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POSTER WALK – NURSING 1

ID 785. Safety and effectiveness of parental holding for newborns during therapeutic hypothermia for hypoxic-ischemic encephalopathy

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Background: Physical separation contributes to parental trauma and poorer bonding in the context of therapeutic hypothermia (TH) for hypoxic–ischemic encephalopathy (HIE). As parental holding (PH) has been shown to improve parental experience, we started to propose this strategy as standard care to parents in 2019. In order to better assess this strategy, we aimed i) to determine the physiological and behavioral stability of newborn held by one parent during TH for HIE, ii) to evaluate the perception of parents and healthcare professionals.

Methods: Observational prospective study in the NICU of Strasbourg University Hospital (France) from 09/2020 to 01/2022, for all newborns > 35 weeks’ gestation and a birthweight > 1800g treated with TH for HIE, whom parents wanted to hold. According to French guidelines, all patients were mechanically ventilated, received sedation–analgesia, had central venous and urinary catheters.

The main outcome measures were changes in body temperature ($> 34^{\circ}\text{C}$ or $< 33^{\circ}\text{C}$), vital signs and behavior (comfort/pain scores). Recordings were performed at 5 time points: 5 min before and after PH start, 30–60 min during PH, 5 min before and after PH end. Parental and nurses feelings were assessed by a self-questionnaire using a 10 points Likert-scale evaluating several dimensions. Ethics committee approval and parental consent obtained

Results: Among 53 eligible infants, 30 were held by their parents. Mean holding time was 83 (± 26) min. PH did not induce significant changes in vital signs (Table 1) nor in the infant's COMFORT-B score (3 missing values). Self-questionnaires filled in by parents and nurses showed a high level of overall effectiveness and satisfaction of PH. For parents (mean \pm SD): perceived benefit (9.5 \pm 0.8), reassurance feeling (9.7 \pm 0.5), apprehension score (2.1 \pm 2.3), discomfort score (1.1 \pm 1.8). For health-caregivers: satisfaction (9.1 \pm 1), apprehension score (2.3 \pm 1.2), perceived increased workload (3.2 \pm 2.3). No patients experienced seizures detected on aEEG during PH and none of the sessions had to be prematurely stopped by the healthcare team.

Conclusions: Holding newborns receiving TH for HIE was safe for the newborn without causing discomfort. It was also beneficial for the parents and supported by the health care team.

Table 1: Physiological and behavioural changes during Parental Holding

Time Points	-5 min PH	+ 5 min	+ 30-60 min	End of PH	5 min after PH	p-value
Body T°, °C (min-max)	33.5 (33-34)	33.5 (33.2-34)	33.6 (33.3-34.1)	33.5 (33.1-33.9)	33.5 (33.1-33.9)	0,19
Heart Rate (+/-SD)	98 (± 12)	101 (± 12)	99 (± 13)	95 (± 11)	97 (± 15)	0,07
SaO ₂ , % (min-max)	98 (93-100)	98 (91-100)	98 (87-100)	98 (87-100)	99 (93-100)	0,13
Respiratory Rate (+/-SD)	38 (± 9)	38 (± 8)	39 (± 8)	36 (± 7)	39 (± 11)	0,46
Systolic BP, mmHg (SD)	60 (± 8)	62 (± 9)	62 (± 8)	62 (± 11)	63 (± 9)	0,72
FiO ₂ (%) (min-max)	21 (NA)	21 (NA)	21 (NA)	21 (NA)	21 (NA)	NA
COMFORT B > 17, n (%)	1 (3.6%)	1 (3.6%)	0	0	0	0,99

Results are given in median (min-max) or mean (+/-SD) according to the data distribution,

ANOVA for repeated measures (normal distribution) or Wald and Bonferroni tests .

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ANOVA for repeated measures (normal distribution) or Wald and Bonferroni tests .

