Endovascular cooling for hypothermia after severe hemispheric stroke:

**BACKGROUND** The prognosis of massive hemispheric infarction is poor with a mortality rate of 70-80%. There is no evidence that conventional antiedema therapy improves clinical outcome or mortality. Therefore, more aggressive therapy approaches are needed. Hypothermia may represent a promising option. We here report our 5 years experience with an endovascular cooling approach for prolonged moderate hypothermia in patients with space-occupying infarction of the middle cerebral artery (MCA) territory.

**PATIENTS AND METHODS**
From 2002 until 2006, 35 patients with severe acute ischemic stroke were treated with prolonged moderate hypothermia according to our institutional protocol.

**Induction of hypothermia**
- Hypothermia was induced as soon as possible using an 8.5F 35-cm catheter (ICY, Alsius Corporation, Fig. 1a and b). This catheter consists of an additional lumen, which ends in 3 balloons sized 8x5x5 mm. These balloons are perfused with a sterile infusion of saline via a closed-loop tubing system which is connected to a temperature management device.

**RESULTS**
- The temperature course before, during and after hypothermia induction is illustrated in Fig. 2.
- The minimal temperature achieved in most patients was 32.1°C.

**Mortality and Outcome at 3 months**
- 20 patients survived the hemispheric stroke (57%).
- Herniation caused by secondary rise in ICP during/after rewarming was the cause of death in 11 patients.

**CONCLUSION** Prolonged hypothermia for the treatment of postischemic edema after hemispheric infarction is safe and feasible using this endovascular cooling approach. Substantial and sustained control of elevated ICP can be achieved in most patients. When compared to historical controls, hypothermia may reduce mortality and improve clinical outcome. A prospective randomized trial is now on its way.