



Charleston County News Release

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EMS Using Therapeutic Hypothermia to Save Heart Attack Patients

Reducing body temperature while in ambulance can increase chances of survival

Charleston County's Emergency Medical Services (EMS) Department is using a new procedure, called therapeutic hypothermia, to increase cardiac arrest (heart attack) patients' chances of survival after they've been revived, and it's already seen success.

The new procedure involves injecting a patient, who was under cardiac arrest and then revived, with intravenous (IV) fluids that have been cooled down with ice, but not frozen, in order to lower their internal body temperature and reduce the amount of damage caused by the heart attack.

Once arriving at a local hospital emergency room, the patient is then placed into a hypothermic bed which cools them down even further.

"After a patient with cardiac arrest is revived and has a pulse, they are not yet in the clear," said Don Lundy, Charleston County's EMS Director. "This new treatment allows us to reduce the impact of a heart attack on a patient's body and increase their chance of survival once they get to the hospital."

Brain injury, heart dysfunction, systemic inflammation and the underlying disease that caused the cardiac arrest all contribute to the high death rate of patients who initially have their pulse re-started. Collectively, these symptoms are known as post-cardiac arrest syndrome.

According to the National Registry of CPR (cardiopulmonary resuscitation), among the 19,819 adults and 524 children whose hearts were re-started in 2006, in-hospital mortality rates were 67 percent and 55 percent, respectively.

One local patient, however, beat those odds when Charleston County EMS crews used the procedure for the first time while on the way to the Medical University of South Carolina Hospital.

The 74-year-old male had suffered cardiac arrest while participating in the Cooper River Bridge Run in April 2009. Thanks to event planners' careful staging of medical crews, responders were able to reach the patient quickly.

After paramedics revived him and he had a steady pulse, they used the hypothermia treatment on board the ambulance to cool down his internal body temperature. Once at the hospital, the patient was placed into a coma, and the hypothermic treatment was continued.

"The patient has since fully recovered with no neurological or heart tissue damage," said Dr. Edward C. Jauch, Medical University of South Carolina Associate Professor of Medicine for the Division of Emergency Medicine and the Department of Neurosciences. "Great coordination and teamwork were key to the patient's success. Because the patient's symptoms were recognized early, very good CPR was given by a bystander, and he was given early defibrillation and early cooling, he had optimal chances for a good outcome."

After studying post-cardiac arrest syndrome, the International Liaison Committee on Resuscitation, of which Dr. Jauch is a member, stated that successful treatments of an unconscious adult patient resuscitated after out-of-hospital cardiac arrest include mild therapeutic hypothermia, which is cooling the internal body temperature to between 89.6°F and 93.2°F for at least 12 to 24 hours. Therapeutic hypothermia can improve survival and decrease the risk of brain damage.

The therapeutic hypothermia treatment was first used by EMS paramedics in Wake County, N.C., in 2007, and approved by the American Heart Association later that year.

The S.C. Department of Health and Environmental Control's Medical Control Committee approved the use of the procedure by EMS departments in 2008. After developing protocols with its medical director, Charleston County EMS implemented the procedure in March 2008.

Implementing the procedure did not incur any cost to the county because the equipment used for the procedure was already available on the county's ambulances. IVs are commonly used for patients, and portable ice boxes have been on ambulances for some time. Ice used to cool down the IV fluids is provided by area fire departments.

SIDEBAR

International Liaison Committee on Resuscitation's statement on post-cardiac arrest syndrome published in *Circulation: Journal of the American Heart Association* and *Resuscitation: Official Journal of the European Resuscitation Council*.

- View the entire statement [here](#).
- The new statement says there is growing evidence that post-cardiac arrest care can lower the death rate and improve functional outcome for patients.
- Research shows that many aspects of post-cardiac arrest syndrome can be treated. The statement discussed treatments for various types of patients, including:

Unconscious adult patients resuscitated after out-of-hospital cardiac arrest were recommended to receive mild therapeutic hypothermia, which is cooling between 32°C to 34°C (89.6°F to 93.2°F) for at least 12 to 24 hours. Therapeutic hypothermia can improve survival and decrease the risk of brain damage.

- The International Liaison Committee on Resuscitation (ILCOR) was formed in 1992 to provide an opportunity for major organizations involved in resuscitation to work together on CPR (Cardiopulmonary Resuscitation) and ECC (Emergency Cardiovascular Care) protocols.

ILCOR is composed of the [American Heart Association](#); the European Resuscitation Council; the Heart and Stroke Foundation of Canada; the Australian and New Zealand Committee on Resuscitation; the Resuscitation Councils of Southern Africa; the Resuscitation Councils of Asia; and the Inter American Heart Foundation.