We have no conflict of interest to declare

ID 222. THE PARENTS' EXPERIENCE OF; CARE, EATING HABITS, AND BEHAVIOURAL DEVELOPMENT IN OUR TINIEST SURVIVORS

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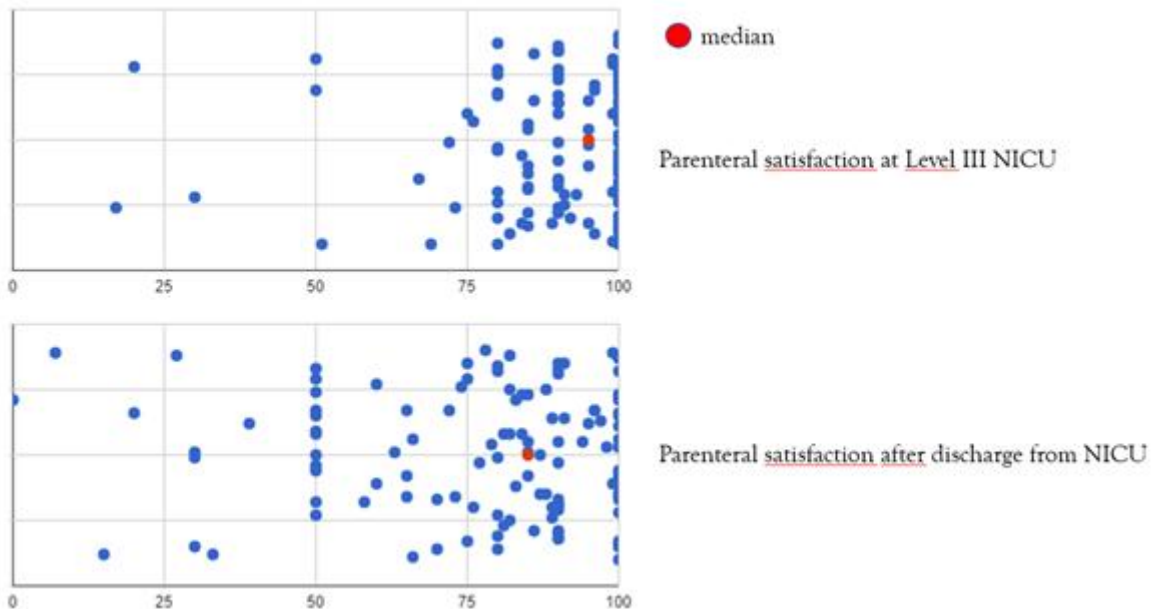
Background: Active care for children born before 24 weeks of gestation has resulted in an increased survival with 50% of these infants in Sweden. However, they often experience neonatal diagnoses and developmental neurological disabilities. This study aimed to evaluate parents' care experiences and examine the children's eating habits and behavioural development.

Methods: A survey study was conducted with 349 parents of Swedish children born before 24 weeks of gestation between 2007–2018. The anonymous survey was accessed through an electronic link (www.redcap.se). The survey contained electronically validated questionnaires with categorical answers, VAS-scale answers (0–100), and open-ended questions to support and verify the quantitative questions. Descriptive statistical analysis and thematic analysis were performed. Interquartile range (IQR) was calculated (percentile 25–75).

Results: 131 out of 349 (38%) parents completed the survey, with 50% of the answers relating to infants born between 2007–2013. Most parents (n=125) expressed satisfaction with care and information during their first period of care at the Level III

NICU, with median satisfaction and information levels of 95 (IQR: 15) and 90 (IQR: 20), respectively. After discharge from neonatal care, satisfaction with care and information on the child's health and development decreased, with median levels of 85 (IQR: 32) and 80 (IQR: 21), respectively. Notably, 22 parents in this group had answers of 50 or lower. The thematic analysis revealed that the main reason for parental dissatisfaction and insecurity during the neonatal hospital period was transportation between NICUs. After discharge, disturbed eating habits were reported among 62% (75/121) of infants, attention and concentration problems in 69% (83/121), and difficulties with social interactions in 60% (73/121).

Conclusions: This study provides insights into the challenges families of extremely preterm children face in the short and long-term perspectives, highlighting a problem with the change of hospital units as well as high prevalence of problems with eating habits and behavioural development at follow-up. These findings emphasize the need for integrated efforts in harmonization between units, early interventions, follow-up, and support throughout childhood and school age.



