early neonatal course in bichorionic biamniotic twins.

Methods: Prospective case-control investigation of UA blood flow and early neonatal course was performed in 52 bichorionic biamniotic twins and 27 singletons. The signs of blood flow were estimated at 35 weeks pregnancy: Vmax – peak-systolic blood velocity, Vmin – end-diastolic blood velocity, S/D - systole-diastolic ratio, RI – relative resistant index on the ultrasound apparent Philips HD7 XE unit (Italy). For statistic analysis the program STATISTICA 7 was used.

Results: The pregnancy course in women with twins and singletons was not difference. Women with bichorionic biamniotic twins had increase rate of in vitro fertilization (p=0.0006), and cesarean section (p=0.001). There were no any significant difference in Vmax, Vmin and RI in first and second fetuses comparing singletons in UA, but the S/D ratio was significant highly 2,4 (1,85; 2,73) comparing 2,21 (1,9;2,35) in singletons (p=0.0343). The early neonatal course in twins has shown the significant higher rate of preterm labor (p=0.0360), respiratory distress syndrome (p=0.005) and Apgar less 6 at fifth minute of life (p=0.0015). There was correlation between RI anterior cerebral artery and ductus arteriosus diameter (r=0.5, p<0.05) in tern infants. We have carried out multiple linear regression, having included anamnesis data for the prognosis of complications development at neonatal period and have not obtained statistical difference which involves further accumulation of data in this direction.

Conclusions: We conclude that dopplerography of umbilical blood flow in bichorionic biamniotic twins determined an increase in systole-diastole ratio of the umbilical artery and the additional dopplerometric parameters must be early diagnostic criteria of fetal reaction to distress in multiple pregnancy by bichorionic biamniotic twins.
Follow-up of Very Low Birth Weight Infants and Infants with Fetal Alcohol Syndrome

Olena Riga¹, Irina Gordiienko³, Nataliya Konovalova³, Ganna Khotsenko²

¹Pediatrics and Neonatology, Kharkiv National Medical University, Ukraine
²Follow-up, Kharkiv Regional Clinic Hospital, Ukraine
³Rehabilitation, Kharkiv Regional Specialized Orphanage 1, Ukraine

Background: The neurological complication and delay of development occur in 15-52% of preterm infants and in infants with fetal alcohol syndrome (FAS).

Objective: Of study was a comparison of development from birth to 24 month in VLBW infants and children with FAS.

Methods: The developmental assessment was performed in 60 VLBW infants and in 21 children with FAS. There were used Albert scale (gross motor) and KID - RSDI scale (cognitive, fine motor, speech and language, social and adaptive development). All infants have been include to early intergenerational program.

Results: The comorbidity of VLBW were following: retinopathy of newbon (10%); neurosensory deafness (3,3%), bronchopulmonary dysplasia (5%), congenital heart diseases (12,5%). The medical problems of FAS were intrauterine growth retardation (42.8%, p<0.05), premature VLBW (28%, p<0.05), congenital cataract (9,5%), congenital heart diseases (19%). There was significant delay of motor development (-2 mo) in VLBW (45%) compare in infants FAS (19%, p=0,03). The delay of cognitive development were in 45% of VLBW and in 52,3% infants with FAS on the first year. Mean cognitive delay in VLBW was 3,1 mo; in infants with FAS – 3,9 mo (p<0,05) at the first year of life, at the second year - 3,3 mo and 5,6 mo respectively (p<0,05).

Conclusions: About half children of both category - very low birth infants and infants with fetal alcohol syndrome - has cognitive developmental delay on the first year of life. The delay of motor development on the first year of life predominates in very low birth weight infants, the cognitive delay of development on the second years predominates in children with fetal alcohol syndrome.
Background: The partial pressure of transcutaneous CO$_2$ (PtCO$_2$) is considered an accurate and clinically acceptable estimate of the venous carbon dioxide tension.

Objective: The aim of this study was to compare the PvCO$_2$ and PtCO$_2$ data separated by three different PvCO$_2$ value group (hypocapnia, normocapnia, and hypercapnia) and to understand the usefulness and limitations of PtCO$_2$ monitoring in neonatal care.

Methods: The study was conducted in the neonatal intensive care unit at the Sisli Etfal Children Hospital, Istanbul. Venous blood gas sampling and monitoring of the PtCO$_2$ level at same electrode temperature (44°C) was done simultaneously. All measurements perform on mechanically ventilated infants. Firstly PvCO$_2$ values divided into three groups (hypocapnia group: 4.67 kPa, normocapnia group: 4.67–7.33 kPa, hypercapnia group: 7.33 kPa) and then PvCO$_2$ and PtCO$_2$ data within each group were compared separately. A bias of more than ± 0.7 kPa was considered clinically unacceptable.

