controls. These differences may indicate a disruption in auto-regulation, which is currently incompletely understood in this population.

**CONCLUSION:** This study is the first to apply time-frequency analysis to simultaneous NIRS and preductal peripheral oximetry in extremely preterm infants early in life. Significantly lower durations of cross-correlation (CrSO\textsubscript{2} with HR and \textit{SpO\textsubscript{2}}), anti-phase (CrSO\textsubscript{2}, \textit{SpO\textsubscript{2}}) and coherence (PI, BP) in PH-IVH patients may reflect early abnormal circulation. Our results show the potential of non-invasive monitoring to identify premature infants at-risk of early PH-IVH.

**58 ARE CANADIAN NEONATOLOGISTS READY FOR A STEM CELL TRIAL FOR BRONCHOPULMONARY DYSPLASIA?**

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**BACKGROUND:** Pre-clinical studies support the role of stem cells in preventing bronchopulmonary dysplasia (BPD), a chronic lung disease of prematurity. We are planning the first Canadian clinical trial of stem cell therapy for BPD.

**OBJECTIVES:** To ensure successful bench-to-bedside translation, the objective of our study was to identify the barriers and enablers that may influence neonotologists’ decision to identify extremely preterm infants at risk of BPD for participation in a stem cell trial for BPD.

**DESIGN/METHODS:** Semi-structured interviews were conducted with neonatologists across Canada. We used the Theoretical Domains Framework (TDF) to develop an interview topic guide covering 14 key domains that influence behavior (e.g. knowledge, intentions, goals, social influences). Two independent researchers used directed content analysis (using qualitative software NVIVO 11) to assign utterances to TDF thematic domains. We further identified sub-themes within domains to identify key barriers and enablers to neonatologists identifying infants for the planned trial.

**RESULTS:** Sixteen interviews were conducted with neonatologists across Canada (Western Canada n=7, Central Canada n=7, Eastern Canada n=2). Seven were practicing as a neonatologist for 10 years or less, 5 for 11–20 years and 4 for >20 years. Preliminary analyses demonstrated that neonatologists are eager to help identify patients for this study due to the importance they place on trying to treat BPD. Many participants had worries concerning the lack of evidence on long-term outcomes of stem cell therapy. Access to clear protocols, well defined eligibility criteria, and research assistants were brought up as key facilitators for screening patients. The most commonly reported barrier included the need for human resources (e.g. research assistants), funding, and institutional support to help screen patients.

**CONCLUSION:** Our interviews identified facilitators and barriers from a neonatologist perspective to a potential stem cells trial for BPD. Our findings will inform the design of a phase I/II clinical trial.

**59 DOES THE TIMING OF INITIATION OF THERAPEUTIC HYPOThERMIA INFLUENCE MRI FINDINGS AND OUTCOMES IN ENCEPHALOPATHY BABIES?**

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**BACKGROUND:** Therapeutic hypothermia (TH), initiated < 6h of life, is the standard treatment for infants with moderate to severe hypoxic ischemic encephalopathy (HIE). While preclinical studies show that TH is more effective when started early, little clinical data exists.

**OBJECTIVES:** The objectives of our study are to examine the effect of early vs. late TH on the severity and pattern of brain injury on MRI and on the neurodevelopmental outcomes.

**DESIGN/METHODS:** This retrospective cohort included infants with HIE treated with TH at a level three neonatal intensive care unit between 2009 and 2016. Babies were grouped into: early cooling (TH started ≤ 180 minutes of life) or late cooling (TH started > 180 minutes of life). Two radiologists evaluated the severity and pattern of brain injury on MRI using both NICHD and Barkovich scoring systems. Neurodevelopmental outcomes were evaluated at 4, 10, 18 and 48 months.

**RESULTS:** Ninety-four patients (median gestational age 39 weeks; median birth weight 3.3 kg) were included in the study, 55 in the early cooling and 39 in the late cooling group. The early cooling group included more patients with severe HIE (32.7% vs 10.3%, p=0.01). No difference was observed between the 2 groups in regard to the pattern and severity of brain injury. In the late cooling group, there was a trend toward more severe watershed (WS) injury (WS score ≥3) (30.6% vs 17%, p=0.19) and more moderate to severe brain injury (33.3% vs 23.4%, p=0.33). There was no difference in the neurodevelopmental outcomes between the 2 groups.

**CONCLUSION:** TH initiated early (before 180 minutes of life) was neither associated with a difference in brain injury on MRI nor better neurodevelopmental outcomes. Despite having more infants with severe HIE in the early cooling group, there was a trend toward less significant brain injury in this group.