

# A Neonatal Rehabilitation Program for High Risk Preterm Infants



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## BACKGROUND:

- Neurodevelopmental impairments are common in children born preterm.
- Interventions focusing on environmental enrichment and emotional connection can positively impact outcomes.
- We and others have shown that parent-driven multimodal interventions are well received and feasible in very low birthweight (VLBW) infants.

## METHODS:

- Single center; randomized-controlled trial in VLBW infants (gestational age (GA)  $\leq 32$  weeks and/or birthweight  $< 1500$  grams)
  - Admitted to the University of Virginia NICU
- Randomized to intervention (NeoRehab) versus usual care

		NeoRehab Program				
Intervention timing (CGA)		23-25	26-28	29-32	33-36	$\geq 37$
Multisensory positive experiences	Vocal soothing	█	█	█	█	█
	Scent exchange	█	█	█	█	█
	Comforting touch	█	█	█	█	█
	Skin-to-Skin care	█	█	█	█	█
+ Motor training	Infant massage			█	█	█
	Physical therapy				█	█

## AIM 1:

Acceptability (View of the intervention)	Feasibility (Practicality)	Fidelity (Extent to which interventions are delivered as planned)
<ul style="list-style-type: none"> <li>○ Recruitment, retention, follow-up rates</li> <li>○ Weekly interviews</li> </ul>	<ul style="list-style-type: none"> <li>○ Direct observation</li> <li>○ Weekly interviews</li> </ul>	<ul style="list-style-type: none"> <li>○ Activity log reviews</li> <li>○ Direct observation</li> <li>○ Weekly interviews</li> </ul>

## AIM 2:

Short term motor outcome at 3 months CGA using the Hammersmith Infant Neurological Examination (HINE)

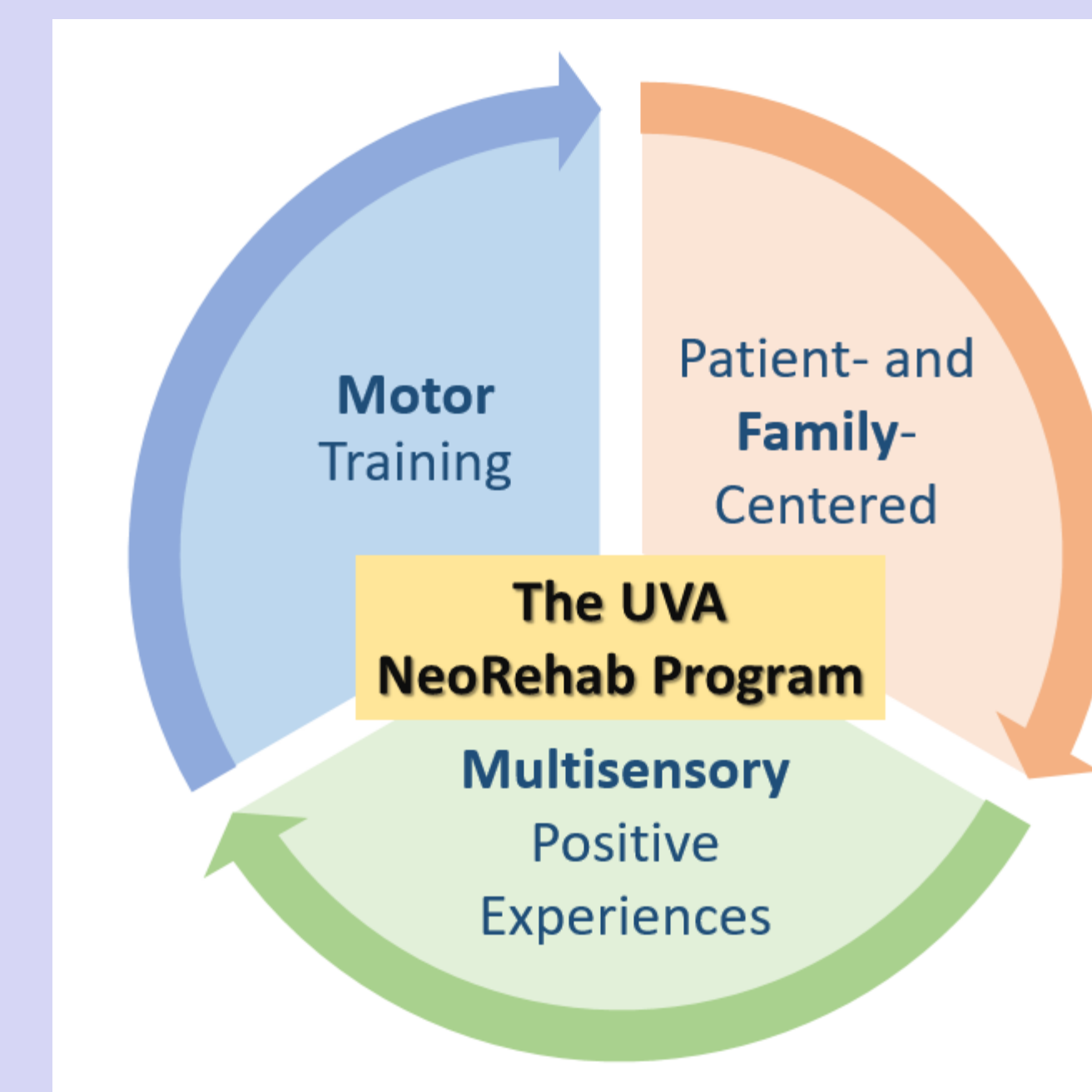
## RESULTS

- **70 patients enrolled** (03/2019-10/2020)
- **Acceptable and feasible** (well received)
  - 71% recruitment
  - 97% retention rate
  - 90% follow-up rate
- Interim analysis of motor outcomes suggest that the NeoRehab program may improve short term motor outcomes.

