GP256 IMPACT OF A MEDICATION SAFETY BUNDLE ON PHARMACEUTICAL CARE ISSUES IN A NEONATAL INTENSIVE CARE UNIT (NICU)

^{1,2}Ann-Marie Cassar Flores, ^{3,4}Naomi McCallion, ³Nurul Aminudin, ^{1,2}Brian Cleary*. ¹Pharmacy Department, Rotunda Hospital, Dublin, Ireland; ²School of Pharmacy, RCSI, Dublin, Ireland; ³Department of Paediatrics, Rotunda Hospital, Dublin, Ireland; ⁴Department of Paediatrics, RCSI, Dublin, Ireland

10.1136/archdischild-2019-epa.315

Introduction Neonatal intensive care units are high risk areas for medication errors. The complexity of the medication use process for high-alert medications in sick neonates leads to multiple opportunities for error. A medication safety bundle was designed to assist with the prescribing, preparation and administration of four high alert continuous infusions - HACIs (morphine, dopamine, insulin and heparin), with the aim to reduce medication errors. Pharmaceutical care issues (PCIs) identified before and after the implementation of the medication safety bundle were compared.

Method The bundle of medication safety strategies was implemented in a level III NICU in Dublin. The medication safety bundle involved implementing: (i) Standard concentration infusions and drug monographs- this replaced the process of diluting medications using multiple variations of the rule of 6; (ii) An electronic calculator to aid the prescribing process- this generated printed prescriptions and syringe labels; (iii) smart pump technology with an associated drug library, thus eliminating the use of the ml/hr option on syringe pumps. The NICU clinical pharmacist provided training to NICU nurses and prescribers. PCIs were collected prospectively before and after implementation by the NICU clinical pharmacist. Descriptive statistics were generated for PCIs in the two time periods. Binary logistic regression analyses were used to examine the association between medication safety bundle implementation and the occurrence of PCIs (SPSS 23, IBM Corp.)

Results Prescriptions of HACIs were recorded on 178 days. The medication safety bundle was used on 56 days. A total of 191 patients required ≥ 1 HACI. Prior to the implementation of the bundle, on review of 292 orders, there were 60 PCIs per 100 orders. After implementation, on review of 217 orders, there were 19 PCIs per 100 orders (OR 0.15 95% Confidence Interval 0.10–0.23). Analyses adjusting for gestation at delivery, age, weight, staffing ratio and unit occupancy did not alter the findings. There was a large reduction in incomplete prescriptions and labels. A shift in the nature of PCIs was noted post implementation, with new issues related to selection of the wrong infusion routes or bypassing smart pump functionality.

Conclusion Implementation of this medication safety bundle was associated with a reduction in the number and a shift in the nature of PCIs associated with the prescribing, preparation and administration of HACIs. This study provides useful data to inform a future study to assess the effectiveness of this medication safety bundle on a broader scale.

GP257 MORTALITY RISK AMONG VERY LOW BIRTH WEIGHT INFANTS BORN IN THE REPUBLIC OF IRELAND, 2014–2016

¹Richard Corcoran, ¹Linda Drummond, ²Anne Twomey*, ³Brendan Murphy, ¹Richard Greene. ¹University College Cork, Cork, Ireland; ²National Maternity Hospital, Dublin, Ireland; ³Cork University Maternity Hospital, Cork, Ireland

10.1136/archdischild-2019-epa.316

Background and aim Globally, there are approximately six million deaths of children under 5 years of age each year, the leading cause of which is preterm birth complications. Very preterm infants are at especially high risk of mortality. The Vermont Oxford Network (VON) is a non-profit voluntary collaboration of health care professionals from nearly 1000 neonatal intensive care units around the world and it maintains a database of information regarding the care and outcomes of high-risk newborn infants.

We aimed to use the VON data to assess whether very low birth weight (VLBW) infants born in Ireland in 2014–2016 had a higher than expected risk of death.

Methods Since 2014, all 19 neonatal units in Ireland have contributed data to the VON database on VLBW infants, defined as an infant who is born alive and whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks 0 days and 29 weeks 6 days (inclusive). VON colleagues use multivariable logistic regression models to quantify the risk of mortality associated with a range of infant characteristics. We used coefficients from these regression models to calculate standardised mortality ratios (SMRs).