None declared



ID 530. Outcomes of neonates delivered preterm iatrogenically because of growth concerns in one of the twins: A single centre experience

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Background:

Multiple pregnancies are associated with a higher risk of mortality and a number of morbidities such as prematurity and growth restriction. In a proportion of monochorionic and dichorionic twin pregnancies, the growth of one of the twins may be more affected than the other. In such situations, fetal medicine and neonatal teams have to weigh up the risks and benefits of earlier preterm delivery or continuing pregnancy. The outcomes of growth restricted neonates have been described in literature but studies reviewing the outcomes of 'well' twin are sparse.

Aim:

This study aimed to compare the outcomes of growth restricted twins to the 'well' twins delivered prematurely because of growth concerns in one of the twins.

Methods:

We conducted a retrospective observational study of preterm twins (<31weeks GA) delivered iatrogenically prematurely at Nottingham University Hospitals Trust UK between January 2017 and December 2022 due to growth concerns in one twin. Patient database (Badgernet®) was reviewed for baseline characteristics and relevant outcomes [survival without bronchopulmonary dysplasia (BPD) at 36 weeks corrected gestational age (CGA), mortality, BPD at 36 weeks CGA, days on respiratory support,

and necrotising–enterocolitis (NEC) of grade 2 or higher]. We excluded cases with preterm delivery for other reasons, in–utero death of one of the twins.

Results:

Of 124 identified preterm twins, 40 (20 pairs) fitted the criteria for analysis. The growth compromised group had significantly lower birth weights and Z scores (Table 1). All patients in the compromised group and 85% in the ‘well’ group needed invasive ventilation. Incidence of NEC was higher in the ‘compromised’ group but all other outcomes were not significantly different (Table 1).

Conclusions:

Both compromised and ‘well’ twins have significant risks after iatrogenic preterm delivery. The risks for both the twins need to be considered during decision making discussions between families, fetal medicine and neonatal teams.

Patient characteristic		‘Well’ twin	Compromised twin	P Value
Gestational age (weeks) Median (IQR)		29 (28, 29)		
Birthweight (grams) Median (IQR)		1190 (1017, 1361)	1005 (800, 1234)	0.04338
Birthweight Z score Median (IQR)		0.17 (-0.4,0.55)	-0.95 (-1.61, -0.29)	0.00278
Gender	Male	9	8	1
	Female	11	12	
Survival without BPD		11	8	0.5273
BPD		9	6	0.2
Mortality		1	6	0.0915
Days on respiratory support* (days) Median (IQR)		33.5 (18.75, 39.25)	25 (6, 35.75)	0.5485
NEC Bell’s Stage 2 or more		1	7	0.0436

*= Respiratory support included invasive ventilation and non-invasive ventilation (CPAP/ BIPAP/ Humidified high flow nasal cannula)



Table 1: Demographics and outcomes of twins delivered preterm iatrogenically at Nottingham University Hospitals Trust UK between January 2017 and December 2022 due to growth concerns in one twin.

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None declared



ID 106. Exploring the Impact of Maternal Bonding and Parental Stress on Neurodevelopmental Outcomes in Very-Low-Birth-Weight Infants During the COVID-19 Pandemic: A Prospective Cohort Study

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Background

The experience of premature birth has consequences not just for the child and the mother as separate entities, but also for their relationship as it develops during a critical period. Studies on mother–infant bonding have little theoretical doubt that better bonding may have a positive effect on further neonatal social development. However, there is hardly any empirical evidence, especially lacking prospective longitudinal studies. During the COVID–19 pandemic, restrictions on visiting preterm infants in the neonatal intensive care unit have resulted in poorer maternal bond than before. This study aims to explore the impact of these restrictions on mother–infant bonding to the infants' development.

Method

In this prospective cohort study, we enrolled very–low–birth–weight infants born during the COVID–19 pandemic and admitted to the Veterans General Hospital in Taichung, Taiwan. The hospitals were given varying levels of restriction rules by the government, and we adhered to these guidelines while utilizing social media to aid those restricted. Parents completed the Mother–Infant Bonding Inventory and Parenting Stress Index, Fourth Edition twice: right before discharge and at the first outpatient visit. The Bayley Scales of Infant and Toddler Development, 3rd edition,



were utilized as a neurodevelopmental outcome measurement to infants at a corrected age of 6 months. We used multiple linear regression model to adjust the variables and see the relation with neurodevelopment outcome and the scores in these two questionnaires.

