

Cooling therapy for cardiac arrest survivors is as cost-effective as accepted treatments

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Cooling unconscious cardiac arrest survivors can increase survival and has a cost effectiveness comparable to other widely accepted treatments in modern health care, researchers report in *Circulation: Cardiovascular Quality and Outcomes*.

Out-of-hospital [cardiac arrest](#) - in which the heart stops effectively pumping blood through the body - annually occurs in about 300,000 adults in the United States.

"Therapeutic hypothermia is the only post-resuscitation therapy shown to improve both survival and reduce disability after cardiac arrest," said lead author Raina M. Merchant, M.D., M.S., a Robert Wood Johnson Foundation Clinical Scholar and emergency medicine physician at the University of Pennsylvania School of Medicine in Philadelphia.

"Since 2003, the American Heart Association has recommended that comatose (unconscious) patients with spontaneous circulation after out-of-hospital ventricular fibrillation (VF) cardiac arrest should receive therapeutic hypothermia," Merchant said. "Despite repeating this recommendation in the 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, along with other studies that show its benefits, therapeutic hypothermia hasn't been adopted as quickly as one would hope. We thought it would be a good idea to determine whether cost should be a barrier to its use."

With therapeutic hypothermia, a patient's body temperature is cooled

and the patient is monitored so that their internal body temperature remains between 32 and 34 degrees centigrade (89.6 to 93.2 degrees Fahrenheit) for at least 12 to 24 hours. Cooling blankets, one of several technologies used to accomplish therapeutic cooling, were the focus of the current analysis.

Researchers used a complex mathematical design to measure quality-adjusted survival after cardiac arrest, cost of hypothermia treatment, cost of post-hospital discharge care and incremental cost-effectiveness ratios. Factors affecting costs included additional nursing care required during cooling treatment, extra time spent in the intensive care unit and post-discharge care required.

Merchant said, "Quality adjusted life year calculations were based on previous studies of patients with cardiac arrest."

Quality adjusted life years (QALY) are a measurement of health outcomes that are calculated by combining quality of life and life expectancy.

The incremental cost-effectiveness ratio (ICER) for therapeutic hypothermia compared with conventional care (post-resuscitation care without hypothermia) was \$47,168/ (QALY), Merchant said.

"We found that even at extreme estimates for costs, the cost-effectiveness of hypothermia remained less than \$100,000/QALY in more than 91 percent of our simulations," she said.

Researchers used data from two landmark papers published in 2002 by the Hypothermia After Cardiac Arrest (HACA) study group, which reported that therapeutic hypothermia improves survival and neurologic outcomes in comatose resuscitated cardiac arrest patients. In addition, researchers used information from cooling device companies and

consultation with resuscitation experts.

In comparison, other studies estimated the ICER of kidney dialysis at \$55,000/QALY. Public access defibrillation — the placement of automated external defibrillators (AEDs) in public places — has an ICER of \$44,000/QALY. Placing AEDs on all U.S. commercial aircraft has an estimated cost of \$94,700/QALY, researchers added.

"We showed that [therapeutic hypothermia](#) is a good value for the cost," Merchant said. "In fact, even if a hospital had only one patient eligible for [hypothermia](#) therapy annually, and considerable post-resuscitation care costs resulted for survivors, the cost-effectiveness is consistent with many widely accepted healthcare interventions."

One of the limitations of the current study is the lack of long-term outcomes data, which Merchant hopes will be overcome with future research.

Source: American Heart Association ([news](#) : [web](#))

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