

# EXTREME COOLING

## WORSENS TRAUMATIC BRAIN INJURIES IN CHILDREN

**Using hypothermia for 24 hours to treat severe traumatic brain injury in children doesn't work. It doesn't improve their condition and may even contribute to their death.**

**T**hat's the devastating conclusion of a recent study by researchers affiliated with 17 hospitals across Canada, France and the United Kingdom. *"That was a big surprise to us and it was discouraging,"* says study collaborator Jacques Lacroix, a pediatrician who runs the Health Outcomes theme for the CHU Sainte-Justine Research Center in Montreal. *"We did this because we truly believed that it would work. We thought that it would be successful."*

Compelling animal studies led researchers to believe that cooling a patient's body temperature to a hypothermic level (32.5 degrees Celsius) would work if it were done quickly after the trauma and for a period of 24 hours. So they set up a five-year study of children between one and 17 years old with severe brain injury. They also ensured that all study patients were treated within eight hours of trauma.

Of the 1,441 brain-injured patients who arrived at the participating hospitals between February 1999 and October 2004, a total of 225 children met the study eligibility criteria and received parental consent to participate in time. A centralized telephone system enabled researchers to randomly place the subjects into the experimental or control group. Children in the experimental group were cooled to 32.5 degrees Celsius, while those in the control group were cooled to a normal body temperature of 37 degrees Celsius.

After 24 hours, the body temperatures of the children in the experimental group were raised to normal levels. During this period, several children had to be treated for low blood pressure or because blood circulation through their bodies and brains was less efficient than usual.



The study continued for a period of at least six months after each child's injuries. Unfortunately, 23 children in the experimental group and 14 in the control group died. Nine patients in each group suffered severe disabilities or stayed in vegetative comas. The children who had recovered from their brain injuries and could communicate were psychologically assessed three and 12 months after their accidents. Researchers found that children who had been treated with hypothermia remembered significantly less than those in the control group.

These results, combined with a higher mortality rate and re-warming side effects, led researchers to recommend against 24-hour hypothermia treatment for children with severe traumatic head injury.

*"We now know that we don't want to lower the body temperature of our patients to a level of hypothermia,"* says Claude Mercier, a neurosurgeon at CHU Sainte-Justine. *"We are go-*

***"We are going back to our traditional way of treating our head trauma patients."***

*ing back to our traditional way of treating our head trauma patients. Before the study, we were never taking account of body temperature in the measurement of the outcome, but we were trying to keep it as normal as possible. We have stopped using hypothermia."*

BY TRACEY ARIAL