

September 20th, 2023 15:00 - 17:00

## PARALLEL SESSION 12 - EFCNI 2

### ID 389. PLACING PRETERM INFANTS IN POLYETHYLENE BAGS BEFORE UMBILICAL CORD CLAMPING: A RANDOMISED TRIAL

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#### Background:

Hypothermia on admission to the neonatal intensive care unit (NICU) increases preterm infants' risk of death. We wished to determine whether placing very preterm infants in a PB before CC, compared to after CC, results in more infants with a temperature in the normal range on NICU admission.

#### Methods:

We conducted a randomised controlled trial at a tertiary maternity hospital. Infants < 32 weeks' GA for whom intensive care was planned were eligible for inclusion. Infants were randomly assigned to have a PB placed before or after CC. The primary outcome was rectal temperature within the normal range (36.5oC – 37.5oC) on NICU admission.

#### Results:

Between July 2020 – September 2022, 198/220 (90%) eligible infants were enrolled to this study; 99 were randomly assigned to BEFORE (43 [44%] female) and 99 (53 [54%] female) to AFTER. One infant died before the primary outcome was recorded, and was excluded from analysis. The median [IQR] GA was 29[27,31] vs 29[27,31]

weeks, and mean [SD] birthweight was 1200 [426] vs 1138 [419] grams respectively. Baseline demographics were well matched between the groups. The proportion of infants who had normal temperature on NICU admission did not differ between the groups (BEFORE 54/99 [55%] vs AFTER 55/98 [56%]; RR 0.98, 95% CI 0.77 – 1.27, p 0.886). The proportion of infants with a temperature outside of the normal range was similar between the groups; hypothermia (BEFORE 34/99 [35%] vs AFTER 33/98 [34%], p 0.880), hyperthermia (BEFORE 10/99 [10%] vs AFTER 10/98 [10%], p 1.00) [figure 1]. There were no significant differences in secondary outcomes between the groups.

#### Conclusions:

This is the first study to examine a thermal care intervention before cord clamping. Placing a PB before CC did not increase the proportion of preterm infants with normal temperature on NICU admission. A large proportion of preterm infants had abnormal temperature at NICU admission. Further studies on thermoregulation before CC are warranted.

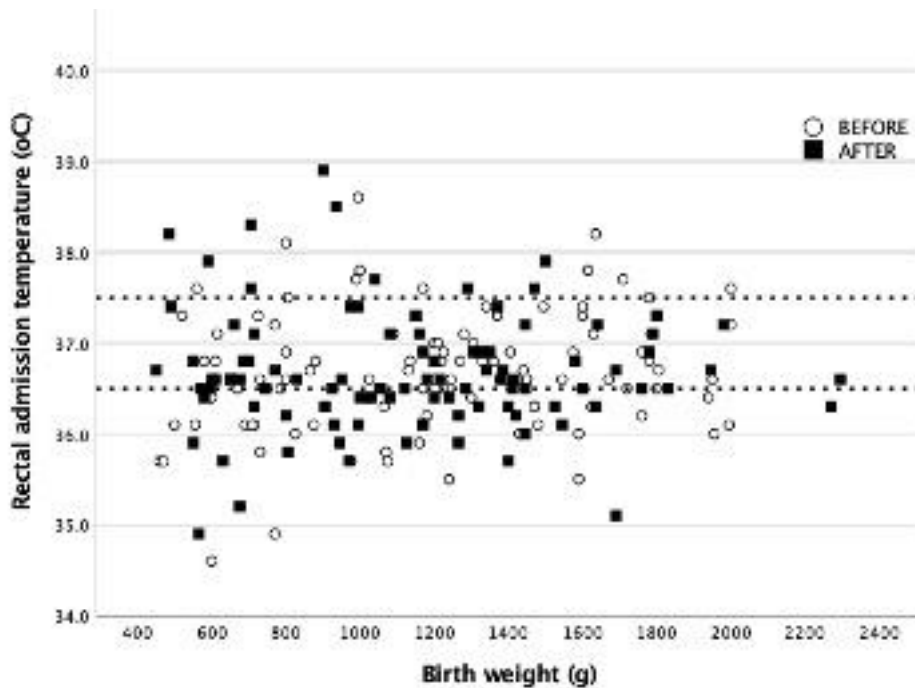


Figure: Scatterplot of birth weight [g] and admission rectal temperature [oC]. The area between the hatched lines represents the normal temperature range(36.5–37.5oC). Open circles = “BEFORE”. Black squares = “AFTER”.

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Nothing to declare

## ID 118. NETwork Meta-analysis Of Trials of Initial Oxygen in preterm Newborns (NETMOTION): A Systematic Review and Individual Participant Data Network Meta-Analysis

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## Background

Resuscitation with lower fractional inspired oxygen ( $\text{FiO}_2$ ) reduces mortality in term infants but the impact of this practice on preterm infants is unclear. Network meta-analysis (NMA) addresses the limitations of previous pairwise meta-analyses by allowing multiple initial  $\text{FiO}_2$  to be compared simultaneously.

