



Educate. Advocate. Integrate.



A Collaborative Effort Exploring the
4moms mamaRoo® infant seat as a
Non-Pharmacological Intervention for NAS Patients

Introductions



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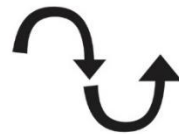
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4moms

Meet the mamaRoo®



It moves like you do™

- Natural bounce and sway
- 5 unique motions



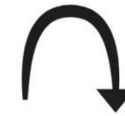
car ride



kangaroo



tree swing



rock-a-bye



wave

mamaRoos® in the Care Environment

- Over 375 hospitals nationwide use the mamaRoo
- 4moms Hospital Program
- 4moms Cares Program
- Opioid epidemic & NAS patients



mamaRoos® in the Care Environment



Seat

Open design
Removable soft goods

Design

Small footprint
Lightweight
No batteries

Recline

Recline and upright positions

Motion

Natural bounce and sway

Neonatal Opioid Withdrawal Syndrome and Treatment



- NOWS occurrence increased nearly twofold from 2009 to 2012
- Non-pharmacologic treatment includes positioning, feeding adjustments, supporting behavioral regulation and attachment support to families
- mamaRoo® introduced to care when parents are not present to support the infant behaviorally and physiologically

NPA and 4moms Collaboration







- NPA identified mamaRoo® as an intervention for NOWS
- NPA contacted 4moms about research completed on its use with this population
- In collaboration with 4moms, NPA developed and initiated a pilot project to assess the efficacy of the mamaRoo in treatment of NOWS

Methodology

- Reviewed available literature
- Variables:
 - Heart Rate
 - Respirations
 - Behavioral State
- Nursing/Parent Assessment
- Conditions A-F
- Data Analysis





BEHAVIORAL STATE ASSESSMENT
mamaRoo® QUALITY ASSURANCE PROJECT

	QUIET SLEEP	1 Nearly still, no eye movements, occasional sucking movements at regular intervals, breathing is smooth and regular. Neonate arouses only with significant stimulation (heel stick, position change).
	ACTIVE SLEEP	2 Some body movements with REM fluttering of eyes beneath the lids, fussy or smiling movements of the face. Breathing patterns are irregular. Neonate is more easily to arouse to just sound or light change without position changes.
	DROWSY	3 Body movements usually smooth, but startles noted, eyes open and close with heavy lids. Minimal facial movements and breathing is irregular. Responses to all stimuli occur, but in a delayed fashion with a return to sleep if stimulation is discontinued.
	QUIET ALERT	4 Minimal body movements, eye are open and widen with stimulation. Neonate has an attentive face to stimulation. Breathing is regular and this is the state where the neonate is available for interaction with caregivers.
	ACTIVE ALERT	5 Neonate has a significant increase in movements, though they are usually smooth and coordinated. Eyes are open, but are not attentive, sometimes dull or glazed in appearance. Breathing is irregular. Infant can with stimulation either return to a quiet alert state or escalate to crying.
	CRYING	6 Increased movements, often jerky and disorganized, color changes to red or paling. Eyes can be tightly closed or open. Facial expression can be grimacing or open mouth with significant vocalizations. Breathing is significantly irregular and hiccups may occur. Crying is usually a response to hunger, fatigue, noxious stimuli, pain or extreme overstimulation.

Brazelton TB & Nugent JK. 1995. Neonatal Behavioral Assessment Scale 3rd Edition. London, UK: MacKeith Press.

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Methodology


DATA SHEET

infant code: _____
 date: _____ gender: _____ medication/dose: _____

condition	HR/RR	behavioral state	setting - motion/speed
A pre-mamaRoo		1 2 3 4 5 6	in crib
B initial mamaRoo		1 2 3 4 5 6	mamaRoo "off"
C 10 min. mamaRoo		1 2 3 4 5 6	/
D 30 min. mamaRoo		1 2 3 4 5 6	/
E 10 min. out of mamaRoo		1 2 3 4 5 6	in crib
F 30 min. out of mamaRoo		1 2 3 4 5 6	in crib

 **parent assessment:**



Please support parent participation

 **nurse assessment:**

initials of person(s) completing data sheet: _____

date: _____

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NURSE ASSESSMENT

If I understand the protocol and can communicate it to others, including parents Yes I need more information

condition	Strongly Agree	Agree	Disagree	Strongly Disagree
A Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4
B Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4
C Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4
D Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4
E Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4
F Infant is calm, comfortable	1	2	3	4
Infant is fussy, requires support	1	2	3	4
Infant is inconsolable	1	2	3	4

Infant Code: _____

date: _____

Signature person(s) completing data sheet: _____

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Hospital Recruitment

- Hospital Program partners
- Hospitals with high NAS populations
- 4momsCares program donations

Participating sites:



BAPTIST HEALTH



"Serving Humanity to Honor God"



Sample Information

N=72 Assessments Total: Parental Assessments not completed in most observations and missing data on small percentage of assessments.

