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IMPROVING PAEDIATRIC CARDIOLOGY TRANSITION TO ADULT CARDIOLOGY SERVICES IN A DGH, LEVEL 3 CHD CENTRE

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Background Transition is the purposeful, planned movement of adolescent and young adults with congenital heart disease to the adult cardiac services. It is not yet an established service across other level three CHD centres. Following a serious incident, a transition clinic for paediatric cardiology patients with complex congenital heart disease was set up at our centre in May 2019. This audit was undertaken to review the existing transition and transfer process of paediatric cardiology patients to adult cardiology services.

Objectives Our aim was to provide an overview of current transitional care for patients with CHD and to evaluate the process to aid successful transition from paediatric to adult cardiology services according to NICE Standards.

Methods Patients aged 16 to 20 years who had been under paediatric cardiology services at our centre were included. Electronic notes were reviewed retrospectively in October 2020. Current set up has two transition clinics per year attended by a PEC, Paediatric cardiologist and a dedicated ACHD nurse specialist to support. Data was collected on diagnosis, whether under paediatric or adult cardiology services, route of referral, whether patient had been reviewed by adult services or they did not attend the appointment.

Results There were 106 patients aged 16 to 20 years under the care of paediatric cardiology services. Of these, 58 patients (55%) were under the care of paediatric services. 48 patients (45%) had been referred to adult cardiology services.

31 (65%) patients were referred to adult services following a standard paediatric clinic appointment including 4 patients with complex CHD. 3 (6%) patients were referred directly with a letter without a paediatric clinic appointment. 14 (29%) patients were referred via transition clinic. Overall, 14% (15) patients of 16-to-20-year olds had been reviewed in transition clinic. 3 patients (16%) did not attend appointments with adult services following transition. These patients were not seen in transition clinic prior to transfer.

Conclusions The majority of patients were seen in a paediatric cardiology clinic to discuss transfer process to adult services, even if not in a formal transition clinic. It is vital to educate adolescent patients with CHD to take charge of their health with a structured transition programme. The DNA rate of patients following transfer to adult services is a potential cause for concern and we need a robust policy in place to address this issue. It is important to determine patients are being given appropriate information and support and we recommend undertaking a patient survey. In long-term, we plan to expand and offer the transition clinic service to CHD patients as per the NICE standard.

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LIPID OVERDOSE IN A PRETERM NEONATE: LESSONS LEARNT FROM MEDICATION ERROR

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Background Medication errors can cause significant harm, but are a preventable cause of morbidity and mortality in the presence of effective intervention strategies. The complexity of intravenous medication administration in neonates involves an increased risk of medication errors. Also, neonates have a less capacity to buffer the unintended consequences of the medication error due to physiological immaturity.

Lipids are considered as high alert medication and overdose can cause significant complications including hypertriglyceridemia, respiratory failure, metabolic acidosis, hemolysis, liver dysfunction and pancreatitis. Long-term complications include pulmonary hypertension, chronic lung disease and neurodevelopmental delay.

Objectives Aim: To highlight intervention strategies and learning involved in a medication error due to lipid overdose.

Case History: A baby boy born at 29 weeks was commenced on Parenteral Nutrition (PN) including lipid for suspected Necrotising enterocolitis. The infusions were 'checked' by two trained nurses at the start and at two handovers; with hourly pump readings. After 16 hrs, the infusion pump delivering lipid alarmed noting the bag as empty. This prompted a review of fluid balance chart only to note that the infusion rate of lipids was set incorrectly; 120 mls of lipid was infused; instead of expected 17.1 mls (7 times higher).

The baby developed mild respiratory distress, observations were stable. The lipid infusion was stopped immediately. The triglyceride level of the baby was 83.8 mmol/l (40 times higher) (Normal 0.34 – 2.0 mmol/l).

The baby was transferred to tertiary NICU, required respiratory support and received 'Double volume exchange transfusion'.

Parents were updated and supported throughout.

Methods INTERVENTIONS: National Patient Safety Agency (NPSA) alert was raised.

A serious incident root-cause analysis was carried out to identify the opportunities to minimise the recurrence of error. This case illustrated a lack of robust checking system and no clearly identifiable process to differentiate between multiple infusions. This emphasised on independent checks by two trained nurses, and cot side checklist during handover (to be signed by two qualified nurses) to allow checking of pumps and rates to overcome involuntary automaticity.

The process of administration of PN in neonatal unit was reviewed to include a detailed workflow diagram to identify specific problem areas. The bags were colour coded, clear labels were used and infusions were set to run for a maximum of 4 hours.

A competency based workbook was developed to improve uniformity in practice with regards to administrations of medication including PN.

Debrief session and shared learning was organised for all staff, reinforcing the lessons learnt and incorporating into neonatal mandatory training.

Results Our investigation led to a major change in manufacturing nationwide. Based on recommendations, the volume in lipid bags was reduced from 120 mls to 60 mls and changed to red coloured bags.

Conclusions

1. Exchange transfusion remains the mainstay of treatment for lipid overdose to prevent acute and delayed complications.
2. Human factors play a crucial role. Identifying human errors and developing robust intervention strategies is challenging but very important.

3. Medication safety in neonatal care involves education and training of the staff; debriefs and shared learning from errors, and timely review of the practices.