Results: 9 term and 26 preterm newborns were included in the study. A total of 168 measurements of each PvCO$_2$ and PtCO$_2$ simultaneously data were compared in three separated groups (13 in hypocapnia group, 118 in normocapnia group, and 37 in hypercapnia group). PtCO$_2$ was related to PvCO$_2$ with clinically acceptable results between the two measurements in hypocapnia and normocapnia groups. On the other hand in hypercapnia group PtCO$_2$ values were statistically significant and clinically lower than PvCO$_2$ data.

Conclusion: Transcutaneous monitoring allows continuous monitoring of the PtCO$_2$. In this study good (close) correlation was demonstrated between PvCO$_2$ and PtCO$_2$ values in hypocapnic and normocapnic PvCO$_2$ level whereas for hypercapnic PvCO$_2$ level was not. These results suggest that when PvCO$_2$ is increasing, the difference of PvCO$_2$ and PtCO$_2$ values are increasing. Transcutaneous carbon dioxide measurements are generally useful in neonates, but has some important limitations especially with high level of carbon dioxide tension.
Systemic Arterial Blood Pressure Values in Healthy Term Newborn Infants During First Five Days of Life

Omer Guran, Sinan Uslu, Ali Bulbul, Umut Zubarioglu, Mesut Dursun, Muhittin Celik, Ebru Turkoglu, Asiye Nuhoglu

Neonatology, Sisli Etfal Children Hospital, Turkey

Background & Objective: Lots of changes occur in various organ systems soon after the birth. The most particular changes were seen in cardiopulmonary system so that systemic blood pressure is affected in the early postneonatal days. Our aim is to show normative blood pressure values of healthy term newborn infants in their first week.

Material and Methods: Between April 2012 and September 2012, healthy term newborns (≥ 37 gestation weeks) were recruited in the study. Blood pressure measurements were done with the device of DRAGER Siemens SC 6002-XL which was using oscillometric method. All measurements were taken when babies were asleep or quite awake position during the 5 consecutive days between 09:00-12:00 hours. Every measurements were repeated to 3 times. The babies were admitted to intensive care unit for any reason (congenital abnormality, sepsis, jaundice, etc.), had low Apgar scores (7) and had a mother who had pregnancy complications (preeclampsia, eclampsia, placental pathology, etc.), chronic illness or drug using were excluded from the study.

Results: Babies’ mean birth weights and gestational weeks were 3302.22±397.81 g and 39.28±1.19 week consequently. Mean systolic, diastolic and mean blood pressure values were significantly increased during the first 5 days. In orderely 1st day= 71.84±7.16, 31.66±6.46, 48.10±7.35 mmHg; 2nd day=76.77±7.75, 35.81±6.49, 53.02±7.78mmHg; 3rd day=79.77±6.98, 38.57±7.02, 55.91±7.52mmHg, 4th day=82.74±6.78, 40.60±6.84, 58.84±6.9mmHg; 5th day=89.92±7.58; 42.21±7.04; 59.23±6.79mmHg. (For each day, p value 0.001).

Conclusion: Our study demonstrated a percentiles and normative range of systemic blood pressure values for Turkish babies in the early neonatal period which is comparable to other international studies. Similar to the literature we found that systemic blood pressure values were increased significantly in the first days of life.
Significance for Mothers after News of Hearing Screening Failure of her Son
Cristiana Romeiro, Neila Santini de Souza, Rebecca Ortiz La Banca, Conceição Vieira da Silva Ohara, Regina Issuzu Hirooka de Borba
Pediatric Nursing, Federal University of São Paulo, Brazil

Introduction: The Newborn Hearing Screening Program (NHSP) aims to identify the earliest possible hearing impairment in neonates and infants. The NHS is part of a set of actions that must be performed for comprehensive health care hearing in childhood: screening, tracking and monitoring of the development of hearing and language, diagnosis and (re) habilitation. Thus, the NHS should be integrated with the Care Network for People with Disabilities and the actions of monitoring maternal and child.

Objective: To know the significance of mothers of newborns (RN) who have failed the hearing screening test.

Methodology: This is a qualitative descriptive research, developed at the Association of Parents of Hearing Impaired Sorocaba, Sao Paulo - Brazil. Data collection was performed with five mothers, through semi-structured interviews. The analysis was performed in accordance with the purposes of Mayan.

Results: Were revealed six categories, and this study highlighted only three: (1) Believing that the child is not hearing impairment, (2) the expectation of Living retest, (3) Feeling supported by faith in God.

Conclusion: It is necessary to reflect on the importance of speaking the truth to mothers, to have greater adherence to the program of screening and early treatment.
Fetal Ductus Arteriosus is Closed with Antidiabetic Sulfonylureas and Neonatal Ductus Arteriosus is Re-opened with Anti-hyperinsulinemic Diazoxide

Kazuo Momma, Katsuaki Toyoshima, Emiko Hayama, Toshio Nakanishi
Pediatric Cardiology, Tokyo Women's Medical University, Japan

Background: Fetal and neonatal ductus arteriosus (DA) is closed with indomethacin and prostaglandin. Neonatal DA closure is oxygen induced via ATP-sensitive potassium channels (K\textsubscript{ATP}).