## Methods

We performed a systematic search for randomized trials (RCT) comparing initial oxygen concentration for resuscitation. We collated individual participant data (IPD) for infants <32 weeks' gestation. Low, intermediate, and high oxygen were defined as  $\text{FiO}_2$  <0.3, 0.5–0.65 and >0.9, respectively. The pre-specified primary outcome was all-cause mortality at discharge. Secondary outcomes were morbidities of prematurity and oxygen saturation ( $\text{SpO}_2$ ) at 5 minutes. We conducted one-stage Bayesian IPD-NMA, adjusting for the covariates of gestational age, mode of delivery and birthweight small for gestational age. Certainty of evidence was graded according to the CINeMA framework.

## Results

IPD were provided for 1055 infants from 12 of the 13 eligible studies. Infants resuscitated with high initial  $\text{FiO}_2$  had a significantly reduced mortality compared to low (OR 0.45 95% credible interval [CI] 0.23–0.86, moderate certainty) and intermediate  $\text{FiO}_2$  (OR 0.34 CI 0.11–0.99, low certainty). High initial  $\text{FiO}_2$  had a 97% probability of ranking best to reduce mortality. The effects on other morbidities (Table 1) were inconclusive due to low event rates. Five minute  $\text{SpO}_2$  was higher in those given high initial  $\text{FiO}_2$  compared to low  $\text{FiO}_2$  (mean difference 9.02, 2.1–16.3). Most infants (89%) failed to achieve the 5 min  $\text{SpO}_2$  80–85% target but high  $\text{FiO}_2$  had the highest odds of achieving  $\text{SpO}_2$  >80% at five minutes.



## Conclusion

We found high initial FiO<sub>2</sub> likely reduces mortality in preterm infants <32 weeks' gestation compared to low (moderate certainty), and that high initial FiO<sub>2</sub> may reduce mortality compared to intermediate (low certainty). Resuscitation with high FiO<sub>2</sub> also led to higher 5 min SpO<sub>2</sub>, however, most infants under- or overshoot the SpO<sub>2</sub> target regardless of initial FiO<sub>2</sub> received. Importantly, most trials were conducted in settings where oxygen blending and saturation monitoring were available. These findings suggest that high initial FiO<sub>2</sub> may be a reasonable alternative to current standard practice.

Comparison	Overall certainty	Odds Ratio (95% CrI)
<b>Primary Outcome: All-cause mortality to hospital discharge</b>		
High vs Low	⊕⊕⊕○ Moderate	<b>0.45 (0.23-0.86)*</b>
High vs Intermediate	⊕⊕○○ Low	<b>0.34 (0.11-0.99)*</b>
Intermediate vs Low	⊕○○○ Very Low	1.33 (0.54-3.15)
<b>Secondary Outcomes:</b>		
<b>Oxygen saturation in target range (80-85%) at five minutes</b>		
High vs Low	⊕○○○ Very Low	0.99 (0.19-6.51)
High vs Intermediate	⊕○○○ Very low	1.43 (0.1-29.23)
Intermediate vs Low	⊕⊕○○ Low	0.68 (0.06-6.51)
<b>Severe intraventricular haemorrhage (Grade III-IV)</b>		
High vs Low	⊕○○○ Very low	0.56 (0.10-1.82)
High vs Intermediate	⊕○○○ Very low	0.76 (0.05-6.17)
Intermediate vs Low	⊕○○○ Very low	0.74 (0.12-4.25)
<b>Chronic lung disease</b>		
High vs Low	⊕○○○ Very low	1.17 (0.55-2.52)
High vs Intermediate	⊕○○○ Very low	1.34 (0.38-4.30)
Intermediate vs Low	⊕○○○ Very low	0.86 (0.35-2.39)
<b>Retinopathy of prematurity</b>		
High vs Low	⊕○○○ Very Low	1.17 (0.58-2.20)
High vs Intermediate	⊕○○○ Very low	1.52 (0.51-4.60)
Intermediate vs Low	⊕⊕○○ Low	0.77 (0.31-1.77)
<b>Mean difference in oxygen saturation at five minutes</b>		
High vs Low	⊕○○○ Very low	<b>9.02 (2.08-16.31)*</b>
High vs Intermediate	⊕○○○ Very low	2.55 (-0.13-15.64)
Intermediate vs Low	⊕○○○ Very low	6.39 (-4.04-15.68)

Abbreviations: CrI, credible intervals  
\*Denotes statistically significant effects  
Low Oxygen (<30%), Intermediate Oxygen (50-65%), High Oxygen (>90%)

Table 1 – Summary of relative effect estimates and certainty of evidence for primary and secondary outcomes

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None declared