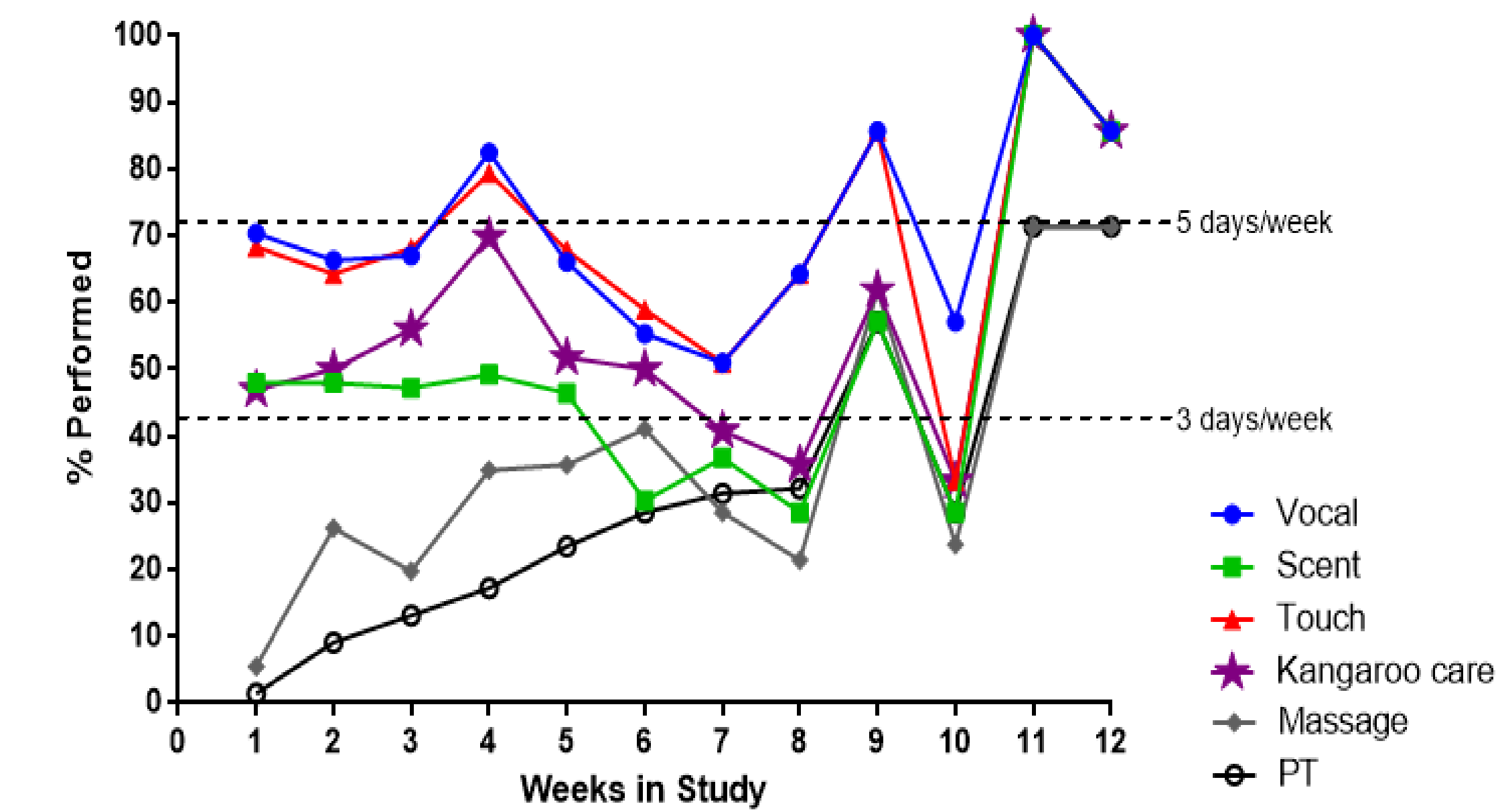
A NICU-based parent-administered NeoRehab program is feasible and improves 3 month HINE scores.



Take a picture to view the abstract and additional data



## Fidelity of the NeoRehab Interventions



**Figure 1:** Fidelity data for patients randomized to the intervention group (n = 36). The mean weekly completion rate of individual interventions over time is shown.

## Short-Term Outcomes (interim analysis)

	Usual care (n = 15)	Intervention (n = 15)
Follow-up rate	86.7%	86.7%
PMA (weeks)	56.3 $\pm$ 2.2	53.7 $\pm$ 1.6
Global HINE score (mean $\pm$ SD)	49.2 $\pm$ 11.2	58.3 $\pm$ 2.3
TIMP (mean score)	84.2 $\pm$ 10.8	87.9 $\pm$ 5.9
Rossetti (solid skill, %)		
- Language comprehension	30%	46.2%
- Language expression	0%	35.5%

## CONCLUSIONS

- The NeoRehab program is **well received and feasible**.
- The goal of 5 days/week was not achieved.
  - Most parent performed interventions between 3 and 5 days per week
- Preliminary HINE score data suggest that the NeoRehab program may improve short term motor outcomes.