Results

We enrolled 56 very-low-birth weight infants. The mean gestational age of all participants was 29.10 ± 2.35 weeks and the averaged birth weight was 1150.40 ± 233.23 grams. After adjusting the parents' age and educational levels, we found no relationship between the scores in the Mother-Infant Bonding Inventory with the Bayley scales in the cognitive, motor and language domain except the social-emotional domain. There are negative links with maternal depression in the cognitive and language domain. As in social-emotional domain, there is the negative correlation with maternal role restriction subscale.

Conclusions

The higher scores in the role restriction and depression subscales from maternal side affect negatively the neurodevelopment outcome in very-low-birth weight infants at 6 month of corrected age.

None declared.



ID 919. Facilitating the transition from gavage to direct breastfeeding in preterm infants: A quality improvement project

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Background:

The transition from gavage to breastfeeding is a pivotal step in the development of preterm infants. Non-nutritive sucking, oral stimulation, promotion of direct breastfeeding experience, bottle avoidance, exposure to the odor of breast milk, as well as cue-based feeding approach are evidence-based interventions that can facilitate this transition (Ziadi et al., 2016a). A quality improvement project, based on the Iowa Model for Evidence-Based Practice to Promote Quality Care (Titler et al., 2001) and the results of a pilot project (Ziadi et al., 2016b), was implemented in a neonatal intensive care unit (NICU). Consisting of a 90-minute evidence-based educational intervention, this project aimed to improve the knowledge, beliefs, and intended clinical practice of neonatal nurses regarding the transition from gavage to direct breastfeeding in preterm infants and related evidence-based interventions.

Methods:

A before-after quasi-experimental study with a single group of neonatal nurses was implemented in a Canadian level-III NICU in order to evaluate the effects of the evidence-based educational intervention. The educational intervention focused on the oromotor development of preterm infants and evidence-based interventions that facilitate the transition from gavage to direct breastfeeding. The neonatal nurses' knowledge, beliefs and intended clinical practice were assessed in pre- and post-educational intervention phases (2 and 6 weeks after the educational intervention)

using a 26-item questionnaire. A satisfaction questionnaire was also completed by the neonatal nurses following the educational intervention.

Results:

More than 80 neonatal nurses participated to the evidence-based educational intervention. The educational intervention had significant positive effects on their knowledge, beliefs, and intended clinical practice. Neonatal nurses were satisfied with the content and format of the educational intervention.

Conclusion:

A brief nursing educational intervention can improve neonatal nurses' knowledge, beliefs, and intended clinical practice regarding the transition from gavage to direct breastfeeding in preterm infants. This quality improvement project shows the relevance of supporting the professional development of neonatal nurses for a clinical practice that is evidence-based.

None declared



ID 646. MIND THE GAP: COMPARING PARENTS' INFORMATION NEEDS ABOUT IMPENDING PRETERM BIRTH TO CURRENT CLINICAL PRACTICES USING A MIXED METHODS APPROACH.

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KEYWORDS: preterm birth; antenatal counselling; information provision; information needs; patient involvement; clinician–patient communication

BACKGROUND: Current knowledge about parents' information needs on preterm birth remains scant. With a multidisciplinary research team, including parents and clinicians, this study aims to innovate by formulating guiding principles for the development of a nationwide information platform that is built on parents' perspectives. We identified parents' information needs about impending very preterm birth (<32 weeks gestation) and compared these needs to current information practices in the Netherlands.

METHODS. Step 1: We surveyed N=206 parents of preterm infants to assess information needs. We analyzed survey data using descriptive statistics and inductive

thematic analysis. Step 2: We collected Dutch information resources from hospitals (N=9 NICUs) and through a comprehensive online search. We analyzed the materials using deductive thematic analysis. Step 3: We systematically compared findings from Steps 1–2.

