

September 23rd, 2023 09:00 - 11:00

## PARALLEL SESSION 36 – Parents in the NICU

**ID 806. Parental touch trial (Petal): a multicentre randomised controlled trial investigating parental touch as an intervention to relieve neonatal pain and reduce parental anxiety**

**Doctor Annalisa Hauck**<sup>1</sup>, Dr Marianne Van der Vaart<sup>1</sup>, Dr Caroline Hartley<sup>1</sup>, Dr Fiona Moultrie<sup>1</sup>, Dr Daniel Crankshaw<sup>1</sup>, Dr Amraj Dhami<sup>1</sup>, Ms Shellie Robinson<sup>1</sup>, Dr Jean Yong<sup>2</sup>, Dr Marina Freire<sup>1</sup>, Dr Mariska Peck<sup>1</sup>, Dr Roshni Mansfield<sup>1</sup>, Mr Simon Marchant<sup>1</sup>, Dr Vaneesha Monk<sup>1</sup>, Dr Luke Baxter<sup>1</sup>, Dr Eleri Adams<sup>2</sup>, Dr Aomesh Bhatt<sup>1</sup>, Dr Ravi Poorun<sup>3,4</sup>, Dr Maria Cobo<sup>1,5</sup>, Professor Rebeccah Slater<sup>1</sup>

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### Background

Tactile stimulation, such as kangaroo care, massage and brushing, are reported to reduce pain in infants. The aim of this clinical trial was to establish whether parental touch, optimised for C tactile (CT) fibre activation and delivered prior to an acutely painful clinical procedure, can reduce neonatal pain.

### Methods

In this multicentre randomised controlled trial, neonates born  $\geq 35$  weeks gestational age, without neurological abnormalities, and requiring a heel lance during the first 7

postnatal days were eligible. Neonates were randomised to receive gentle stroking for 10 s either shortly before (intervention group) or after (control group) a clinically–required heel lance. The parent delivered the intervention to the neonate’s lower leg, ipsilateral to the side of the heel lance, at a speed of 3cm/s optimised for CT fibre activation. The primary outcome was the magnitude of noxious–evoked brain activity, recorded by EEG, following the heel lance. Secondary outcomes were the Premature Infant Pain Profile – Revised (PIPP–R) score, development of tachycardia post heel lance, and parental anxiety measured with the State–Trait Anxiety Inventory State (STAI–S). The trial and statistical analysis plan were registered (ClinicalTrials.gov:NCT04901611; ISRCTN:14135962).

