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Special thanks to Amalka and her family for being the inspiration behind this project.

Aim

To improve developmentally-supportive care in the NICU by providing consistent infant containment, alignment, and comfort.

Design

Inclusion Criteria

- Any gestational age
- Identified as “active,” “irritable,” or “doesn’t tolerate nasal prongs” on non-invasive ventilation
- Infants exposed to perinatal substances (Neonatal Abstinence Syndrome)

Exclusion Criteria

- Continuous aEEG monitoring or suspected seizure
- HIE management (therapeutic hypothermia or normothermia)
- Chest tube in situ
- Sedating or paralyzing medications
- Otherwise clinically unstable

Data collected while infant positioned in the cocoon and compared to when not in the cocoon at 2, 5, 8, minutes and then hourly until next handle.

- Vital signs (VS)
- Neonatal Pain Agitation and Sedation (NPASS)* score
- Behavioural state
- Infant Positioning Assessment Tool (IPAT)** score

*possible NPASS score 0-10/11 (add 1 if <30 weeks gestation). NPASS score > 3 requires intervention.

** IPAT scores 12 = ideal; 9-11 = acceptable; ≤ 8 = needs repositioning

Lessons Learned & Next Stage

- Type of interface used for non-invasive ventilation was not recorded during the measurements. To identify a potential cause for improved data, the same interface should be used for both conditions.
- Future PDSA cycles will include documentation of FiO₂, as an increase in FiO₂ above baseline may correlate with the infant’s level of distress.
- Only 1 NAS infant was available for inclusion. Fewer NAS infants are admitted to the NICU in Fraser Health due to the implementation of the Eat Sleep Console program. Further study on the cocoon’s effectiveness for NAS could be conducted in a unit with continuous monitoring (the cocoon is not suitable for areas without continuous cardio-respiratory monitoring).
- Expand the cocoon use for infants undergoing painful procedures in the NICU (lab draws, IV starts, ROP exams, NG/OG insertion).

PDSA Cycle 2



PLAN

DO

STUDY

ACT

By expanding the study to a wider group of participants we hope to have further evidence of the cocoon’s effectiveness versus standard care and positioning. Effectiveness of the cocoon is measured by improvement in VS; lower NPASS score; achieving quiet alert, light sleep, or deep sleep state; IPAT score ≥ 9.

Data collected from November 2023 to June 2024

Data / Results

Participants:

- 32 infants included in the study (1 participant excluded due to incomplete documentation)
- GA at birth: 23⁺⁰ - 37⁺⁵ weeks
- Birth weight: 610-3330 g
- At time of observation:

PMA	Infants
26 ⁺⁰ - 29 ⁺⁶	18
30 ⁺⁰ - 38 ⁺³	14

Respiratory Support	Infants
None	9
Non-invasive	13
Invasive (HFJV/HFO)	10 (9/1)

- Current weight: 645-3025 g

Gender	Infants
Male	18
Female	14

After the infant was placed in the Cocoon:

94% of infants NPASS score was 0/1 at 2 min; 100% at 5 min

94% achieved desired behavioural state at 2 min; 100% at 10 min

100% had an ‘acceptable’ or better IPAT score at 2 min