RESULTS. We identified four themes pertaining to parents' information needs: (1) participation in care, (2) emotional support, (3) experience/success stories, and (4) practical information. Clinicians' communicative skills and time were considered prerequisites for optimal information–provision. Notably, hospital resources provided mainly practical information with some emphasis on participation in care, while online information focused on emotional support and experience/success stories.

CONCLUSION. While parents demonstrate clear information needs about impending very preterm birth, current information resources are at odds with those needs. This discrepancy needs to be addressed to optimize information–provision.

None declared

ID 952. Neonatal Central Venous Catheters: a successful triad of a traffic light system, an education guide and a new X-Ray project

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Project Introduction and Aims:

The use of central venous catheters (CVC) is an essential part of neonatal care. However, their utilisation is associated with severe complications such as extravasation to a body cavity. Critical events associated with neonatal CVCs triggered a thorough review into local practice, with the aim to disseminate findings and ensure sustained improvements to patient care and safety.

We aimed to reduce the number of incorrectly positioned lines, with the secondary aim of reducing complications through a prescriptive education package. A collaborative 'Central Line Quality Improvement Group' was initiated to address all the project aims.

Project Methodology/ PDSA cycles:

Cycles 1&2: We analysed data from our national neonatal records (Badgernet) and our electronic notes to review CVCs inserted from 01/09/2021– 6/12/2021. We implemented changes and re-evaluated practice after three months (01/03/2021– 30/04/2021).

Cycle 3: After collating feedback, we developed an education guide which has been distributed to every new rotation of doctors since 01/05/2022, as well as instilling parallel education across the multidisciplinary team.

Cycles 4&5: The initial audit prompted a review of the quality of X-rays. We assessed images for artefacts, collimation and the correct positioning. An audit of 50 babies showed poor quality X-Rays impacting on decision making. We therefore initiated a

quality improvement (QI) project with the radiology department. We re-evaluated the outcome two months post change (01/01/2023).

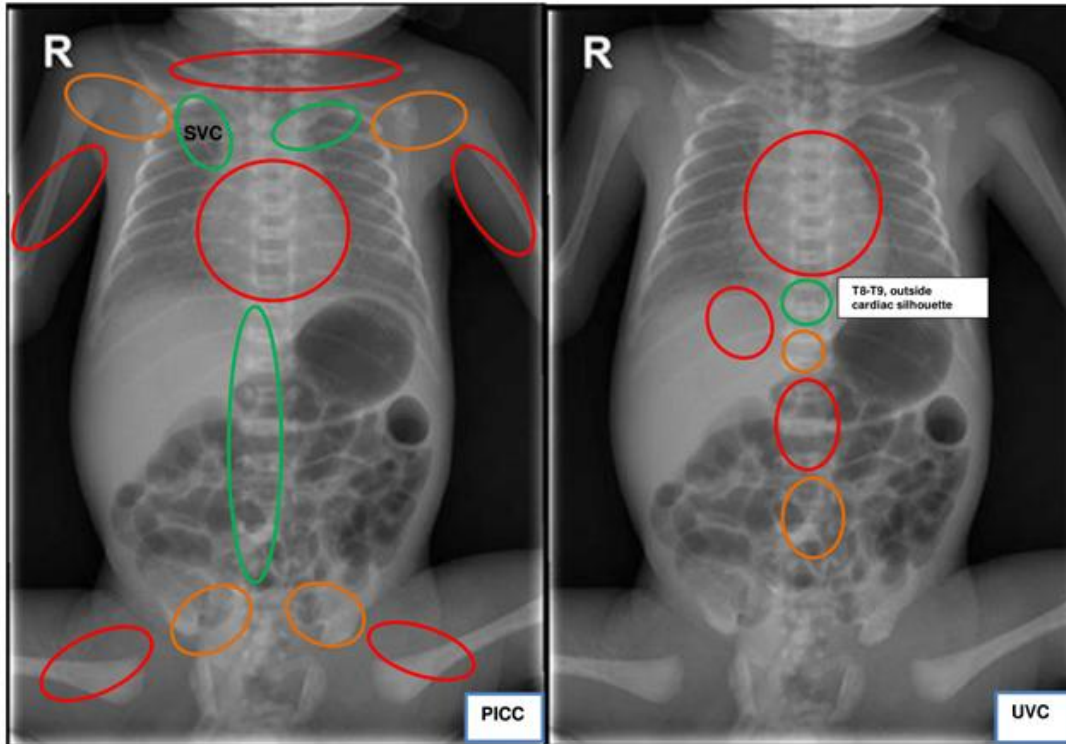
Project results and lessons learned:

94 lines were reviewed and 27.6% (n=27) were identified in an unintentionally suboptimal position (with two cardiac tamponades). We created a 'traffic light system' to assess and monitor CVCs and educated the team on optimal securing of catheters to avoid migration. Our re-audit findings revealed a reduction of 'red lines' to 17.4%.

Data collection from the X-Ray QI showed suboptimal body and limb positioning in 45% of cases and artefacts in 55% of images. We liaised with the lead radiographers and created more educational material. On subsequent review, red lines were further reduced to 13%.

Our robust system of ensuring good education, optimal position of lines, high quality x-rays and frequent monitoring has ensured improvement in patient care and safety.

**Traffic Light Guide to Neonatal Central Venous Catheter
Positions**



Peri-renal vessels:
UVC **should not** lie at L1-L3 level, but PICC safe to use unless clinical/
radiological concerns of malposition

GREEN	Optimal line position
AMBER	'Short long line/UVC' acceptable with extra caution and not for PN
RED	Unacceptable position - remove line or pull back

UAC: goes through one of the umbilical arteries, descends to the iliac artery before it ascends to the aorta. Appropriate placement is **T6-T10**

Every PICC, UVC, UAC line positioning should be confirmed with the consultant on call

Traffic line system for neonatal CVC position
Traffic line system for neonatal CVC position

None declared

ID 137. Technical skills required by neonatal experts: a European Delphi study

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Background

Simulation–based training (SBT) can help healthcare providers acquire the technical skills necessary to improve neonatal outcomes and increase patient safety. However, SBT is resource–demanding emphasizing the need for prioritization. While the European guidelines for training in neonatology provide guidance on necessary skills, they do not prioritize them. To address this gap, this study sought to identify and prioritize technical skills for inclusion in a simulation–based curriculum for neonatology.

Methods

A general needs assessment was carried out using a three–round iterative Delphi process. A steering committee, composed of representatives from the included countries, managed the process. The committee identified 10 neonatal experts from each country (expert group) who, then, nominated 1–3 physicians training to become neonatologists (trainee group). In round 1, the participants listed all the technical skills they believed should be mastered by newly trained neonatologists. Duplicates, physical examinations, and non–technical skills were excluded during content analysis. In round 2, the participants scored all remaining technical skills using the Copenhagen Academy for Medical Education and Simulation Needs Assessment Formula (CAMES–NAF), which evaluated four factors: frequency, importance of competency, impact of SBT on patient safety, and feasibility of SBT. The four factors

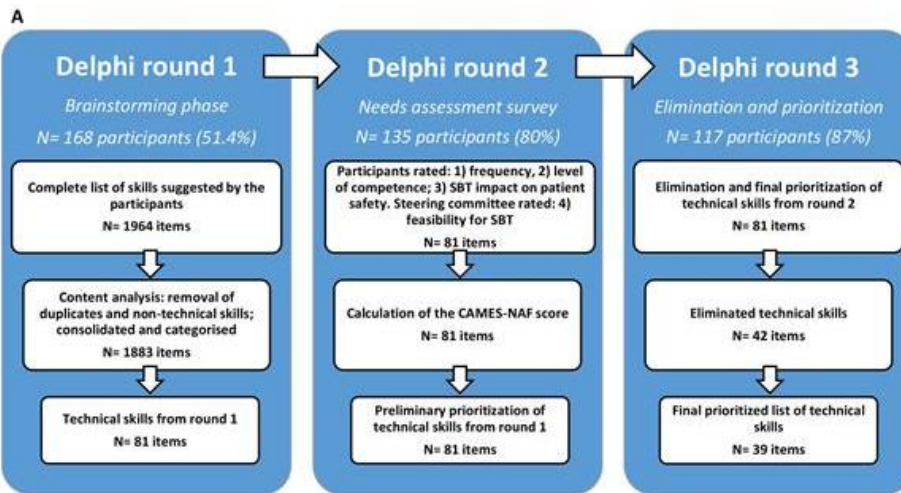
were scored using five–point Likert scales, and a mean CAMES–NAF score was used to preliminarily prioritize the technical skills. In round 3, the participants excluded and reprioritized the technical skills. For an item to be included in the final list, consensus was defined as agreement of $\geq 75\%$ in the final round.