Results The VON database had data on 1,812 VLBW infants born in Ireland in 2014–2016, of which 1,765 were records from their hospital of birth. The mortality risk for these 1,765 infants was 1.17 times higher than expected, a statistically significant excess mortality (95% CI: 1.05, 1.29). Infants born at 22–23 weeks had a 23% higher mortality risk (SMR=1.23, 95% CI: 1.02, 1.44) that was almost wholly due to the infants not administered resuscitation. Infants born at 24–27 weeks in a tertiary unit did not experience higher than expected mortality (SMR=1.01, 95% CI: 0.80, 1.23) but those born in non-tertiary units had a 70% higher mortality risk (SMR=1.70, 95% CI: 1.25, 2.15).

Conclusions These findings support the recommendations that resuscitation should be administered to all infants born at 23 weeks who present in favourable condition, i.e. without congenital anomaly, severely small for gestational age, severe hypoxia or severe infection. In line with the existing Model of Care for Neonatal Services in Ireland, infants born before reaching a gestational age of 28 weeks should ideally be delivered at a tertiary neonatal unit.

GP258 THE ROLE OF REFLECTIVE MATERIALS IN NEONATAL JAUNDICE – A PRE-CLINICAL STUDY

Gearoid McGauran*, David Healy, Prof Eugene Dempsey. Cork University Maternity Hospital, Cork, Ireland

10.1136/archdischild-2019-epa.317

Introduction Jaundice is a common reason for admission to neonatal units. The mainstay of treatment is phototherapy¹. During phototherapy much of the light emitted fails to reach the baby's skin due to dispersion. It has been hypothesised that the use of reflective materials around the incubator may increase the efficacy of phototherapy with little added cost².

Aims This study aimed to determine whether the addition of reflective materials could increase irradiance during single-light phototherapy and whether any increase was comparable to addition of a second light source.

We also investigated whether the addition of reflective materials could increase irradiance during double-light phototherapy.

Methods Under simulated conditions we investigated two single-light phototherapy setups - using Draeger PT4000®, and Natus NeoBlue Mini® lights - and one double-light phototherapy setup using both units.

Irradiance was measured using a Respiroics Joey Dosimeter® at predetermined body locations on a mannequin with and without reflectors.

We tested two reflective materials - a gloss-white cover, and a Mylar® silver foil cover.

Results We detected an increase in cumulative mean irradiance with the addition of reflective covers in two setups.

In the Draeger setup, irradiance increased by 22% when using either a white or Mylar cover over no cover [14.5 to 17.8 uW/cm2/nm (white cover) (p=0.037)] [14.5 to 17.9 uW/cm2/nm (Mylar cover) (p=0.036)]. The addition of a second phototherapy unit (Natus) without reflectors increased irradiance by 43% [14.5 to 20.8 uW/cm2/nm (p=0.001)].

In the double-light setup, irradiance rose by 17.8% compared to no cover [20.8 to 24.3 uW/cm2/nm (white) (p=0.003)] [20.8 to 24.5 uW/cm2/nm (Mylar) (p=0.002)].

In the Natus setup, reflective covers produced a small, non-significant increase in irradiance compared to no cover [6.5 to 7.0 uW/cm2/nm (white)] [6.5 to 7.1 uW/cm2/nm (Mylar)].

We detected no difference in irradiance between Mylar and white covers in any set up.

Conclusion The addition of reflective covers can optimise neonatal phototherapy. Our study suggests that total body irradiance can be improved in both single- and double-light phototherapy setups. Clinical trials would be useful in further exploring the role of reflective materials in phototherapy.

REFERENCES

1. Maisels MJ, McDonagh AF, Phototherapy for neonatal jaundice, *N Engl J Med*. 2008 Feb 28;358(9):920–8
2. Rostenberghe HV *et al*, Use of reflective materials during phototherapy for newborn infants with unconjugated hyperbilirubinaemia, *Cochrane Systematic Review protocol*, e-pub: Dec 2015, www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012011/full

GP259 FRESH OR FROZEN: WHAT IS THE DIFFERENCE?