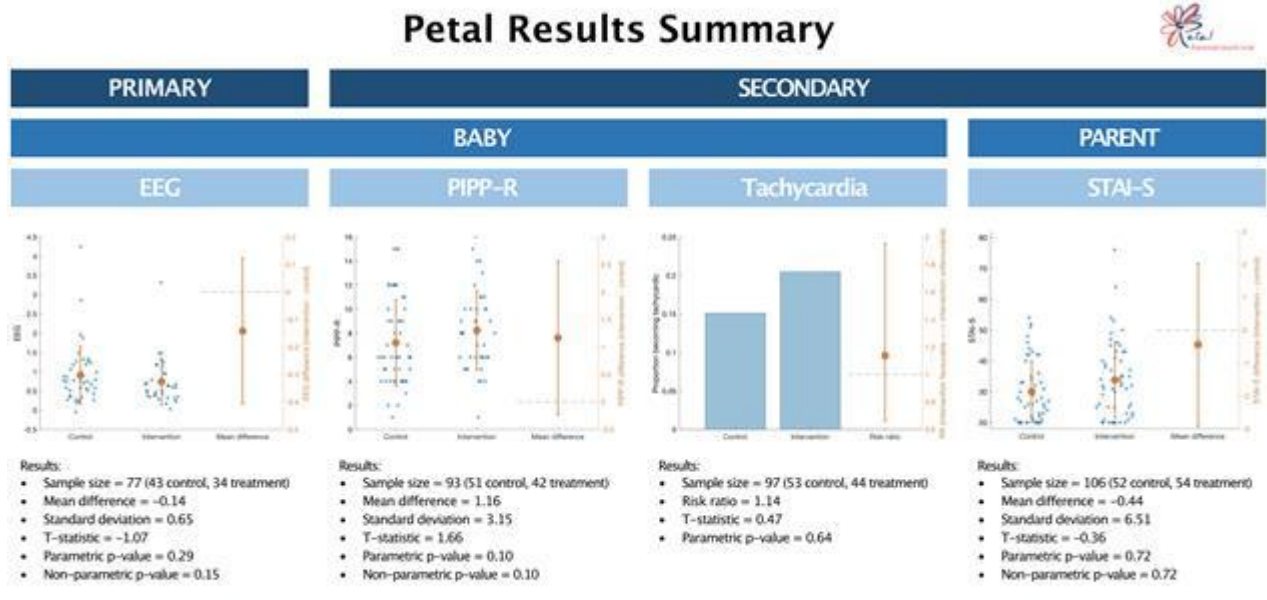
## Results

We enrolled 112 participants between 1 September 2021 and 7 February 2023. The magnitude of noxious–evoked brain activity following the heel lance was not significantly different between the control and intervention groups (difference in means  $-0.14$ ,  $p=0.15$ ; Figure 1). In addition, no significant differences between control and intervention arms were observed in the secondary outcomes (difference in PIPP–R means  $1.16$ ,  $p=0.10$ ; tachycardia risk ratio  $1.14$ ,  $p=0.64$ ; difference in STAI–S means  $-0.44$ ,  $p=0.72$ ; Figure 1).

## Conclusion

Parents stroking their infant’s leg at 3cm/s for 10 seconds prior to a heel lance did not significantly change infants’ noxious–evoked brain activity, PIPP–R score, development of tachycardic episodes, nor parental STAI–S scores. The lack of an effect of the intervention on the primary outcome is not consistent with previous observational research demonstrating the analgesic effects of gentle CT–fibre–stimulating experimental brushing. These conflicting findings could highlight

important differences between experimental brush stimulation and parental stroking under research conditions.



Results.

The intervention and control columns display raw data and mean±SD (overlying bars). The third column shows adjusted intervention minus control mean difference/risk ratio, 95%CI, and null value (dashed line).

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## ID 532. Management of neonatal pain in the NICU with skin-to-skin contact

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### INTRODUCTION

Advances in neonatology have significantly reduced morbidity and mortality, but neonatal pain, discomfort, and stress remain significant problems in neonatal intensive care units (NICUs), especially for preterm infants. Although significant progress has been made in the treatment and prophylaxis of neonatal pain in many NICUs, the early and long-term outcomes of pain and stress in these vulnerable infants compel the continued search for healing pain- and stress-reducing interventions. Therefore, the aim of our research was to study how skin-to-skin contact influences neonatal pain intensity in preterm infants in the NICU.

### MATERIAL AND METHODS

The study included 140 preterm infants with gestational age less than 34 weeks, who were treated in the NICU of the regional perinatal center. For the laboratory evaluation of pain and the effectiveness of skin-to-skin contact (SSC) in pain relief the level of pain markers (dopamine, serotonin, endorphin) were determined before (baseline level) and after rooming-in and skin-to-skin contact of an infant with mother. The level of dopamine,  $\beta$ -endorphin, serotonin in urine samples was determined by enzyme-linked immunosorbent assay.

### RESULTS

The study included 19 extremely preterm (13.6%), 52 very preterm (51.4%), and 49 moderate preterm infants (35%). There were 74 (52.9%) males and 66 (47.1%)



females. The mean gestational age (GA) of the study population was (31.1±2.4) weeks, the mean birth weight – (1591.46±439.51) grams.

There was a significant decrease in the dopamine level in preterm infants after SSC in comparison with baseline values (132.20 [104.80; 183.70] pg/ml vs 85.99 [69.35; 112.20] pg/ml),  $p < 0.001$ , before and after intervention). The  $\beta$ -endorphin and serotonin levels simultaneously significantly increased after SSC compared to baseline values (29.87 [20.61; 46.94]) pg/ml vs 40.09 [26.81; 70.63] pg/ml,  $p = 0.009$  before and after SSC, and (22.30 [15.13; 31.65] ng/ml vs 25.49 [20.45; 40.08] ng/ml,  $p = 0.011$ , respectively).

## CONCLUSIONS

Kangaroo mother care with skin-to-skin contact is effective intervention for neonatal pain management. The level of dopamine as a pain hormone reduced after regular SSC and pain-relieving markers  $\beta$ -endorphin and serotonin reliably increased in preterm infants in response to the SSC.

None declared

## ID 699. POSTNATAL DEPRESSION, BONDING AND ATTACHMENT IN PARENTS WHO DID OR DID NOT CUDDLE THEIR INFANTS COOLED FOR HIE.

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Background: Children cooled for neonatal hypoxic–ischaemic encephalopathy (HIE) experience cognitive impairments associated with altered brain connectivity. Enhancing parent–infant bonding and addressing parental mood can improve cognitive development. We investigated whether parents cuddling their babies during cooling therapy influenced mother–infant bonding and postnatal depression, and examined postnatal depression and father infant attachment in fathers.

