Pre-Hospital-Initiated Therapeutic Hypothermia for Survivors of Out-Of-Hospital Cardiac Arrest: A Review of Literature

Jani Rameswaran, Undergraduate Nursing Honors Student
Sharon D. Horner, PhD, RN, FAAN, Sponsor
The University of Texas at Austin School of Nursing

**Purpose:** Studies show the use of therapeutic hypothermia (TH) improves neurological outcomes following out-of-hospital cardiac arrests (OHCA). Although the American Heart Association categorizes TH as a Class I recommendation, its use is limited in the pre-hospital setting. This review addresses the barriers to utilization of TH in pre-hospital settings and examines literature on current research studies involving pre-hospital cooling. Identified barriers to the implementation of TH include knowledge gaps among health care professionals regarding TH's mechanisms of action, inconsistent studies about TH's effects on OHCAs with a non-shockable initial cardiac rhythm (pulseless electrical activity or asystole), and the lack of standardized protocols explaining when and how to use TH in pre-hospital settings. **Methods:** This review of literature includes comprehensive searches of The Cochrane Library, PubMed, CINHAL, and MEDLINE. Bibliographies of chosen articles were searched to identify additional relevant articles. **Findings:** I found several methods currently used in pre-hospital and hospital settings. These methods are categorized as invasive or non-invasive. Of those methods, there are several novel devices currently being tested. Seven studies between 2008 and 2012 are included in this review of literature. The compared studies contain a variety of initial cardiac rhythms, interventions, and outcome measures. The overwhelming consensus between these articles is that pre-hospital induction of TH is safe, feasible, and effective when lowering body temperatures during or after resuscitation. Unfortunately, current studies are not powered to determine pre-hospital TH's effect on hospital discharge outcomes. **Conclusions:** The lack of data regarding hospital outcomes for patients who received TH treatment in the pre-hospital setting is a detriment to the improvement of current post-cardiac arrest practices.

Key words: Therapeutic hypothermia, pre-hospital, post-cardiac arrest