September 23rd, 2023 08:00 - 09:00

POSTER WALK – LUNG 5

ID 880. CLINICAL TRIALS OF INHALED NITRIC OXIDE IN PRETERM INFANTS: A REVIEW OF DOSING REGIMENS

Doctor Isha Patel[1], Dr Natasha Aikman[2], Dr Nim Subhedar[2]

[1]Alder Hey Children's NHS Foundation Trust, Wirral, United Kingdom, [2]Liverpool Women's NHS Foundation Trust, Liverpool, United Kingdom

Background

Although inhaled nitric oxide (iNO) is widely used for unlicensed ('off–label') indications in preterm infants < 34 weeks' gestation, the optimal dosing regimen remains unknown. Consequently, dosing regimens are varied and typically determined by the specific indication or underlying disease pathology. Despite its widespread use, the safety of iNO in preterm infants is yet to be established.

Objectives

To describe the variation in dosing regimens used in clinical trials of iNO in preterm neonates.

Methods

As part of a wider scoping review of published clinical trials of iNO from 1 January 2000 to 31 December 2022, we identified original articles reporting the use of iNO in preterm infants < 34 weeks' gestation. Information collected included population demographics, indication for using iNO, and details of iNO dosage regimen.

Results

55 trials involved off-label use in preterm babies, 33 of which exclusively enrolled infants < 34 weeks' gestation. The commonest indications for iNO use amongst this latter group were hypoxic respiratory failure/persistent pulmonary hypertension of the newborn (HRF/PPHN) (13), prophylaxis against bronchopulmonary dysplasia (BPD) (10), preterm prolonged rupture of membranes (PPROM)/pulmonary hypoplasia (2), and surfactant-deficient lung disease (SDLD) (4). A low starting dosing (⩽5 ppm) was used more commonly in studies exclusively involving preterm babies versus those involving term and near-term babies (14/33 (42%) vs. 2/47 (4%), p<0.001).

Conclusions

There is substantial variation in the dosing approach reported in clinical trials of iNO in preterm babies. A low starting dose with subsequent dose escalation was reported more frequently in preterm studies compared with those in more mature babies. There is an urgent need for more research into the safety and effectiveness of different iNO dosing regimens in preterm babies.

	Dosage regimen by gestation					
	< 34 weeks (n=33)			≥ 34 weeks (n=47)		
	Increasing	Decreasing	Fixed	Increasing	Decreasing	Fixed
HRF/PPHN	9 (27)	2 (6)	2 (6)	14 (30)	18 (38)	4 (9)
SDLD	0	3 (9)	1 (3)	0	0	0
PPROM/pulmonary hypoplasia	1 (3)	1 (3)	0	0	0	0
Prophylaxis against BPD	0	7 (21)	3 (9)	0	0	0
Other	0	0	0	3 (6)	0	1 (2)
Total	10 (30)	13 (39)	6 (18)	17 (36)	18 (38)	5 (11)

Data in this table refers to number (%) of trials.

Data in this table refers to number (%) of trials.

None declared

ID 69. Comparison of tracheostomy use in preterm infants on a NICU versus PICU

Doctor Aoife Hurley[1], Doctor Cath Harrison[1], Doctor Catherine Penrose[1]

[1]Leeds Teaching Hospitals Trust, Leeds, United Kingdom

Background

Improving perinatal care means more extreme preterm infants are surviving, with that increasing respiratory morbidity. There is no general consensus on who to offer a tracheostomy to, and when we should do it.

A retrospective review of preterm infants admitted to a tertiary NICU and PICU was undertaken to identity any common themes and to add to information needed for decision making and subsequent counselling.

Methods

badger.net data base was used for NICU patients, identifying all preterm patients admitted to Leeds General Infirmary (LGI) NICU receiving a tracheostomy (19/04/2010 – 26/01/2022). PICANET data base was used to identify all preterm infants either admitted with tracheostomy or had one inserted during PICU admission (2011– 2022). Electronic patient records (PPM) was also used.

Results

20 NICU patients and 34 PICU patients (table 1). Average age in receiving a tracheostomy on NICU 90 days, versus 5.6months on PICU. Average length of stay on NICU 141 days versus PICU 30 days. 100% of NICU patients had their tracheostomy during NICU admission, average birth gestation 28.1weeks. 62% had tracheostomy inserted on PICU, average birth gestation 31.8weeks. 45% NICU patients needed tracheostomy ventilation versus 60% PICU patients, for on average 2.2 years.