Results

We included 168 participants from 10 European countries. The response rates in rounds 2 and 3 were 80% and 87%, respectively. In round 1, the participants suggested 1964 items. Content analysis revealed 81 unique technical skills, which were rated and prioritized in round 2 according to CAMES–NAF. In round 3, 42 technical skills were excluded, and the remaining 39 technical skills were included and re–prioritized. The experts and trainees differed on the inclusion of 9 technical skills.

Conclusion

The Delphi process reached consensus on a prioritized list of 39 technical skills to be included in a simulation–based curriculum for neonatologists.



B

Final rank	Technical skill	Final rank	Technical skill
1	Neonatal resuscitation and stabilization in the delivery room: Comprehensive group of skills according to guidelines	20	Set up of inhaled nitric oxide (iNO)
2	Manual non-invasive ventilation, one person technique	21	Insertion of oropharyngeal airway
3	Neonatal resuscitation and stabilization in the NICU: Comprehensive group of skills according to guidelines	22	Insertion of laryngeal mask
4	External maneuvers to open the airway (e.g., jaw thrust, chin lift, head positioning)	23	Puncture of intrapleural space - air, liquid, and pus
5	Perform chest compressions	24	Perform lumbar puncture
6	Manual non-invasive ventilation, two-person technique	25	Drainage of intrapleural space - air, liquid, and pus
7	Oral endotracheal intubation, conventional	26	Perform basic echocardiography
8	Insertion of umbilical venous catheter	27	Insertion of percutaneous long line, peripherally inserted central catheter (PICC) line and midline
9	Set up of CPAP/BIPAP	28	Electrical conversion of arrhythmias and external defibrillator use
10	Comprehensive group of different skills to perform Minimal Invasive Surfactant Therapy (MIST) or Less Invasive Surfactant Administration (LISA)	29	Insertion of peripheral arterial catheter
11	Set up of ventilatory circuit (CMV)	30	Insertion of intraosseous cannula
12	Insertion of umbilical arterial catheter	31	Transillumination for pneumothorax
13	Comprehensive group of different skills to perform INTubation-SURfactant-Extubation (INSURE)	32	Ultrasound of lungs
14	Nasal endotracheal intubation, conventional	33	Urethral catheterization
15	Ultrasound of brain	34	Perform neonatal exchange transfusion
16	Insertion of peripheral venous catheter	35	Transillumination for locating the vessels
17	Oral endotracheal intubation, video laryngoscope	36	Ultrasound control of umbilical catheter position
18	Oral endotracheal intubation, guided with styles	37	Ultrasound of bladder
19	Insertion of nasopharyngeal airway	38	Puncture of Omay/Rickham reservoir
		39	Suprapubic bladder aspiration

C

Rank after round 2	Technical skill	All participants	Experts	Trainees
13	Set up of ventilatory circuit (NIV)	73%	71%	77%
25	Nasal endotracheal intubation, video laryngoscope	74%	74%	77%
44	Replacement of tracheal cannula	72%	70%	77%
51	Ultrasound control of central line position	71%	62%	83%
52	Ultrasound control of umbilical catheter position	77%	70%	87%
53	Perform intravenous injection	72%	78%	62%
60	Puncture of Omay/Rickham reservoir	77%	80%	72%
61	Perform intramuscular injection	69%	75%	62%
67	Comprehensive group of different skills to perform Surfactant Administration Through Laryngeal or Supraglottic Airways (SALSA)	62%	54%	77%

Figure 1: A) The Delphi process. B) The final prioritized list of technical skills needed by newly trained neonatologists. C) Technical skills where the experts and trainees differed about inclusion in the curriculum. The percentages refer to how many participants in each group voted for inclusion. The underlined and bold values refer to the items that reached consensus (≥75%) in each group.

