Title: **HypOthermia for Patients requiring Evacuation of Subdural Hematoma: a Multicenter, Randomized Clinical Trial**

**Background:** Traumatic brain injury (TBI) resulting in subdural hematoma occurs in over 40,000 Americans annually with up to 70% of these injuries resulting in death or severe disability. Therapies to improve outcome are desperately needed. Standard treatment includes the surgical removal of the hematoma; however, after evacuation, an ischemia-reperfusion injury occurs at the time of brain tissue reperfusion. Hypothermia is proposed to reduce the effects of this ischemia-reperfusion injury. In fact, retrospective subgroup analysis of NABISH:I and NABISH:II hypothermia trials revealed that TBI patients undergoing surgical evacuation of intracranial hematomas who were treated with hypothermia had significantly improved neurologic outcomes compared to patients treated with normothermia. The HOPES Trial aims to test whether treatment with early hypothermia prior to surgical evacuation of a subdural hematoma improves patients’ outcomes.

**Primary Objective:** The primary objective is to determine if rapid induction of hypothermia prior to emergent craniotomy for traumatic subdural hematoma (SDH) will improve outcome as measured by Glasgow Outcome Scale-Extended (GOSE) at 6 months.

**Methods:** This randomized, prospective trial will study the effect of very early cooling in patients undergoing surgical evacuation of acute subdural hematomas (35°C prior to opening the dura followed by maintenance at 33°C for a minimum of 48h). Intravascular cooling catheters (Thermogard XP Device, Zoll) will be utilized to induce hypothermia or to maintain normothermia.

Because of the emergent nature of the traumatic subdural hematoma and the urgency to go to the operating room, obtaining timely informed consent for research participation is unlikely to occur. Regulations exist that allow research to be conducted with the expectation of obtaining consent as soon as possible, but possibly after the subject has undergone the research intervention (21 CFR 50.24 FDA; 45CFR 46.101(i) DHHS). In order to meet criteria to invoke this emergency waiver of informed consent provision the condition must be life-threatening, obtaining informed consent is not feasible, there must be prospect of direct benefit to the subject and investigators must attempt to contact the patient’s representative. Additionally, the current treatments are unproven or unsatisfactory, and there is no way to prospectively identify subjects. Investigators have utilized the community through a process we refer to as “community consultation” to confirm if they would want to participate in the study if they had an emergent traumatic subdural hematoma. During the community consultation process the investigators meet with community groups to inform them of the study. The community members ask
questions and provide the investigators with feedback regarding whether or not they
would hypothetically want to be a research subject or allow their family member to be a
subject in this study. The IRB reviews the community member surveys to determine if
subjects can be enrolled under the emergency waiver of informed consent. An
additional requirement of utilizing the emergency waiver of informed consent is public
disclosure. A video was created which describes the study (please see the link below).
Additionally, media releases were made to community partners.

**Sites/Collaborators:** The University of Texas at Houston Medical School and
Memorial Hermann Hospital; The University of Pittsburgh Medical Center and UPMC
Presbyterian; The University of Miami and Ryder Trauma Center, Jackson Memorial
Hospital; Berry Consultants; and Baylor College of Medicine.

**Institutional Review Board (IRB):** The Committee for the Protection of Human
Subjects at the University of Texas Health Science Center at Houston (IRB) has the
primary IRB oversight of this study. The University of Pittsburgh Medical Center and
University of Miami IRBs also oversee the study.

**Video Link:** http://neuro.memorialhermann.org/hopes-trial/

**Related Literature:**


**Choi HA**, Badjatia N, Mayer SA. Hypothermia for acute brain injury--mechanisms and practical

**Choi HA**, Ko S, Presciutti M et al. Prevention of Shivering during Therapeutic Temperature

**Clifton GL**, Miller ER, Choi SC, Levin HS, McCauley S, Smith KR, Jr., et al. Lack of effect of
63.

hypothermia induction in patients with severe brain injury (the National Acute Brain Injury

Hypothermia for Evacuated Intracranial Hematomas: A Post Hoc Analysis of Two

**Puccio AM**, Fischer MR, Jankowitz BT, Yonas H, Darby JM, **Okonkwo DO**. Induced
normothermia attenuates intracranial hypertension and reduces fever burden after
severe traumatic brain injury


This study has been made possible through the generous support of the Vivian L. Smith Foundation for Neurologic Research and Zoll

Contact Information: HopesTrial@uth.tmc.edu