Average age at decannulation was 4.2years. 15% needed airway reconstruction surgery, 60% subsequently successfully had tracheostomies removed. Overall mortality for the two groups was 11%, 83% had a congenital abnormality or condition and 17% were extreme preterm.

Conclusion

Patients receiving a tracheostomy only, without ventilation support, were able to be discharged home from NICU and were discharged sooner than if needing tracheostomy–ventilation. Similar reasons for requiring a tracheostomy on PICU and NICU: subglottic stenosis followed by genetic conditions and airway abnormalities including syndromes respectively. On both PICU and NICU, more likely to get tracheostomy earlier if upper airway conditions, similar to other studies. Timing of tracheostomy on PICU similar to literature, 5.6months versus reported average 3.7–11months.

Further research is needed looking in more detail at optimal timings of tracheostomy, how to facilitate quicker discharges, growth, neurodevelopmental outcomes. This however adds to the information needed for discussions between families and clinicians.

none declared

ID 251. The use of fibreoptic bronchoscopy in the NICU - A single centre experience

Doctor Yu-Ting Lim[1], Doctor Andrew Brunton[1], Doctor Andrew MacLaren[1], Doctor Elaine Balmer[2], Doctor Jonathan Coutts[1]
[1]Royal Hospital for Children, Glasgow, United Kingdom, [2]University Hospital Wishaw, Wishaw, United Kingdom

BACKGROUND Flexible bronchoscopy (FB) is considered safe and effective for adult and paediatric intensive care, although its use in neonatal intensive care is less established. Our neonatal intensive care unit, which provides ECMO, cardiology, and surgical services, has access to flexible bronchoscopy. The aim of this study is to examine the indications and findings of FB in NICU.

METHODS 640 FB were performed between 2005 and 2022 by a Consultant Neonatologist or a senior registrar following local unit guidelines. Here we present patient demographics and indications for FB, with resulting diagnosis, therapeutic procedures and complications.

RESULTS FBs were performed on infants weighing 480g — 6470g. 39.2% were preterm infants with 76.8% via the endotracheal tube (ETT). Common indications were atelectasis on chest X–ray (43%) and persistent stridor (16.3%). Abnormal placement of the ETT occurred in 35.6% despite satisfactory position on chest Xray. Other findings included airway plugs (29.3%) and copious secretions (26.5%). Anatomical abnormalities were found in 32.2% including malacic airways, complete tracheal rings, tracheal right upper lobe bronchi and recurrent tracheoesophageal fistula. The procedure was well tolerated and transient desaturation responded to removal of the instrument. Fresh bleeding occurred in 1.3% and was only significant

in anticoagulated babies receiving ECMO. Bronchoalveloar lavage successfully cleared airway plugs in the vast majority of infants.

CONCLUSIONS Our findings have shown that FB in the NICU is a safe and effective procedure both for diagnosis and therapy for preterm and term infants receiving full intensive care support. This is consistent with a similar study done in the same center in 2014. We recommend that it should form a routine component of neonatal intensive care.

None declared

ID 734. REDUCING MOTHER-INFANT SEPARATION IN NEONATAL UNITS WITH POINT-OF-CARE LUNG ULTRASOUND: BONDING WITH SOUND WAVES

Doctor Nazakat Merchant[1], **Doctor Sankara Narayanan**[1]

[1]West Hertfordshire Nhs Trust, London, United Kingdom

Background:

Infants born after 34 weeks gestation are generally healthy enough to stay with their mothers in postnatal wards or transitional care. However, respiratory distress is a common cause for admission to neonatal unit, resulting in mother–infant separation. This negatively impacts breastfeeding and bonding. Interventions, for example oxygen, radiography, antibiotics, and intravenous fluids are commonly used. Our study examined the use of point–of–care lung ultrasound (POCUS) and its impact on neonatal unit length of stay (LOS) and need for interventions.

Methods:

