

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Pre-hospital survival outcomes of patients suffering from a cardiac arrest treated with hypothermic therapy.

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2nd Party Appraiser:

Clinical Scenario:

Paramedics respond for a 56 year old male who was found. What is likelihood of the patient surviving if the paramedics use therapeutic hypothermia (cooled saline) along with CPR?

PICO (Population-Intervention-Comparison-Outcome) Question:

In out of hospital cardiac arrest do patients have higher survival outcomes when treated with therapeutic hypothermia (cooled saline)?

Search Strategy:

(pre-hospital OR out of hospital OR emergency medical services OR paramedic) AND (hypothermic OR hypothermia) AND (cardiac arrest OR heart arrest OR resuscitate* OR return of spontaneous circulation)

Limits: Full Text, Abstract Available, English Language, last 10 years.

Search Outcomes: 157

Relevant Papers:

Author, Date	Population: Sample Characteristics	Design (LOE)	Outcomes	Results	Strengths/Weaknesses

Rao et al (2016)	Patients who suffer out of hospital cardiac arrest.)	Retrospective analysis.	Survival to discharge	Out of 847 patients 55% received prehospital hypothermia. The results of the study was that patients who received prehospital hypothermia have a higher survival to hospital discharge rate. (1.56%).	Weaknesses: The study's result was very minimal, yet it claimed some significance. Strengths: The authors realized that there may have been other varying factors such as differences in patient care.
Mooney et al (2011)	Patients with non-ventricular fibrillation cardiac arrest or cardiogenic shock. Also, patients with a STEMI received cardiac intervention and cooling simultaneously.	Retrospective analysis.	Survival to discharge	The study found that overall survival to discharge rate was 56% and 92% of survivors had no neurological deficits.	Weaknesses: Very minimal comparison to non-hypothermic cardiac arrest treatments. Strength: Exclude candidates that had were very unlikely to be resuscitated.

Comments:

This PICO question yielded a fairly reasonable number of responses because the process of infusing cardiac arrest patients with cooled saline while conducting CPR is a fairly new intervention. Both relevant studies included were retrospective analysis, which was expected in survival to discharge outcome studies. Although both studies did find a slight increase in survival rates when patients were given cooled saline, neither study proved any real significance in the effectiveness of the procedure. Also, the studies did mention that it is hard to determine exactly if the cooled saline was actually the cause of the slight increase of survival. In conclusion both studies did find a higher survival rate in patients who were given cooled saline along with proper cardiopulmonary resuscitation, but neither proves any major significance because the survival increase was minimal.

Consider:

Changing CPR standards to include hypothermia treatment should not be considered at this point because the studies and research on this topic is fairly new and there is not enough clinical significance to prove that the addition of this procedure is actually beneficial to the patient.

Clinic Bottom Line:

Paramedics should continue to follow the current CPR standards in their region because although the addition of cooled saline is not necessarily harmful, it is not yet proven to increase the chance of the patient surviving.

References

Rao, M. P., Dupre, M. E., Pokorney, S. D., Hansen, C. M., Tyson, C., Monk, L., & ... Granger, C. B. (2016). Therapeutic Hypothermia for Patients with Out-of-Hospital Cardiac Arrest in North Carolina. *Prehospital Emergency Care: Official Journal Of The National Association Of EMS Physicians And The National Association Of State EMS Directors*, 20(5), 630-636.
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Mooney, M., Unger, B., Boland, L., Burke, M., Kebed, K., Graham, K., & ... Parham, W. (2011). Therapeutic Hypothermia After Out-of-Hospital Cardiac Arrest: Evaluation of a Regional System to Increase Access to Cooling. *Circulation*, 124(2), 206-214.
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