G564(P) DAILY CHANGE IN PROBABILITY OF LIVE DISCHARGE FOR EXTREME PRETERM INFANTS AT A SINGLE TERTIARY NEONATAL UNIT

AE Bean, J Salvanos, S Clark. *Jessop Wing, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/archdischild-2020-rcpch.482

Aims We have experienced parents, not uncommonly, comment that ‘my baby has come this far, further than we had hoped, so what is the chance of them going home now?’. This is a very challenging question to approach. This study aimed to provide a degree of objective evidence to support our communication with parents of babies born extremely preterm.

Methods Retrospective survival data was reviewed over a 7-year period at a single tertiary neonatal unit. We included all infants less than 27 weeks gestation admitted within 24 hours of birth between January 2011 and December 2017. Date of birth, gestation, birth weight, admission duration, sex, and survival to discharge data were extracted using the Badger database.

Results During the study period 403 infants born less than 27 weeks were admitted to the neonatal unit with an average gestation of 24.9 weeks, birth weight 770 grams, 56% males and length of stay 48 days. 32% (n=129) of these babies died.

The probability of discharge alive for all infants less than 27 weeks over the 7 years was 0.6983. This significantly rose to 0.7879 by day 4 (p=0.0024). If an infant survived to day 13 the probability of live discharge significantly rose to 0.8425 (p=0.0001). This continued to significantly rise on day 30 to 0.9004 (p=0.0367). The chances of survival peaked by day 84 at 0.9479, but this was not significantly higher than at day 30.

These figures vary by gestational age at birth and based on our study, it has been possible to create graphs for each gestation showing the probability of live discharge by day of life.

Conclusions We have shown that for extremely premature infants’ the probability of life discharge at our neonatal unit is almost 0.7 and survival beyond 30 days increases the probability of discharge alive to over 0.9.

Developing a moving probability graph of survival based on current day of life, may help families manage better with some uncertainties inherent in neonatal care. It is reassuring that parental lived experience of increasing optimism as time passes is borne out by the information in this study.

G565(P) RETROSPECTIVE REVIEW OF MORTALITY IN A TERTIARY NEONATAL UNIT-IS THERE AN AUGUST EFFECT?

AE Bean, J Salvanos, S Clark. *Jessop Wing, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/archdischild-2020-rcpch.483

Aims Researchers have found that in adult care there is an increase in overall mortality rates in August, due to this being the time when junior doctors rotate jobs. This phenomenon has been explored by researchers in the UK and USA, with significance found by some but not others. However, this effect has not been reviewed specifically in neonatal units. Therefore, by looking specifically at survival in February and

August, we aimed to investigate any change of rotation staff effect.

Methods Badger. net neonatal health record was reviewed and data extracted for all babies admitted to the neonatal unit within 24 hours of birth between January 1st 2011 and 31st December 2017.

Simple proportions and means were calculated, with 95% confidence intervals. Fishers Exact test was used for categorical variables. Years were compared in 3 year rolling averages as year-to-year comparisons. Infants born in the same months across the 7 years were aggregated. At the unit, the junior medical staff rotation dates are August and February. Survival rates in these two months were compared with the remainder of the year, across different gestational categories.

Results For all admissions the probability of death was highest in August (0.075, 95% CI 0.048 – 0.102) and lowest in November (0.040, 95% CI 0.019 – 0.060). However, this difference was not statistically significant. Comparison of August and February combined with all other months showed no overall significantly increased probability of death in these months for premature infants. However, when reviewing the 1558 term admissions, there was a statistically significant difference in mortality in August and February 9/233 (3.9%) versus 21/1323 (1.6%) for the rest of the year (P=0.0336).

Conclusions The significant difference in survival for term infants in August and February is an unexpected finding. It could be that staffing arrangements around junior doctor rotation may affect both antenatal and postnatal care delivery, and we suggest that more investigation into this possible effect in paediatric and neonatal care is warranted.

G566(P) ACETAZOLAMIDE PARTIALLY RESTORES PULMONARY ARTERY SMOOTH MUSCLE CELL DE-DIFFERENTIATION IN EXPERIMENTAL PULMONARY HYPERTENSION

^{1,2}N Christodoulou, ^{1,3,4}H Hudalla, ^{1,4}Z Michael, ^{1,4,5}H Christou. ¹Department of Pediatric Newborn Medicine, Brigham and Women’s Hospital, Boston, USA; ²School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; ³Department of Neonatology, Heidelberg University Children’s Hospital, Heidelberg, Germany; ⁴Harvard Medical School, Boston, USA; ⁵Division of Newborn Medicine, Boston Children’s Hospital, Boston, USA

10.1136/archdischild-2020-rcpch.484

Aims Pulmonary hypertension (PH) is a serious disease with limited therapeutic options. Inflammation has been shown to be causally linked to pulmonary arterial hypertension pathogenesis along with vascular smooth muscle cell (VSMC) phenotypic switching. We hypothesized that Acetazolamide (ACTZ), vis-à-vis carbonic anhydrase inhibition and induction of extracellular acidosis, restores rat pulmonary artery smooth muscle cell (RPASMC) phenotypic switching in experimental PH.

Methods Adult male Sprague-Dawley rats were injected with Sugen (20 mg/kg) or vehicle and were exposed to hypoxia (9% O₂) or normoxia for 3 weeks followed by 2 days of normoxia to induce pulmonary hypertension. Lungs were harvested subsequent to induction. *In vitro* studies were conducted as follows: 70,000 primary RPASMCs from healthy rats were seeded in 6-well culture dishes and serum-deprived (0.5% fetal bovine serum) for 48 hours prior to stimulation

with 20% FBS. In some experiments, cells were treated with TNF- α (10 ng/ml) and exposed to ACTZ (500 mM) or media buffered to pH 6.8. In other experiments, baseline differences between PASM proliferation from 3 experimental groups (control, Sugen/Hypoxia or Sugen/Hypoxia+ACTZ animals) were compared. Cell numbers were evaluated with a haemocytometer using trypan blue cell exclusion 1, 2 and 3 after stimulation in triplicates. RT-qPCR was conducted to determine the expression of proliferative, contractile and de-differentiation markers.