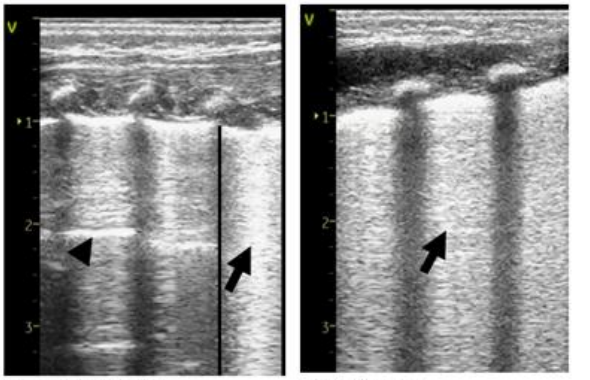
A retrospective study was conducted in a large level 2 neonatal unit over 4.5 months in the United Kingdom. Inclusion criteria: Neonates >= 34 weeks of gestation with respiratory distress receiving respiratory interventions ranging from nasal cannula oxygen to non–invasive ventilation. Exclusion criteria: outborn transfers, mechanical ventilation, surfactant administration, congenital anomalies and second significant comorbidity resulting in increased LOS. POCUS was done when the attending neonatal consultant had the experience and training. Linear or Hockey stick probe (10–12Hz frequency) was used. LOS in neonatal unit and radiation exposure were compared between cohorts. The scans were peer reviewed retrospectively. The results were analysed using Microsoft Excel and STATA. Mann– Whitney U test was conducted to determine if POCUS reduced LOS.

Results:

Of the 66 babies who met the inclusion criteria between Jan–May 2023, 33 were included in the study and 10 had POCUS. The median gestation and birthweight for both groups was 39 weeks and 3.3kg respectively. There was no difference in demographic parameters and mode of delivery between groups except a higher incidence of emergency caesarean section in the POCUS group. The median LOS on the neonatal unit (proxy for mother–infant separation) for POCUS group was 20.1 hours vs 42.9 hours in control group. ($z = 2.115$, $p < 0.034$, at a significance level of 0.05). Radiation exposure was similar between groups.

Conclusion:

POCUS guided decision making resulted in less mother infant separation in the context of late preterm/term respiratory distress. Larger study is needed to confirm these results. Implementation of POCUS would optimise the management of neonates with respiratory distress and has potential to decrease mother– infant separation.



POCUS Lung Ultrasound findings in TTN & RDS

POCUS Lung Ultrasound findings in TTN & RDS

None declared

ID 207. HOSPITAL HEALTH CARE RESOURCE UTILIZATION OF LATE PREMATURE VERSUS TERM INFANTS WITH RESPIRATORY SYNCYTIAL VIRUS BRONCHIOLITIS.

Doctor Diana Fariña[1], Doctor Maria Soledad Arbio[1], Doctor Patricio De Lucca[1], Doctor Tomas Woelflin[1]

[1]HOSPITAL GARRAHAN, Ciudad de Buenos Aires, Argentina

Respiratory syncytial virus (RSV) is a frequent cause of bronchiolitis (BQ) in infants. Palivizumab (PVZ) is the only licensed product for prevention of RSV BQ in preterm infants born with a GA ⩽ 35 w. In Argentina, the national guidelines establish prophylaxis only for infants with a GA ⩽ 32w. Nevertheless, late preterm infants (LPt) represent an important risk group for severe RSV. Establishing the burden of severe RSV infection in LPt can inform judicious use of PVZ in countries with limited resources.

The primary objective of this study was to measure and compare Hospital Health Care Resource Utilization (HCRU) for RSV bronchiolitis in infants born at 33 to 36 wGA (LPt) and those born >36 GA (T).

This is a retrospective, population–based, observational single center study over an eight–year period. All infants with bronchiolitis who were born with a GA ⩾ 33w were included.

Outcomes variables measured included: age and weight at hospitalization, length of stay and requirements of respiratory support (Table) and pooled days on any kind of respiratory therapy.

For the statistical analysis, measures of central tendency and their dispersions were calculated as medians and IQR. To compare results in the two groups, the t–Test or Wilcoxon Rank Sum Test was used for continuous variables and the chi–square test or Fisher's exact test for categorical variables, reporting the relative risks (RR) with 95% confidence intervals (CI95%). $p< 0.05$ was considered statistically significant.

Results: 228 infants were admitted for RSV bronchiolitis; 51 LPt and 177 T. Infant weight at admission had a median of 3130g (2570–3500 IQR) LPt group and 3350 (3016–3700) T group. Age at admission was 42 days (31–50) LPt group and 25 days (12–30) T group. The HCRU comparative analysis are showed on the table. The pooled days on any kind of respiratory therapy were 9 days (IQR 6.5–13.5) LPt group vs 7 days (IQR 4–10) T group (p=0.004).

Conclusion: The HCRU rates of infants with RSV bronchiolitis were significantly higher in late preterm versus term infants. These findings can be used to guide stakeholders in decisions concerning prevention of bronchiolitis in these high–risk infants.

