

Temperature is associated with Survival, Neurologic and Functional Outcome Following In-Hospital Cardiac Arrest and Return of Spontaneous Circulation: a Report from the National Registry of Cardiopulmonary Resuscitation

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- Changes in body temperature occur with circadian rhythms, pyrogens, or insults to the body
- The post cardiac arrest syndrome has associated elevated body temperatures with less favorable outcomes
- Normothermia is associated with better survival outcome

Top 10 Things to Know

1. Fluctuations in body temperature effects neurons; hypothermia is neuroprotective and hyperthermia causes neuronal injury.
2. During a cardiac arrest event and return of spontaneous circulation (ROSC) there can be body temperature fluctuations.
3. A primary outcome for this study was survival to hospital discharge (SDC) for the adult patients who suffer an in-hospital cardiac arrest (IHCA).
4. This study sought to evaluate both the neurologic and functional status of those with SDC.
5. Of the 5,436 adult patients surviving to 24 hours post-ROSC, there was 77.1% (4,193) SDC.
6. Survival outcome varied with temperature occurrences for the 3,426 *NRCPR study patients with both a high and low temperature recorded. Those with normothermia showed the best SDC of 86.5% (1,523).
7. Temperature data collection varied
 - sites for measuring temperature were not controlled—axilla, oral or tympanic site had decreased odds of hyperthermia being recorded.
 - incomplete temperature data for 37% of patients that survived 24 hours- these patients had lower survival rates

8. A hypothesis of this study was that there would be worse outcomes for those who experienced episodes of hyperthermia. Patients with hyperthermia had
 - lower SDC-75.8%
 - lower odds of favorable neurologic performance
9. Fluctuation in body temperature post IHCA has a negative impact on survival. Avoiding hyperthermia in the post resuscitation period has also, previously been reported to have a significant impact on survival.
10. Further study should address the cause of alteration in the regulation of body temperature in the first 24 hours after ROSC; and identify if regulating temperature post arrest has a positive impact on outcomes.

*NRCPR is a performance improvement tool that can be used to identify and monitor key process variables and patient outcomes for in-hospital cardiac arrest.