Results RPASMCs exposed to TNF- α for 24 hours showed significant downregulation of markers of a contractile phenotype and upregulation of proliferative and de-differentiation markers. Exposure to TNF- α also resulted in increased proliferation, which was significantly reduced by exposure to ACTZ or acidosis. ACTZ or acidosis treatment also restored mRNA levels of contractile markers. Additionally, PASM isolated from control, SU/Hx and ACTZ-treated animals retained their respective phenotypes *in vitro* across a panel of markers. Subsequent to stimulation with 20% FBS, PASM of SU/Hx rats underwent significantly higher rates of proliferation, while cells from ACTZ-treated rats proliferated similarly to controls.

Conclusion Acetazolamide partially restores RPASMC phenotypic switching and it may do so through induction of extracellular acidosis.

G567(P) EXPLORING PAEDIATRIC TRAINEES' EXPERIENCE AND TRAINING IN NEONATAL AIRWAY MANAGEMENT SKILLS

¹K Belkhatir, ¹A Scrivens, ²J O'Shea, ¹C Roehr. ¹Newborn Services, Oxford University Hospitals, Oxford, UK; ²Department of Paediatrics, Royal Hospital for Children Glasgow, Glasgow, UK

10.1136/archdischild-2020-rcpch.485

Background Effective and timely airway management is crucial to successful neonatal resuscitation. Successful airway management requires training and maintaining ongoing experience, as well as a unique set of skills and equipment appropriate for the neonatal population. Level 1 trainees are required by the Royal College of Paediatrics and Child Health (RCPCH) to undertake 'advanced airway support, including tracheal intubations'. However, trends towards non-invasive respiratory support, fewer opportunities to practice at the workplace and lack of training have hindered the acquisition of these important procedural skills.

Aims To understand the experience and training of paediatric junior doctors and Advanced Neonatal Nurse Practitioners (ANNPs) in neonatal airway management skills, with a particular focus on neonatal intubation, use of videolaryngoscopy and laryngeal mask airways (LMA).

Methods An online survey was sent to trainee paediatricians and ANNPs in the UK and Ireland via deanery tutors, trainee representatives and the British Association of Perinatal Medicine (BAPM). Respondents reported their experience and training in neonatal intubation and LMA use.

Results The survey received 705 responses. Of these, 196 were junior trainees (ST1-3), 404 were senior trainees (ST4-8), 74 were ANNPs, 31 were clinical fellows. Experience levels were reported as: 42 (6%) no experience of intubation,

291 (41%) <5 term intubations and 235 (33%) <5 preterm intubations. 65% of respondents reported never receiving neonatal intubation training. Videolaryngoscopy is used mainly for difficult airway management (27%); only 7% prefer its use in neonatal intubation. 44% of respondents have had training in using LMAs in neonates, but only 6% have used it on a newborn infant. 70% of trainees strongly felt that a structured training programme would help them to become more confident in neonatal airway management.

Conclusion An alarmingly small number of paediatric junior doctors and ANNPs have formal neonatal intubation/LMA placement teaching, or exposure to practical experience. Developing effective strategies to train paediatric trainees in neonatal airway management is important. Videolaryngoscopy offers a powerful educational means for real-time coaching and teaching neonatal intubation.

G568(P) CHOOSING THE BEST WAY TO FAIL AN UNACHIEVABLE AUDIT STANDARD: ADMISSION HYPOTHERMIA VERSUS ADMISSION HYPERTHERMIA IN THE PRETERM NEWBORN

H Brophy, GK Tan, CW Yoxall. Neonatal Unit, Liverpool Womens Hospital, Liverpool, UK

10.1136/archdischild-2020-rcpch.486

Aim The National Neonatal Audit Programme (NNAP) standard states that 90% of babies admitted before 32 weeks gestation should have a temperature at admission between 36.5°C to 37.5°C.

In 2017, only 5 units achieved this standard, all of these admitted less than 25 babies. Failure may occur because of too many babies <36.5°C or too many babies >37.5°C. In units with more than 50 admissions, there is an inverse correlation between the proportion <36.5°C and >37.5°C ($r = -0.35$, $p = 0.0002$). The price of avoiding hypothermia is an increase in hyperthermia. But are both of these reasons for failure equivalent?

We aimed to compare the short term outcomes of hypothermic, normothermic and hyperthermic very low birth weight (VLBW) babies.

Method Data collected from inborn VLBW admissions between 2010 and 2017 were analysed to compare outcomes in the three groups.

Results Data were available for 1104 babies and are shown in the table 1. Outcomes in the hypothermic and hyperthermic groups were compared to the normothermic outcomes. The only statistically significant difference was the increased rate of major cranial ultrasound abnormality seen in the hyperthermic babies ($p=0.006$).

Abstract G568(P) Table 1

	<36.5	36.5 to 37.5	>37.5
n	155 (14%)	695(63%)	254 (23%)
Survival%	81.9	84.3	83.5
Major cranial ultrasound abnormality%	8.5	9	15.5
Bronchopulmonary dysplasia%	34.5	42.4	47
Retinopathy of prematurity treated%	4.5	4	6.3
Necrotising enterocolitis%	4.5	7.6	8.2