Results	LPt group 33-36 w n=51	T group 37-42 w n= 177	RR (CI 95%)	p value
LOS (median IQR)	12 (8-17)	9 (7-13)		0.001
Nasal Cannula n (%)	34 (66.7%)	100 (56.5%)	1.18 (0,93-1.49)	0.19
CPAP n (%)	16 (31.4%)	29 (16.4%)	1.91 (1.13-3.24)	0.01
NIV-IPPV n (%)	6 (11.8%)	4 (2.3%)	5.21 (1.53-17.7)	0.01
MV n (%)	16 (31.4%)	18 (10.2%)	3.08 (1.7-5.6)	<0.001

LOS: length of stay (days). NIV-IPPV: Non-invasive ventilation w/ intermittent positive pressure. MV: mechanical ventilation
LPt: late preterm group; T: Term neonate group

DF belongs to AstraZeneca board of speakers in Argentina

ID 852. OUTCOMES OF PRETERM NEONATES FOLLOWING RESCUE TREATMENT WITH INHALED NITRIC OXIDE FOR EARLY HYPOXEMIC RESPIRATORY FAILURE

Doctor Asad Abbas[1], Doctor Harish Kumar[1], **Doctor Anju Singh**[1]

[1]Birmingham Women's Hospital, Birmingham , United Kingdom

Background:

Hypoxemic respiratory failure (HRF) is a common and serious complication of prematurity that may be associated with persistent pulmonary hypertension of the newborn (PPHN). Inhaled nitric oxide (iNO) is a selective pulmonary vasodilator that improves oxygenation and reduces pulmonary vascular resistance in term and near–term infants with PPHN. However, the efficacy and safety of iNO in preterm infants with early HRF are uncertain. Several randomized controlled trials have investigated the effects of iNO on mortality, bronchopulmonary dysplasia (BPD), and neurodevelopmental outcomes in this population, but the results have been inconsistent. This retrospective observational study aims to evaluate the outcomes of preterm babies receiving iNO for early HRF (first 3 days of life) at a regional neonatal centre.

Methods:

Design: Retrospective review of neonatal database Badgernet over a 6–year period.

Setting: Regional neonatal intensive care unit.

Patients: 63 neonates <35 weeks gestational age who received iNO for hypoxemic respiratory failure within the first 3 days of life.

Intervention: Inhaled nitric oxide.

Primary outcome measure: Survival to discharge.

Secondary outcome measures: Incidence of BPD, home oxygen, severe IVH (grade 3 or 4), ROP requiring treatment and neurodevelopmental impairment at 2 years in survivors.

Results

45 neonates (71.4%) receiving iNO for HRF survived to discharge. Amongst survivors, 31 (68.8%) had BPD at 36 weeks, 16 (35.5%) were discharged home on oxygen, 10 babies (22.2%) had severe IVH, and 3 babies (6.6%) had ROP requiring treatment. In extremely preterm neonates (<28 weeks GA), survival was 50%. All survivors had BPD at 36 weeks, and 70% were discharged on home oxygen. 27.2 % of the survivors had severe IVH and ROP requiring treatment.

A higher birth weight, higher gestational age at birth, higher 5 and 10–minute APGAR scores and higher pre–ductal saturation at the start of iNO were associated with survival. (Table 1).

Conclusion:

In our preterm cohort inhaled nitric oxide has been an effective therapeutic intervention in early hypoxemic respiratory failure, with a survival benefit. This benefit is sustained even in extremely preterm neonates.

	Deaths	Survivors	p Value
Gestational age (Median, IQR)	26 (25-29)	29 (28-31)	0.02
Birth weight (Mean, SD)	1077.0 (606.0)	1495.2 (769.5)	0.03
Females (n, %)	7 (36.8%)	22 (50%)	0.33
Antenatal Steroids (n, %)	12 (63.1%)	31 (70.4%)	.12
Oligohydramnios (n, %)	3 (15.7)	11 (25%)	0.41
PPROM/Chorioamnionitis (n, %)	7 (36.8%)	15 (34.0%)	0.83
5-minute APGAR (Median, IQR)	5 (4-7)	6 (5-8)	0.01
10-minute APGAR (Median, IQR)	7(6-8)	8 (7-9)	0.01
Vaginal birth (n, %)	8 (42.1%)	12 (27.2%)	
Emergency caesarean section (n, %)	11 (57.8%)	31 (70.4%)	0.24
Pre-ductal saturation at start of iNO (Mean, SD)	67 (20)	78 (17)	0.03
Post-ductal saturation at start of iNO (Mean, SD)	58 (22)	66 (22)	0.19
ECHO diagnosis of PPHN (n, %)	12 (63.1%)	32 (72.7%)	0.44
Clinical diagnosis of PPHN (n, %)	17 (89.4%)	41 (93.1%)	0.61

Table 1: Characteristics of survivors and deceased neonates receiving iNO. Categorical data were analysed using Chi–square test or Mann–Whitney U test, continuous data were analysed using an independent sample t–test.

