

# Therapeutic Hypothermia (TH) for Hypoxic Ischaemic Encephalopathy (HIE) - Neonatal Transfers.



Refer EARLY to KIDSNTS for advice - 0300 200 1100

HIE refers to acute brain dysfunction following critical lack of cerebral blood flow and oxygen delivery. Infants with HIE often have additional multi-organ failure requiring intensive care. Current evidence shows that moderate hypothermia (33-34°C) with continuous temperature monitoring, started within 6 hours after birth, can improve neurological outcomes at both 2 and 6 years of age and is the recommended standard of care.

**Decision to initiate TH is made between referring unit and accepting NICU.**  
KIDSNTS contacted when NICU accepts baby.



Transfers for TH are classified as an **Uplift**. NTS should be at the bedside **within 4 hours of referral**.

## Establish and Agree on an accurate timeline for future decision making.

- On Arrival— Record: 1) Perinatal Events. 2) Full birth history including Resuscitation, 3) Classification of HIE on arrival.
- Reaffirm eligibility criteria + record time of commencing TH (including Mode i.e. Passive or Active TH).
- If any dispute on classification of HIE - conference call with Referring, Receiving and KIDSNTS Consultant.

**Rectal Temperature monitoring is required on arrival at unit. Record core temperature at handover.**

### Airway/ Breathing

- Ventilatory support as required dependent on respiratory drive and blood gas results.
- Aim for PaCO<sub>2</sub> 5.0-7.0 kPa and Aim Sats > 94% whilst avoiding hyperoxia.
- Try to Avoid Bicarbonate due to effects on CO<sub>2</sub> and risk of reperfusion injury.



### Circulation

- Monitor markers of cardiac output - HR, BP, pulses, lactate, urine output.**
- Bradycardia 80- 100 bpm is normal in TH.** A rise in HR > 100 - 120 may be due to distress/pain, Hypovolemia, Hypotension, Seizures or Inotropes.
- Avoid excessive fluid boluses and consider early inotropic support to improve cardiac output (Dobutamine or Adrenaline).
- Consider Urinary Catheter if Urine Output < 1ml/kg/hr



### Disability

- Ensure adequate sedation and analgesia - Morphine 10-20 micrograms/kg/hr.
- Maintain Glucose > 2.6 mmol/L. If required, increase glucose concentration before total fluid volume.
- Treat Seizures if confirmed on aEEG, associated with Physiological disturbance > 3 minutes, or frequency > 3 per hour. **First line therapy for Uplift is Phenobarbitone 20mg/kg loading dose over 20 minutes.**
- Consider prolonged drug clearance during TH and adjust drug dosages accordingly.
- Transfer on TECHOTHERM © - set range 33 -34°C.**



### Haematology

- Disseminated intravascular coagulopathy (DIC)** is a risk after hypoxic injury to the Liver.
- Clotting sample should be sent on arrival at referring centre if not already sent.
- Treatment with clotting factors and/or platelets can be addressed with KIDSNTS Consultants + receiving Consultants prior to departure.



### Pre-departure

- Check Blood Gas and Glucose and consider additional Morphine bolus if infant agitated or HR elevated.
- Consider drawing up additional Phenobarbitone bolus 10mg/kg to carry in Ambulance if loading dose was required.