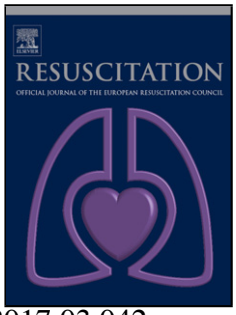


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# Whither the chain of survival?

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The paper by Slomine and colleagues belongs to a group of studies from the THAPCA-OH (Therapeutic Hypothermia After Pediatric Cardiac Arrest Out of Hospital) consortium that are of historical import, having perhaps closed a chapter in pediatric resuscitation.[1-4] Slomine's study addresses two long standing issues in pediatric resuscitation, the effectiveness of therapeutic hypothermia in drowning but also outcomes of pediatric victims of drowning compared to those with other respiratory etiologies of cardiac arrest. Hypothermia for the treatment of drowning has always been the great hope, be it in a protective role provided by cold water against the initial anoxic injury of drowning or in a protective role provided post injury to mitigate secondary injury. In the 1980's, therapeutic hypothermia was the standard of care for all comatose pediatric drowning victims, driven by a case series from a single center that reported improved survival among children who remained comatose after drowning and treated with hypothermia.[5] However, over the next decade, other case series reported poor outcomes, including possible increases in neurologically devastated survivors and the intervention ceased.

Slomine et al and the THAPCA colleagues have enlightened the issues by performing a thoroughly 21st century study- a prospective, randomized controlled, multicenter trial of therapeutic hypothermia in a defined pediatric cardiac arrest population: children and adolescents < 18 years who had had an OHCA treated with chest compressions for 2 minutes and remained comatose and then hospitalized. They reported no significant difference in outcomes following therapeutic hypothermia in their primary study population, that of all pediatric cardiac arrest, nor in a subgroup of pediatric cardiac arrests due to drowning.[2,4] In Slomine's study, as pediatricians should, they evaluated in more depth the most common cause of pediatric cardiac arrest, that of respiratory etiology. Their results showed that survivors of respiratory caused cardiac arrest, despite therapeutic hypothermia intervention, had "Substantial neurobehavioral morbidity". Additionally, drowning survivors faired slightly better than those with other respiratory etiologies. In the history of therapeutic hypothermia for pediatric drowning, the risk of creating devastated survivors led to a thoughtful, anguished paper, "Childhood near-drowning: is cardiopulmonary resuscitation always indicated?"[6] Slomine's study in depth description of neurologically devastated survivors provides us a more nuanced goal: can we decrease not just deaths but the percent of bad post cardiac arrest survivors?

One obvious place to look for ways to improve outcomes is to investigate the chain of survival of these patients. The critical roles of early detection of the arrested victim to early recognition and treatment of VF to early initiation of CPR by a bystander were recognized by the 1990's. These led to EMS system changes to decrease their response time to the scene and to decrease time to resuscitation and implementation of innovative programs such as citizen CPR and public access defibrillation.[7] In a meta-