# 3-13 Neuroprotection following cardiac arrest v.1

Outcome from cardiac arrest is determined by the severity of any supervening neurological or cardiac dysfunction / instability which results from poor vital organ perfusion. Following return of spontaneous circulation (ROSC), inability of the patient to obey commands indicates that neuroprotection techniques should be considered.

## START

1. Prepare the cardiac arrest trolley for any further events.
2. Use positive pressure ventilation, aiming for:
   - $SpO_2$ > 94% and < 98%.
   - $PCO_2$ > 4.5 kPa and < 5.5 kPa.
3. Give sedation and neuromuscular blocking drugs to reduce thermogenesis from shivering.
4. Insert intra-arterial blood pressure monitoring. Consider vasopressor/inotrope to maintain systolic blood pressure, target SBP > 100 mmHg.
5. Obtain 12-lead ECG and discuss with cardiology if percutaneous coronary intervention is possible or appropriate.
6. Check blood glucose. Start glycaemic control therapies if above 10 $mmol.l^{-1}$.
7. Check core temperature. Target temperature is a constant temperature in the range of 32 – 36°C (precise target determined by local policy):
   - Temperature usually decreases without intervention in the immediate post-arrest period.
   - Start cooling strategies if indicated (Box A).
   - Avoid hyperthermia > 37.5°C.
8. Give antiepileptic drugs if seizures develop (Box B).
9. Plan further management in critical care area. Call for extra help as necessary.

**Box A: COOLING STRATEGIES**

**Intravenous fluid bolus:** if not contraindicated give 30 $ml.kg^{-1}$ of cold (4°C) non glucose-containing solutions
**External:** simple ice packs and/or wet towels; cooling blankets or pads; water or air circulating blankets; water circulating gel-coated pads
**Internal:** intravascular heat exchanger; cardiopulmonary bypass

**Box B: DRUGS TO CONTROL/PREVENT SEIZURES**

- Benzodiazepines or propofol are likely to be closest to hand in the operating theatre.
- Sodium valproate, levetiracetam, phenytoin or a barbiturate can also be used.

**Box C: CRITICAL CHANGES**

Cardiac arrest → **2-1**