Table 1: Characteristics of survivors and deceased neonates receiving iNO. Categorical data were analysed using Chi–square test or Mann–Whitney U test, continuous data were analysed using an independent sample t–test.

None declared

ID 325. Comparison of UK versus Canadian NICUs use of inhaled Nitric Oxide.

Doctor Aoife Hurley[1], Dr Kerriann Pereira[2], Dr Cath Harrison[1]

[1]Leeds Teaching Hospitals Trust, Leeds, United Kingdom, [2]The Hospital for Sick Children, Toronto, Canada

Inhaled nitric oxide (iNO) is a potent vasodilator treatment used in hypoxaemic respiratory failure (HRF) due to persistent pulmonary hypertension of the newborn (PPHN). There is no set guidance, with variation in practice noted. A comparison was done between UK and Toronto, Canada Neonatal units.

Method

Google survey was distributed to UK Neonatal GRID trainees. Practice compared to guidelines at The Hospital for Sick Children's (HSC), Mount Sinai Hospital (MSH) and Sunnybrook Hospital (SB), all in Toronto.

Results

In UK, 93.3% start at 20ppm, 3.3% 30ppm and 3.3% 40ppm. Compared to HSC, MSH and SB who all start at 20ppm. UK trainees report 73.3% use maximum 20ppm, 13.3% use maximum 30ppm and 13.3% use 40ppm maximum. In HSC, SB and MSH 20ppm was the maximum. 60% UK trainees report iNO weaning protocol. 80% wean from 20ppm to 15 to 10 to 5 then by 1ppm every few hours until off. 6.7% report weaning from 20ppm to 10ppm then 5ppm, then wean by 1ppm every few hours until off. 13.3% report multiple different strategies, see table 1. At HSC, wean from 20ppm to 5ppm, when infant is stable and FiO2 < 0.6. Then wean from 5ppm to off by 1ppm every few hours. MSH and SB, once FiO2 < 0.4 and infant stable, iNO is weaned by 5ppm every hour until 5ppm. If on iNO > 24hours, the iNO is left at 5ppm for 4hours

before the wean from 5ppm to off by 1ppm every hour. Otherwise wean immediately by 1ppm hourly from 5ppm until off.

Conclusion

Whilst a low response rate from UK trainees (13%) it highlights variation in UK practice. This variation is mirrored in Toronto Neonatal units.The HSC team undertook a QI project that demonstrated weaning from 20ppm to 5ppm had no adverse outcomes therefore changed guidance, explaining their different practice. This has potential implications for UK practice, as if can wean sooner it frees up iNO units, saving costs, improving resources for allocation and reduces exposure to prems.

none declared

ID 673. Infants with congenital lung malformations identified at our tertiary maternity hospital over 5-year period

Miss Georgia Carla Dugaci[1], Barbara Cathcart[1], Heather Hughes[1], Niamh Adams[1], Lisa McCarthy[1], Jennifer Walsh[1], Madeleine Murphy[1]

[1]National Maternity Hospital, Dublin, Ireland

Background

Congenital lung lesions, of which congenital pulmonary airway malformations (CPAM) are most common, represent a spectrum of anomalies with unknown aetiology. We wished to identify cases at our hospital and review subsequent management.

Methods

We identified fetuses referred to our fetal assessment unit (FAU) with suspected CPAM. We performed a retrospective e–chart review of these pregnancies and subsequent live–born infants over 5–years. We collected data and contacted parents if follow–up data was not recorded.

Results

Between 2018–2022, 24 fetuses were referred to FAU with suspected CPAM identified on antenatal ultrasound. Fetal MRI was performed in 19 (79%) cases. The MRI was suggestive of CPAM in 7 (37%) cases, bronchopulmonary sequestration in 5 (26%), bronchial atresia spectrum in 4 (21%), and bronchogenic cyst in 1 (5%); 2 (11%) were diagnosed with congenital diaphragmatic hernia and not included in follow–up data. On subsequent ultrasounds, the lesion decreased in size in 11 (50%) cases, remained stable in 8 (37%), and increased in 3 (13%). Fetal echo was performed in 10 (45%) cases and cardiac anomalies were identified in 2 fetuses. Intra–uterine demise, associated with severe hydrops, occurred in 2 cases.