Methods: Two multicentre cohort studies were conducted involving families of infants receiving therapeutic hypothermia for HIE. The CoolCuddle study (October 2019 to November 2020) evaluated cuddling during cooling and intensive care and included 27 families. The CoolBonding study (February to November 2021) recruited families of 48 infants undergoing cooling and intensive care for HIE in England and Wales. Mothers completed the Mother–Infant Bonding Scale (MIBS) and Edinburgh Postnatal Depression Scale (EPDS) at 5–7 days and 8 weeks postpartum. Fathers completed the Paternal Postnatal Attachment Scale (PPAS) at 8 weeks. In the CoolBonding

study, fathers also completed EPDS at 5–7 weeks and 8 weeks. Using multiple linear regression, association between the exposure, cuddle during cooling, and MIBS (lower score implies improved bonding), EPDS and breast feeding rates were assessed controlling for date of birth, site, severity of HIE and antidepressants use during pregnancy. Fathers' EPDS scores were compared between discharge and 8 weeks using independent samples t test.

Results: Thirty–five families had cuddle exposure (CoolCuddle: 27; CoolBonding: 8). There were no significant differences in baseline characteristics including gestation, sex, birth weight, Apgar score at 10 min, cord pH and severity of HIE between exposed and non–exposed group. Exposure to cuddle was independently associated with reduced MIBS and EPDS score at 5–7 days postpartum. At 8 weeks, MIBs and maternal EPDS were significantly associated with each other. (Table) Fathers' EPDS scores significantly decreased by 8 weeks postpartum (5.7 (3.31) vs 27.2 (2.97),  $P < 0.0001$ ). There was no association between cuddle and PPAS or breast feeding.

Conclusion: Cuddling during cooling therapy for HIE improves mother–infant bonding and postnatal mood. Fathers of infants cooled for HIE exhibit postnatal depression symptoms at discharge, which significantly improves by 8 weeks. Our findings illustrate importance of psychological support for parents of infants undergoing cooling.

Models	Outcome	Predictors	Regression coefficient	95% CI	P value
1	MIBS at 5-7 days	Cuddle	-2.9	-4.88, -1.05	0.003
2	EPDS at 5-7 days	Cuddle HIE severity	-4.9 2.83	-7.74, -2.07 0.08, 5.59	0.001 0.04
3	MIBS at 8 weeks	MIBS at 5-7 days EPDS at 8 weeks	0.22 0.31	0.01, 0.43 0.18, 0.43	0.04 0.001
4	EPDS at 8 weeks	MIBS at 8 weeks	1.26	0.83, 1.71	0.001

Association between Cuddling and MIBS, maternal EPDS at 5–7 days and 8weeks postpartum. Covariates: date of birth, site, HIE severity, antidepressants during pregnancy. MIBS and EPDS (models 3 and 4).

Association between Cuddling and MIBS, maternal EPDS at 5–7 days and 8weeks postpartum. Covariates: date of birth, site, HIE severity, antidepressants during pregnancy. MIBS and EPDS (models 3 and 4).

None declared





## ID 354. Parents involvement in Neonatal Intensive Care Unit (NICU): results from qualitative Care Project in a III level Italian NICU

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### Background:

The hospitalization of a newborn in a Neonatal Intensive Care Unit (NICU) represents a highly stressful experience for parents. It can be associated with feelings of inadequacy and inability to fulfill their parental role. Over the years, following the principles of family-centred care (FCC), various programs have been developed to support and promote parental role and child-parent interaction during the experience of hospitalization in NICU.

This study aims to improve and implement family education and involvement in caring for their children in a NICU in Northern Italy. Also this data could help in the development of quality improvement projects.

### Methods:

Qualitative exploratory study within an action research project. Parents who spoke Italian with children hospitalized in the NICU for at least 72 hours were included. Data was collected through diaries provided to parents, filled out daily, relating to their experience as parents in the NICU. These diaries were developed and promoted by the research team. Data were transcribed and analyzed through thematic analysis following Braun & Clark's approach.

#### Results:

The results revealed five main themes. Parents experience different feelings during their experience in the NICU: there is a "shocking first impression" upon entering the NICU, which evolves into "high attention and reactions (fear, happiness) to changing details (breathing and eating devices) and situations". Sometimes parents have "wrong perceptions about the complexity of some situations and devices" (e.g., respiratory devices, tubes) that their children have. Additionally, they all express a "strong desire to touch and care" for their children, bring them home and start their lives together. In particular, the need to "actively involve fathers" who sometimes cannot be present on the ward every day has also emerged.

#### Conclusions:

This study helped exploring parents' perceptions, concerns and expectations during their NICU experience. These findings can help staff improve and strengthen parental inclusion and active participation in the care of their newborns and develop structured and tailored educational programs.

None declared