The Delphi process and results

The Delphi process and results

None declared

ID 616. Evaluation of the Swedish version of EMPATHIC 30 in a neonatal context.

A cross-sectional psychometric study

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Background

EMpowerment of PArEnts in THE Intensive Care – 30 (EMPATHIC–30) is a questionnaire aiming to measure parents' satisfaction with pediatric intensive care. The questionnaire is grounded in the principles of family centered care and has been translated into several languages. The aim of present study was to establish the initial reliability and construct validity of the Swedish version of EMPATHIC–30 in a neonatal context.

Method

A cross-sectional psychometric study was conducted at one level II and two level III neonatal units in Sweden during a 19-month period in 2019 to 2020. Inclusion criteria was parents to infants who had been treated for at least 48 hours at the neonatal unit and master the Swedish language. The parents were asked to participate in connection with the infants' discharge from the neonatal unit. The reliability was evaluated by internal consistency calculated using Cronbach's alpha coefficients. Construct validity was calculated using Spearman's correlation coefficient and a floor-ceiling effect was considered.



Result

The result was based on a response rate of 67.3% (n=136) and indicated that the Swedish EMPATHIC- 30 has acceptable psychometric properties and could be used to evaluate parents' satisfaction with neonatal care. Cronbach's alpha for the total scale was 0.94 and varied between 0.71 to 0.85 in the five domains with the lowest coefficient in the domain parental participation. Construct validity showed a correlation amongst the total scale and the domains between 0.71–0.89 and the correlation between the domains was 0.35–0.65. The floor effect was less than 15 %. There was a ceiling effect ranging from 18.3% to 53.7%. However, in the present study the mean value of satisfaction with care for the total scale and domains respectively was high, varied between 5.33 to 5.72.

Conclusion

The Swedish version of the questionnaire EMPATHIC 30 can be used to measure parents' satisfaction with neonatal care. Parents' level of satisfaction can help health care personnel to identify areas for improvements and the questionnaire can also be used as a yearly quality indicator in the neonatal unit.



ID 493. IATROGENIC NEONATAL PERICARDIAL EFFUSION

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Background: pericardial effusion is a rare condition in neonates. It is usually iatrogenic and caused by central venous catheters. Pericardial effusion and cardiac tamponade have been reported in 1 – 3 % of newborns with central venous catheters and they carry a 30 to 50 % mortality rate.

Case report: we present a case of a preterm newborn boy, born at gestational age of 33 weeks +1 after a Cesarean section due to maternal placental abruption. His birth weight was 2200 g. Shortly after birth, he developed mild respiratory distress which was treated with non-invasive mechanical ventilation. Because of suspected infection as well as trouble feeding, an umbilical venous catheter was inserted. The placement of UVC was corrected following an X ray, so that the tip of the UVC was outside of the heart. Antibiotics as well as parenteral nutrition were administered via the catheter. On day 4 the baby became increasingly unwell, with mottled skin colour, recurring apnoeic episodes and tachycardia. Both septic shock as well as pneumothorax were initially suspected but were ruled out. As the baby appeared in shock, a bedside echocardiography was performed, which showed pericardial effusion with signs of cardiac tamponade and cardiogenic shock. 16.5 ml of white fluid was evacuated through subxyphoid pericardial puncture and the baby's condition rapidly improved. There was minimal effusion present on the following day and the baby's clinical course thereafter remained unremarkable.

Conclusion: in the past few years, three preterm newborns in our unit were treated for pericardial effusion caused by a central venous catheter, despite all catheter tip positions having been verified by X ray. Several mechanisms for the development of



pericardial effusion have been described, ranging from direct lesions of the myocardium, to transmural necrosis from repeated contact of the catheter tip and osmotic necrosis due to parenteral nutrition. As our cases show, despite careful confirmation of the position of the catheter, pericardial effusion can still develop and it should thus be considered as a differential diagnosis in a rapidly deteriorating baby with a central venous catheter.

None declared.