For the 20 surviving fetuses with lung lesions, the mean (SD) GA was 39 (1) weeks. Twelve (60%) infants were admitted to the neonatal unit. Two infants were intubated – 1 with a double outlet right ventricle and 1 undergoing therapeutic hypothermia; 2 required non–invasive respiratory support. All infants had a postnatal chest x–ray (CXR) and were referred to respiratory and/or cardiothoracic surgery. Postnatal CXR was in–keeping with antenatal findings in 13 (65%) and no definite lesion was seen in 7 (35%).

We obtained longer–term data for 16 infants. At follow–up, 15 (93%) infants had a CT thorax at 6–18 months; another is planned. Five (31%) infants with ongoing respiratory symptoms had a lobectomy; symptoms resolved for all following surgery. The other 11 (69%) infants remain asymptomatic and have ongoing follow–up.

Conclusion

The majority of infants with congenital lung lesions were asymptomatic after birth. Those with ongoing respiratory symptoms underwent surgical intervention. Our study provides important local data helpful when counselling families.

None declared

ID 698. VALIDATION OF A CERVICAL BIOIMPEDANCE MEASUREMENT SETUP FOR PRETERM INFANTS IN HEALTHY ADULTS

Marie-Louise Herrmann[1], MSc Maximilian Mandl[5], Dr. Holger Nahrstaedt[2], Professor Ulrich H. Thome[1], Doctor Tobias Reicherzer[3], Dr. Mathias Klemme[3], Wolfgang Braun[4], Doctor Benjamin W. Ackermann[1]

[1]Department of Neonatology, University Of Leipzig, Leipzig, Germany, [2]Hasomed GmbH, Magdeburg, Germany, [3]University Children's Hospital and Perinatal Center, LMU–Munich, Munich, Germany, [4]F. Stephan GmbH, Gackenbach, Germany, [5]IBE, LMU Munich, Munich, Germany

Background:

Detecting breathing and apnea in critically ill preterm infants remains a challenge. Cervical bioimpedance (cBI) might change during breathing and apnea. We used neonatal techniques and equipment in healthy adults to establish a suitable measurement system for cBI. Our goal was to establish reliable breath detection algorithms and optimize the cBI measurement setup avoiding interventions in preterm infants.

Methods:

A prospective observational study was performed on 15 healthy adults. Spontaneous breathing (SB) was examined by Graseby capsule, respiratory inductance plethysmography (RIP), and Pneumotachograph. We compared two positions for cBI measurement. In both positions, skin electrodes were placed beneath the angle of the mandible. In vertical position (VP), electrodes were additionally fixed above the jugulum, in horizontal position (HP) frontal of the upper larynx. The subjects were

asked to breathe quietly and imitate apneas (AP). Breath amplitudes were calculated for each breath. Statistical differences were calculated by Mann–Whitney–U–Test.

Results:

We examined 15 lung–healthy adults (eight women, seven men) with a median age of 25 (23—42), a median body weight of 70.0 kg (60—75), and a median height of 1.71 m (1.64—1.82). A total of 300 minutes was analyzed. Median raw values of cBI in HP while SB were 37.04 (28.54—49.89) Ω, 17.94 (13.35—27.49) Ω in VP. During simulated apnea, raw values for HP were 36.14 (28.75—49.36) Ω and 17.96 (13.35—27.49) Ω for VP ($p<0.001$). Mean amplitudes during SB were 0.29 ± 0.34 for HP and 0.25± 0.26 for VP compared to 0.05± 0.04 for HP and 0.04 ± 0.02 for VP while apnea ($p<0.001$). Compared to RIP breath detection rate ratio was 1.02(1.02—1.05) and 1.02(1.01—1.07) in VP. The breath detection rate ratio compared to the Graseby capsule was 0.99(0.96—1,00) in HP and 1.01(0.99—1.04) in VP.

Conclusions:

Mean values and amplitudes showed high inter–individual variability. Different electrode positions might be relevant in cBI measurement; VP seems to have a better signal–to–noise ratio. A high breath detection rate ratio was observed in both electrode positions. cBI amplitudes might be associated with apneas.

This study was supported by a research grant of the german ministry for research and education (BMBF; Bundesministerium für Bildung und Forschung).