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IS IGNORANCE REALLY BLISS? EFFECT OF PARENTAL AWARENESS ON NEONATAL MORTALITY IN CENTRAL INDIA

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Background Only with education can we create generalized awareness regarding better neonatal care at the societal level. It is well known that the people in many rural and tribal areas across the developing world tend to harbor grave misconceptions regarding pregnancy and neonatal care and lack the knowledge of danger signs. However, the level of parental awareness and its effect on neonatal mortality in the intensive care units in urban areas is often overlooked.

Objectives To assess the effect of parental awareness on the survival outcome of early preterm neonates in a tertiary care center providing referral services.

Methods After taking the approval of the institutional ethics committee, a cross sectional quantitative social research study was conducted. 140 neonates of gestational age ranging between 28–31 weeks and birth weight ranging from 1000 g to 2499 g; of both sexes born in a tertiary care institute of central India and admitted to its neonatal intensive care unit (NICU) within 1 hour of birth were enrolled in the study. Babies of gestational age <28 weeks and >31 completed weeks, birth weight < 1000 g, having lethal congenital malformations, delivery room deaths and those admitted after 1 hr of birth were excluded. The outcome measure was in the form of hospital death or discharge. The awareness of parents of the enrolled neonates, regarding neonatal care and danger signs, was assessed using a single response (yes/no type) 5 questions questionnaire, prepared in local languages. For parents referred from tribal areas, assistance was taken from translators available among relatives or hospital staff. Their responses were correlated with the outcome. The 'Yes' answers to 80% of the questions were considered a positive response, which was taken as an indicator of good awareness. Chi-square test and 2 × 2 table were used and the p-value was calculated; p < 0.05 was considered statistically significant. The questions asked were regarding the parents being aware of their baby's low birth weight or preterm status, its associated complications, benefits of breastfeeding, identification of each of the danger signs, and whether their response to those signs will be to consult a doctor immediately or to try home-based treatment first.

Results Male: female ratio was 0.92:1. The mean Gestational age was 30.27 ± 0.89 weeks, the mean birth weight being 1599.75 ± 282.35 grams. The total mortality in the cohort was 47.1% (66/140). For the mortality group (66), only 42.31% of parents gave a positive response. The survived group (74) was associated with a 58.30% positive response. Thus, the higher the positive response rate greater was the survival (p<0.007).

Conclusions Increased sensitization of parents regarding neonatal danger signs and care practices has a positive impact on neonatal survival, highlighting that parental education is the need of the hour. Improved parental education from the

grass-root level in rural areas up to the tertiary care centers in urban areas, regarding safe neonatal health practices, will help in reducing neonatal mortality rate and in achieving target 3 of Sustainable Development Goals.

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FIVE YEAR EVALUATION OF THE NEWBORN SCREENING PROGRAMME IN DUBAI, UNITED ARAB EMIRATES: A CROSS SECTIONAL STUDY

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Background The Newborn Screening Programme (NBS) screens for a group of congenital and genetic conditions including the inborn errors of metabolism. The population of the United Arab Emirates' presents uncharted ground for exploration of these disorders. High rates of consanguinity contribute to the higher prevalence of these rare diseases. Early diagnosis is key to lead to better prognosis.

Objectives To investigate the frequency of various neonatal disorders detected by a comprehensive newborn screening programme conducted in a tertiary care hospital over 5 years.

Methods A total of 14733 neonates born in our hospital between October 2012 and October 2017 were included in the study. Neonates underwent a heel prick test at 48 hours of birth which was sent for screening of various disorders. The results of these tests were collected as well as demographic variables including, gender, birth weight, gestational age and birth year. Statistical analysis was carried out through Statistical Package for the Social Sciences SPSS v.24. Qualitative variables were tabulated as frequencies and percentages and the continuous variables as means ± Standard deviation.

Results Of the 14,733 neonates 7049 (47.85%) were females. Average gestational weeks and weight were 37.9 (±2) weeks and 3127 (±561) grams respectively. 14 (0.1%) tested positive for inborn errors of metabolism. Of whom 2 (0.01%) had fatty acid disorders, 11 (0.07%) had amino acid disorders, and 1 had cystic fibrosis. Of the amino acid disorders, 2 neonates had Phenylketonuria. Three (0.02%) newborns tested positive for congenital adrenal hyperplasia and 8 (0.05%) for congenital hypothyroidism. 161 (1.1%) newborns tested positive for glucose-6-phosphate dehydrogenase deficiency and another 172 (1.2%) were carriers. Breakdown of genetic analysis for glucose-6-phosphate dehydrogenase deficiency revealed the most common mutation being C563T Mediterranean mutation occurring in 115 (71%) of neonates. Furthermore, 296 (2%) newborns were found to have a variety of hemoglobinopathy spectrum with only another 13 (0.09%) newborns being positive for a hemoglobinopathy disorder.

Conclusions Glucose-6-phosphate dehydrogenase deficiency G6PD was the most commonly detected condition. However, this rate is lower than these reported in previous studies. Hemoglobinopathy carriers were the highest detected abnormality. A higher frequency of inborn errors of metabolism, hemoglobinopathies, congenital hypothyroidism, and congenital adrenal hyperplasia than worldwide figures was noted. Several factors such as higher regional consanguinity rates and a multi-ethnic population were identified as potential explanations.