Objective: To investigate fetal DA closure with the K\textsubscript{ATP} channel inhibitors, sulfonylurea drugs (SUDs), and neonatal DA opening with the K\textsubscript{ATP} channel opener (KCO) diazoxide, in rats and its clinical relevance.

Methods: Fetal and neonatal DA was studied in Wistar rats using SUDs (tolbutamide and glibenclamide) and diazoxide, followed by rapid whole-body freezing.

Results: Tolbutamide passed across the placenta, and dose-dependently constricted the fetal DA following orogastric administration to near-term pregnant rats. Glibenclamide constricted and closed fetal DA dose-dependently with direct fetal injection. The fetal DA constricted between 30% to 60% with clinical doses of SUDs, and closed completely with higher doses. Fetal DA closure was associated with hydrops and fetal death. Diazoxide delayed neonatal DA closure following injection immediately post-natally, and dilated the closing DA with injection 30 minutes post-natally.

Conclusions: All tested SUDs constricted the fetal DA dose-dependently with complete closure at higher doses. KCO dilated the neonatal DA. These results indicate physiological regulation of fetal and neonatal DA via the K\textsubscript{ATP} channel. SUDs may be useful for closing patent DA in premature neonates. The recently reported reopening of neonatal DA associated with the use of diazoxide for hyperinsulinemic hypoglycemia has been proved experimentally. The DA-dilating effect of KCO may be useful as a bridge to surgery in neonatal DA-dependent congenital heart diseases.
Background: Unwell newborns with low umbilical cord pH may benefit from therapeutic hypothermia. However, it is unclear what is the best management approach for clinically well newborn babies with low umbilical cord pH.

Objective: To identify variations in the management of clinically well newborn babies with low umbilical cord pH without signs of Hypoxic Ischaemic Encephalopathy (HIE) and do not fulfil the criteria for therapeutic hypothermia.

Methods: A telephone survey was conducted across 17 neonatal units (3 intensive care level III units, 10 local neonatal level II units and 4 special care level I units) within one perinatal network. The on-call Neonatal/Paediatric Specialist Registrar was contacted in the first instance and asked a series of standardised questions. If further clarification was required, the Neonatal Unit Manager or Sister-in-charge was contacted.

Results: 16 neonatal units participated in the survey. Only 1 unit had a local written guideline for managing newborn babies with low umbilical cord pH. 4 units had an unwritten agreed policy involving observations and performing a capillary blood gas an hour after birth. In the remaining 11 units with no agreed local policy, there were set criteria for admission of newborns to the neonatal unit. However, only 6 units had low umbilical cord pH listed as an admission criterion and of those only 4 units specified the numerical pH threshold.

Conclusion: This study shows the wide inter-hospital variations that exist in managing newborn babies who are clinically well but have low umbilical cord pH. A majority of hospitals surveyed do not have written or unwritten agreed local policy. Given the known associations between umbilical cord pH and mortality and morbidity, further studies are required to identify the best practice approach for this ambiguous area of neonatal medicine.
Factors Affecting the Duration of Phototherapy in Patients With Indirect Hyperbilirubinemia

Aysu Say, Pınar Ulutas, Manolya Huma Sanlı, Mehmet Cengiz, Erdal Sari, Feray Guven, Ozlem Temel

Clinics of Pediatrics, Zeynep Kamil Training and Research Hospital, Turkey

Introduction: Jaundice is a clinical finding that can be seen in 2/3 thirds of the newborn babies. Phototherapy converts bilirubin to less lipophilic fotomers and prevents the entry of bilirubin to hepatic conjugation system. Time to stop phototherapy is unclear because various factors may affect the process.

Material-Methods: 500 infants who underwent phototherapy with diagnosis of indirect hyperbilirubinemia in our NICU between May 2009- May 2012 were analyzed retrospectively. Method of delivery, gestational age, birth weight, sex and etiology of indirect hyperbilirubinemia were evaluated. The statistical program SPSS 15.0 was used to analyse the data.

Results: Duration of phototherapy was longer in males than females but the difference was not statistically significant. Duration of phototherapy was shorter in the infants with birth weight over 2500 grams than the infants under 2500 grams. No statistical significance was found. The patients who borned after the 37th week of gestational age, have a longer duration of phototherapy compared to babies born before 37th week of gestational age, but the difference was not statistically significant. Infants who were born with C/S compared to babies who were born with normal spontaneous delivery, had a shorter duration of phototherapy, but the difference was not statistically significant. Patients with ABO incompatibility and the patients with Coombs (+) hemolytic disease had statistically significantly longer duration of phototherapy. Although patients with Rh incompatibility had a longer duration of phototherapy, this difference was not statistically significant.

Conclusions: One of the most common indications for hospitalization in neonatal unit is indirect hyperbilirubinemia. Effective, appropriate duration and on time application of phototherapy reduces the possibility of exchange transfusions. Especially in patients with ABO incompatibility and Coombs (+) patients, indirect hyperbilirubinemia must be followed with frequent intervals.