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## THERAPEUTIC HYPOTHERMIA GUIDANCE BY CEREBRAL PERFUSION CONTROL BY DOPPLERULTRASOUND AFTER CPR IN CHILDREN

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**Objectives:** Despite hypothermia treatment (12-24h) survival after cardiopulmonary arrest (CA) is poor in children compared to adults particularly depending on the number out-of-hospital/in-hospital CPR (7- 53%). We observed cerebral hyperperfusion in children with adverse outcome after 24 h hypothermia post CA during the re-warming by transcranial Doppler-Ultrasound (DU). We interpreted this as reperfusion injury after too early and fast re-warming which might be avoidable by Dopplerultrasound guidance.

**Methods:** Intention-to-treat protocol: Inclusion criteria: Children with CA in- and out-of-hospital, aged 4 weeks -18 years; lactate ≥100 mg/dl, CPR ≥ 10 min ;given parental consent. Treatment with hypothermia 32-34° Celsius for 48 hours after CPR and re-warming by 0,5°C / 6 h under DU steering. If vascular Resistive Index (RI) decreased below 0,6 re-warming was reversed or at RI 0,6-0,65 re-warming was withheld for 24 hours and was re-started after 24 h. No fever is allowed for 7 days following hypothermia. We looked for the outcome (survival, GOS at discharge + 6 month) and possible side-effects (bleeding, cardiac arrhythmias, coagulation disturbances, platelet count, infections).

**Results:** 15 children are included so far. Median for: ROSC 25 (10-120)min, PRISM and PIM Score > 90%, and lactate 159 mg/dl. Median hypothermia-time 147(65-212)hours. In 12 children re-warming was withheld for 24 hours in 8 re-warming was reversed. We saw no severe adverse effects. 12/15 (80%) patients survived, 9/12(75%%) survived without neurological residuals after 6 month.

**Conclusions:** Our results suggest that hypothermia and re-warming steered by DU might be a safe and lifesaving treatment after CPR.