

Life Recovery Systems

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In the past several years there's been an increased interest in induced therapeutic hypothermia and its effects on post cardiac arrest and brain trauma patients. The normal body temperature is about 37 C and hypothermia occurs when the body temperature falls to 33 C. Induced hypothermia was also recommended in the 2005 Cardiopulmonary Resuscitation (CPR) guidelines. Studies have shown that lowering the patient's core body temperature after cardiac arrest or brain trauma protects vital organs.

Interest in induced hypothermia began in the 1980's when researchers found that cooling the body rapidly decreases the cerebral metabolic oxygen rate (CMR02) therefore preventing the hypoxic damage to the brain which gives the patient a better chance of making a full recovery. Studies have also shown that the faster the patient reaches hypothermia the higher chance of survival and a higher chance of making a full recovery.



The Thermosuit consists of a disposable body suit that covers the patient's body when inflated and circulates cold water to drop the core body temperature non-invasively using a pumping system. It's been proven that the faster the core body temperature can be dropped the more tissue we can save and a better chance of recovery. The Thermosuit can do this in a matter of minutes by using an ice water immersion system which minimizes the time to reach the target temperature. The pump is very compact and mobile which is very helpful in emergency situations and all it needs is water and ice. The pump is connected to the suit via a multi lumen hose which circulates water very effectively. The patient's core temperature is monitored by an esophageal temperature probe which feeds the information back to the system's computer.

A sheet is placed over the patient and connected to water Inlet, which allows ice water to circulate over the patient's skin at the rate of 14 liters per minute. The Thermosuit allows water to enter from the top and the bottom of the patient.



Most cooling devices need invasive techniques or cooling blankets along with hours to induce therapeutic hypothermia and the Thermosuit cools the body to 34C in 20 minutes using the ice water immersion system. In a recent study, 273 patients were induced hypothermia within eight hours after brain trauma or heart failure and 41 percent of those patients were able to recover with favorable outcomes, in the second part of the study 77 patients were induced hypothermia within 2.5 hours after brain trauma or heart failure had a recovery rate of 88 percent therefore the faster the core body temperature of the patient can be dropped to hypothermia (34C) the higher the chance of recovery, just inducing hypothermia to a patient in minutes more than doubles the chances of the patient's survival, this system can save many lives in emergencies. The Thermosuit is the only system so far that can cool the patient's body this fast and this efficiently.

References:

[University of Rhode Island. "Engineer Develops Thermosuit For Rapid Cooling Of Critically Ill Patients." ScienceDaily 4 May 2008. 11 September 2008 <http://www.sciencedaily.com/releases/2008/04/080430161111.htm>.](http://www.sciencedaily.com/releases/2008/04/080430161111.htm)

<http://www.life-recovery.com/>

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