^{1,2}Saira Tabassum*, ³Emma Conlon, ¹Pamela O'Connor, ¹Anne O'Sullivan, ³Daniel McCartney, ^{1,2}Martin White, ¹Fiona Dunlevy, ^{1,2,4}Anne Doolan. ¹Coombe Women and Infants University Hospital, Dublin, Ireland; ²Royal College of Surgeons, Ireland, Dublin, Ireland; ³Dublin Institute of Technology, Dublin, Ireland; ⁴University College Dublin, Dublin, Ireland

10.1136/archdischild-2019-epa.318

Background Maternal expressed breast milk is the feed of choice for the preterm infant who is unable to latch to feed. Most mothers express and store milk in the fridge or freezer for later use. Irish Breast feeding guidelines recommends storage of fridge freezer for 3 months and deep freezer for 6 months.¹ Some reports suggest no change in macronutrient content after freezing up to 3 months while others report a decrease in fat and caloric content of breast milk.²

Aim To compare the difference in macronutrient content between paired fresh and frozen maternal expressed breast milk samples.

Methods A total of 20 pooled expressed breast milk samples were collected from 15 mothers, expressing for their preterm infants with mean gestation at birth = 28.3 weeks. Mean infants birth weight was 1143 (±364) grams. As per local

hospital policy samples were frozen at -25°C within 24 hours of expression. Breast milk samples were analysed by human milk analyser (MIRIS®) after ultrasonic homogenization after thawing in room-air and warming to 40°C.

Results Median time of freezing was 33 (7–70) days. Macro-nutrient composition varied (as shown in table 2), with fat and caloric content most effected. Some loss of protein content was observed.

Abstract GP259 Table 1 Maternal and infants demographic details

Participant mothers of infants	n=15
Mean age(SD) years	36.2 (4.7)
mean infants gestation at birth (SD) weeks	28.3 (2.65)
mean birth weight of infant (SD) grams	1143(364)

Abstract GP259 Table 2 Macronutrients and caloric contents/ 100mls of expressed breast milk

Median (ran ge)	day 0 value	frozen value	difference
Fat g/100mls	3.85 (2.6–7)	3.45(2.4–6.2)	0.35 g
Protein g/100mls	1 (0.8–1.5)	1(0.8–1.45)	0.05 g
carbohydrate g/100mls	7.55 (7–8)	7.45 (7–7.8)	0.11 g (0–0.45)
energy kcal/100mls	70(61–101)	67 (61–89)	3.3 kcal (1–12)

Discussion Our study shows a decrease in fat and energy content of maternal expressed breast when frozen. This should be taken into consideration when using frozen expressed breast milk for preterm infants and fresh breast milk used where feasible.

REFERENCES

1. www.Breastfeeding.ie/factsheet/
2. Garcia-Lara NR, Escuder-Vieco D, Garcia-Algar O, De la Cruz J, Lora D, Pallas-Alonso C. Effect of freezing time on macronutrients and energy content of breast-milk. *Breastfeed Med*. 2012;**7**:295–301.
3. Ahrabi AF, Handa D, Codipilly CN, Shah S, Williams JE, McGuire MA, *et al*. Effects of Extended Freezer Storage on the Integrity of Human Milk. *The Journal of pediatrics*. 2016;**177**:140–3.

GP260 INDICATION OF LUMBAR PUNCTURE IN WELL LOOKING NEONATES – NATIONAL BASED SURVEY

Sheik Fareed Virupachi*, Rizwan Khan. *University Hospital Kerry, Tralee, Ireland*

10.1136/archdischild-2019-epa.319

Background The incidence of early onset neonatal bacterial meningitis (EONM) was estimated to be approximately 0.3 per 1000 live births. Sign of EONM in term infants typically present by first 6 hrs and the majority presents within the first 24hr of life. Diagnostic investigations varies widely. However rationale to do lumbar puncture in well looking neonates with raised CRP varies widely

Aims and methods To perform a national survey via questionnaire to all paediatric consultant & neonatologist in Republic of Ireland. Questionnaire consists of questions regarding indication of lumbar puncture in well looking neonates with raised CRP and what level of CRP is indicative for Lumbar puncture.