ID 992. VARIATION IN DOSING REGIMENS IN CLINICAL TRIALS OF INHALED NITRIC OXIDE IN NEONATES

Doctor Natasha Aikman[1], Doctor Isha Patel[2], Doctor Nimish Subhedar[1]

[1]Liverpool Women's NHS Foundation Trust, Liverpool, United Kingdom, [2]Alder Hey Children's NHS Foundation Trust, Liverpool, United Kingdom

Background

Inhaled nitric oxide (iNO) is a licensed treatment for neonatal hypoxaemic respiratory failure (HRF) complicated by pulmonary hypertension (PH) in infants ⩾ 34 weeks' gestation but is also widely used 'off–label' for unlicensed indications in preterm infants.

Objectives

To describe the variation in dosing regimens used in clinical trials of iNO in neonates.

Methods

We performed a scoping review using the PRISMA–ScR guidelines of published clinical trials of iNO from 1 January 1992 to 31 December 2022 using PubMed, EMBASE and Clinicaltrials.gov databases. Article selection and characterisation were performed in duplicate using pre–defined data extraction criteria. Information collected included population demographics, indication for using iNO, dosing approach (increasing, decreasing or fixed regimen) and details of iNO dosage.

Results

Of the 102 clinical trials identified there were 52 randomised controlled trials (RCTs), 22 cohort studies, 9 case–controlled studies and 19 case series. 55 (54%) involved

off–label use in preterm babies. Dosing regimens varied within all trial designs (Table 1).

The commonest indications for iNO use were HRF/PH (69), congenital diaphragmatic hernia (12) and bronchopulmonary dysplasia (12). There were 33 studies performed exclusively in preterm infants < 34 weeks' gestation and 47 studies in infants ⩾ 34 weeks' gestation.

The starting dose in the majority of studies was ⩾ 20 ppm but iNO was started at ⩽ 5 ppm in 16 studies.

Conclusion

The primary literature that informs iNO dosing comprises a variety of different study designs and dosing regimens. There is considerable variation in dosing regimens used in studies of iNO therapy for licensed and off–label indications in neonates. Further research is needed to better define the optimal dosing strategy for iNO in neonates.

	Dosing regimen			
	Increasing dose, N (%)	Decreasing dose, N (%)	Fixed dose, N (%)	Other, N (%)*
RCTs	16 (31)	22 (42)	11 (21)	3 (6)
Cohort	7 (32)	6 (27)	1 (5)	8 (36)
Case-controlled	3 (33)	4 (44)	0 (0)	2 (22)
Case series	8 (42)	4 (21)	2 (11)	5 (26)

*3 studies had randomised doses; 15 had incomplete dosing strategy descriptions.

Table 1: Dosing regimens

Table 1: Dosing regimens

None declared

ID 561. THE USE OF THE INTERNATIONAL NEONATAL CONSORTIUM (INC) NEONATAL ADVERSE EVENT SEVERITY SCORE IN THE BABY LUNG OBSERVATIONAL STUDY.

Doctor Reena Bhatt[1], Dr Kathy Chant[1], Dr Jens Madsen[1], Professor Neil Marlow[1], Professor Howard Clark[1]

[1]EGA Institute For Women's Health, University College London, London, United Kingdom

Introduction

Clinical trials in the neonatal population pose significant challenges given the physiological variability and vulnerability especially in preterm infants. Trials are often terminated due to what is thought to be an increase in adverse events but are more likely due to the pathologies common in the preterm infant. We aimed to assess the usability and adaptability of the INC neonatal adverse event severity score (NAESS) in a cohort of preterm infants participating in an observational study to establish the baseline incidence of adverse events in preterm infants born at <30 weeks gestational age.

Methods

61 preterm infants were recruited to the Baby Lung observational study. Adverse events were identified and scored as per the INC NAESS at 24, 48, 72, 96 hours and 7 days of life. Data was recorded on the RedCap database. These events were categorised using the NAESS templates and frequency of events and severity were analysed. If there was progression of the adverse events between time points, they were recorded as separate events.

Results

Interim analysis of 6 neonatal complications in 35 patients were categorised according to the INC NAESS templates. There was a greater incidence of adverse events in the most immature infants. The most common adverse event was intraventricular haemorrhage (n=5). Unexpected adverse events for preterm infants such as hypoxic ischaemic encephalopathy was noted and progression of adverse events at the different data time–points was demonstrated reflecting the precarious nature of neonatal intensive care. The adverse events were easily categorised and could be scored objectively using the templates by the INC.

Conclusion

The INC NAESS is well suited to assess adverse events in neonates admitted to an intensive care unit. It allows objective scoring of commonly occurring events especially in preterm infants and is therefore better suited for neonatal interventional trials than other definitions that have been adapted from adult clinical trials. Using this data we have been able to understand the background incidence of neonatal adverse events in our cohort which has informed the definition of dose limiting events for a proposed phase–I study in a similar preterm cohort.