Four Hospitals:

N=23 from site 1

N=32 from site 2

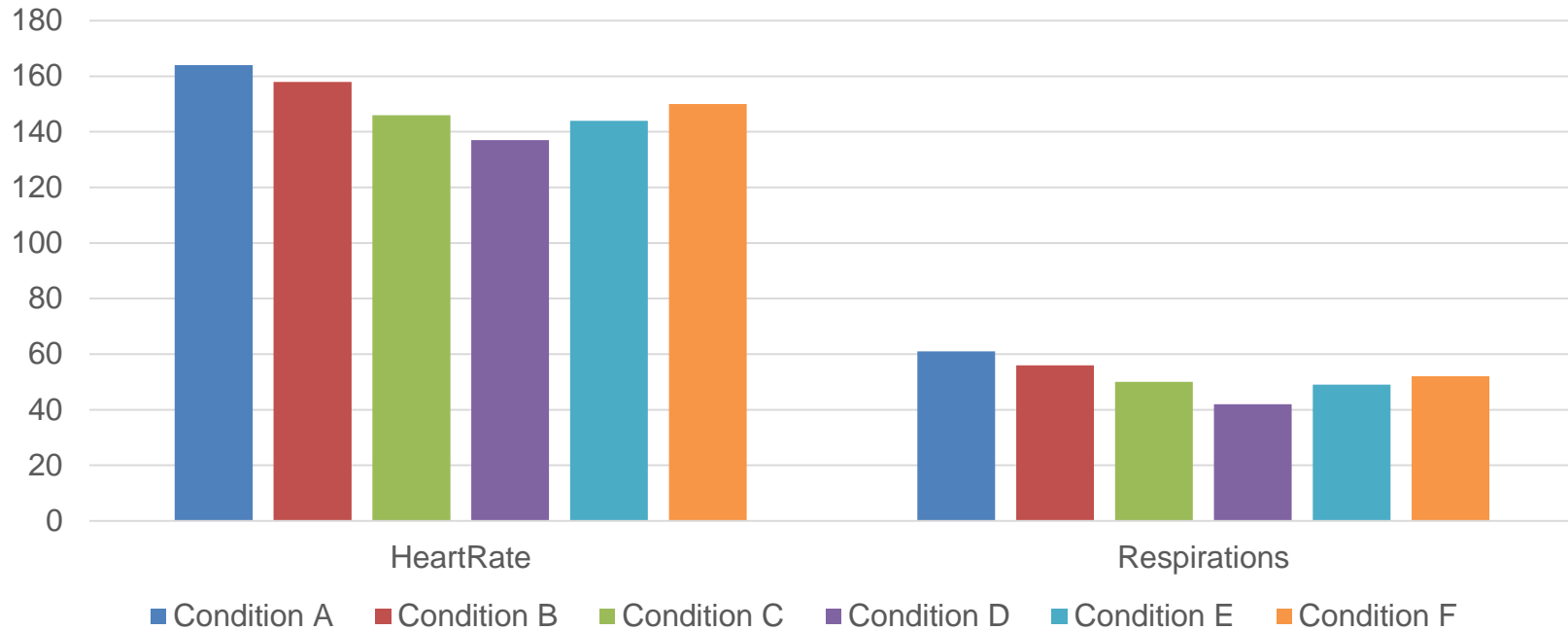
N=10 from site 3

N=7 from site 4

N=36 male

N=35 female

Heart Rate and Respirations

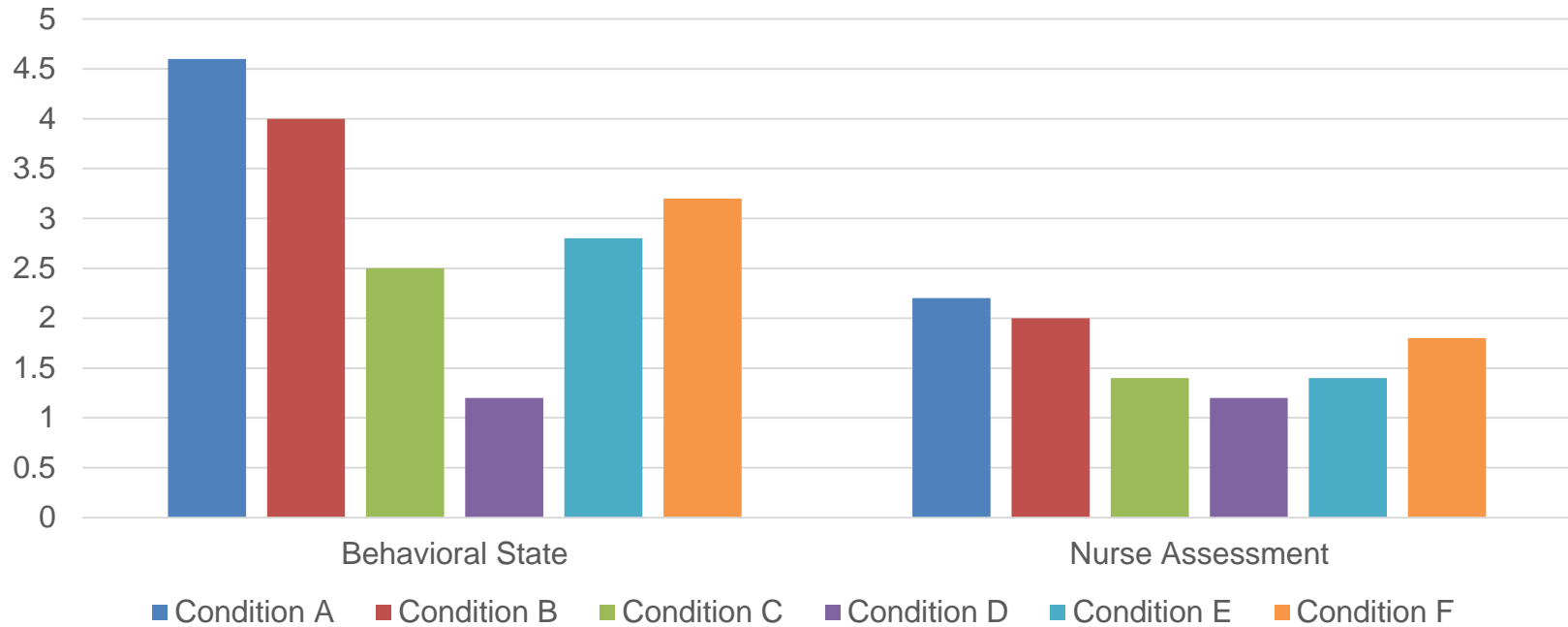


Key:

- Condition A: Pre-mamaRoo
- Condition B: Initial mamaRoo
- Condition C: 10 min. mamaRoo
- Condition D: 30 min mamaRoo
- Condition E: 10 min. out mamaRoo
- Condition F: 30 min. out mamaRoo

$p = < 0.005$ for Condition D vs. other conditions

Behavioral State and Nursing Assessment



Key:

Condition A: Pre-mamaRoo

Condition B: Initial mamaRoo

Condition C: 10 min. mamaRoo

Condition D: 30 min mamaRoo

Condition E: 10 min. out mamaRoo

Condition F: 30 min. out mamaRoo

$p = < 0.005$ for Condition D vs. other conditions

Results

- Data analyzed by Tiffany Moore, RN, Ph.D., NPA Board; University of Nebraska Medical Center
- Males significantly higher ($p < 0.05$) in Heart Rate for all Conditions.
- Males significantly higher ($p < 0.005$) for all variables in Conditions 10 minutes after removal from mamaRoo and 30 minutes after removal from mamaRoo.
- Significant differences ($p < 0.005$) between all variables in Condition 30 minutes after being placed in mamaRoo, Conditions 10 minutes after removal from mamaRoo and 30 minutes after removal from mamaRoo between sites. Site numbers differed and missing data.
- All sites were significantly different ($p < 0.005$) between Condition before placement in mamaRoo and Condition 30 minutes after being placed in mamaRoo for Nursing Assessment and Behavioral State.

Pilot Implications

- Babies were more physiologic stable, in a calm behavioral state and viewed as comfortable by their nurses when they were assessed 30 minutes after placement in the mamaRoo.
- The findings support anecdotal evidence that the mamaRoo is effective in supporting physiologic and behavioral regulation in infants experiencing neonatal opioid withdrawal when the parent cannot be present.
- A more comprehensive, multi-site research project is needed to determine the accuracy of the current findings.

Next Steps

Begin development of multisite, IRB-Approved Research Project:

- 10 to 12 hospitals
- Research Design and Methodology
- Update data collection tools
- Expand data and statistical analysis

Share results

- Hospital Program partners
- Interested hospitals
- NANN conference

Questions?