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BACKGROUND

- 47% of cooled mod-severe HIE will have neurodisability despite therapy
- Research focus on optimization of hypothermia or reducing harmful effects of therapy
- Care is multifactorial and complex
- Combining evidence-based neuroprotective practices in to “Care bundle” and implemented together in a reliable way, may both improve the quality of care and patient outcomes

OUR SETTINGS

- 56 bed Level III NICU , 14 Level II beds for patient with complex needs (care provided by neonatologists)
- Inborn: Perinatal unit with high-risk MFM
- Outborn: from the region
- Admission ~ 50 neonates admitted for cooling

GLOBAL AIM

Improve neurodevelopmental outcome in hypoxic-ischemic encephalopathy by adapting a holistic approach to Neuroprotection

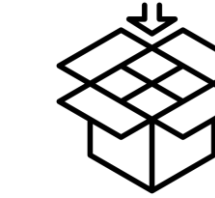
SMART AIM

To achieve a compliance rate of 85% for all five elements of neuroprotection bundle in neonates undergoing hypothermia therapy at McMaster NICU by December 2024.

CARE BUNDLE

We customized some of the elements of a recently proposed HIE care bundle for specific resources available at McMaster NICU

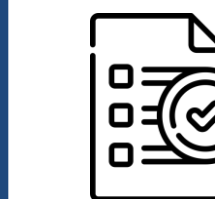
INTERVENTIONS



Adapting a neuroprotection care bundle



Group Education



Care Goal Checklist



24 x7 interactive assistance
Through EPIC chat



TIMELINES

MEASURES

How do we quantify change?

Outcome

Rate of Compliance to Care Bundle calculated monthly (All or nothing indicator)

1

Process

- % Attendance at the educational meetings
- Number of times educational material is used/downloaded
- Completion rate of Care Goal Sheet

2

Balance

- Nursing Activity Score (NAS scale)
- Medical teams' workload
- Parents stress index:
- Length of stay

3

Early recognition and timely intervention

- Ensure that target temperature is reached by 6 hours of life
- Ensure that CFM monitoring is started within 1 hour of admission
- Ensure targeted Neuro assessment completed on transport and at admission
- Ensure there is no inadvertent hypothermia
- Ensure electro graphic seizures are treated within 30 mins of initiation
- Send placenta for pathology

Optimal Sedation and stress management

- Ensure NPASS scores are recorded every 4 hours for 72 hours
- Ensure NPASS scores maintained within -5 to +5
- Restrict intermittent boluses to 3/ day
- No sedation used for MRI
- No benzodiazepines used for sedation

Fluid/Nutrition/Skin Care

- Ensure pressure points are checked every 2-4 hr
- Maintain blood glucose level 2.6-8.3
- Start enteral feeds within 48 hrs of life
- Start TPN within 24 hrs of life
- Insert central lines within 6 hours of active cooling
- Ensure fluid balance of 0 to +50 during hypothermia

Neuroprotection Care Bundle

Optimal cardio-respiratory management

- Maintenance of PaCO2 (temperature corrected) within 40-50 mm Hg
- Maintenance of arterial PaO2 (temperature corrected) 50-80 mm Hg
- Maintain MAP between 40-50 mmHg
- TNE assessment completed within 12 hours of initiation of inotropes
- Extubation within first 24 hours in the absence of parenchymal lung disease, or severe PPHN or refractory seizures

Family Integration

- First family update provided within 12h of admission [non-nurse provider]
- Family provided reading resources within 24h of admission
- Family is able to hold infant at least once during hypothermia and once within 24h of rewarming
- Family update within 48 hr of MRI brain

