**Optimizing Resource Allocation in the NICU to Improve Outcomes of Very Preterm Infants – Phase 2**

Marc Beltempo, Prakesh Shah, Bruno Piedboeuf, Guy Lacroix on behalf of the Resource Allocation Investigators of the Canadian Neonatal Network

**BACKGROUND**: National quality improvement programs have contributed to improve outcomes of very preterm infants by focusing on care practices. However less is known about the association of resource availability with outcomes. On ongoing research program on resource allocation in the NICU has identified two potential domains that require further investigations.

First, **24-h in-house coverage by attending neonatologist** has been be associated with better resuscitation in the delivery room (lower rates of chest compressions/epinephrine) and higher success rates of intubation. It may also help in continuity of care, earlier extubation and early recognition of critical patients yet the level of evidence is low and there is significant variations in models of coverage in Canadian NICUs.

Second, **nursing resources and unit occupancy** are two important factors that NICUs must manage on a daily basis. Our recent study on NICU occupancy found that infants <33 weeks admitted to units with >85% bed occupancy had a 7% increase in risk of mortality/morbidity compared to those admitted to lower occupancy and that maintaining adequate nursing ratios could in part mitigate these effects.

**OBJECTIVES**: **We propose two distinct projects**

**Project 1**. To assess the impact of 24-h in-house neonatologist coverage compared no 24-h in-house neonatologist on outcomes of very preterm infants.

**Project 2**. Develop and implement bundles of best management and resource allocation in the NICU and to assess their impacts on resource use and patient outcomes.

**METHOD**: To answer these questions, we propose two projects and study designs

1. A prospective comparative effectiveness study comparing units with 24-h in-house neonatologist coverage to those without
* Unit would commit to maintaining one model of 24-h coverage for 2 years while we prospectively collect additional data on
	+ Specific processes of care via the CNN database
	+ Descriptive data on how team function
	+ Surveys on perceptions of the impacts of 24-h neonatologist coverage (parent satisfaction, other providers perspective and trainee perceptions)
1. Prospective quality improvement study that would develop
* Benchmarking administrative data on unit occupancy and nursing ratios
* Developing and implementing consensus bundles via an interdisciplinary community of practice (NB already ongoing in Quebec)

**TEAM AND TIMELINE**: We will be organizing meetings in April/May 2022 in preparation of the 2022 Fall Grant Applications.

**SIGNIFICANCE AND IMPACT**: Improving how we organize current resources in the NICU may lead to improved outcomes at lower/same costs is a critical step in sustaining quality healthcare.

**CONTACT: marc.beltempo@mcgill.ca**