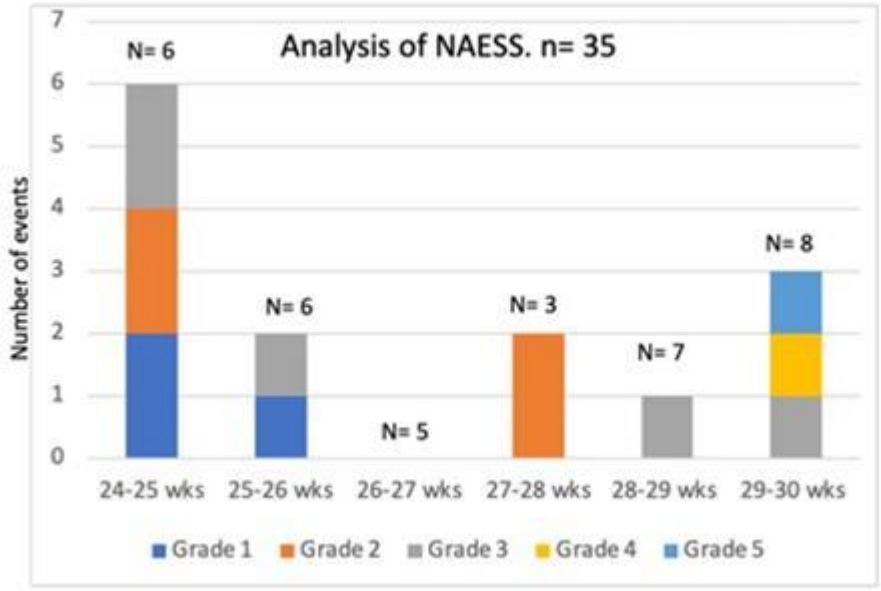


Figure 1. Interim analysis of 6 neonatal adverse events in 35 participants categorised by the INC NAESS. N= number of participants in each gestational cohort.

Figure 1. Interim analysis of 6 neonatal adverse events in 35 participants categorised by the INC NAESS. N= number of participants in each gestational cohort.

None Declared

ID 76. How Important is Antenatal Steroid Administration for Late Preterm Babies?

Doctor Kristin Tanney[1], **Doctor Jamie Gilmour**[1], Maureen Hayton[1]

[1]Newborn Intensive Care Unit, St. Mary's Hospital, Manchester, United Kingdom

BACKGROUND

There is clear evidence for antenatal steroids for babies < 35 weeks' gestation, but between 35+0 and 36+6 weeks opinion is divided. Recently there has been increased discussion around antenatal steroids at this gestation. In our NICU, we see many late preterms admitted with respiratory morbidity, some of whom become very unwell and require prolonged ventilation. We decided to review our late preterm admissions to assess current practices with antenatal steroid administration.

METHODS

We carried out a retrospective review of 34+0 — 36+6 week babies admitted to our unit in 2021. We used Badgernet and our electronic patient record to collect information on:

- Reason for admission
- Gestation, weight and sex
- Details of delivery, respiratory support and surfactant received
- Antenatal steroid administration
- Cot days required

We excluded any babies who were complex, ie had medical or surgical co-morbidities.

RESULTS

228 late preterm babies were admitted to NICU in 2021, and 183 met the inclusion criteria. The commonest reason for admission was respiratory distress; over half had Surfactant Deficient Lung Disease.

- 109 /183 non-complex late preterms' mothers had no steroids
- 128 /183 required respiratory support
- 73 of these 128 who required respiratory support did not receive steroids
- For these babies there were a total of 108 respiratory support days, and 506.5 cot days
- 9 were ventilated; 64 required CPAP / High-Flow

CONCLUSION

There is no debate about the benefit of antenatal steroids for 34+0 — 34+6 week babies. Our 2021 data showed 69% steroid administration for this group. Recent evidence suggests that for 35+0 — 36+6 week babies, number needed to treat to avoid respiratory support = 33. Respiratory support days lead to delayed establishment of feeds and longer NICU stay. ICU days especially have high cost profile and significant effect on admissions, deliveries and Paediatric services. Risk:balance ratio of antenatal steroids should be considered for all late preterm babies, and parents helped to make an informed choice. Based on this analysis, women with expected late preterm delivery in our centre are now offered an information sheet to aid joint decision-making.

None declared