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“Cerebrovascular Autoregulation after Pediatric Cardiac Arrest”

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Co-sponsor: ASCCA-FAER-Hospira Physician Scientist Award

Summary: Pediatric cardiac arrest often results in permanent neurologic injury despite efforts to protect the brain by inducing hypothermia after resuscitation. Cerebrovascular autoregulation maintains constant blood flow to the brain across changes in blood pressure. Deranged autoregulation and inappropriate blood pressure management may contribute to poor neurologic outcomes. Autoregulation has not been adequately studied after resuscitation from cardiac arrest in children, and the effects of hypothermia are unclear. We hypothesize that autoregulation is impaired and that different temperatures affect autoregulation after resuscitation from cardiac arrest. In neonatal swine resuscitated from arrest, cerebral blood flow and autoregulatory indices will be monitored during normothermia and hypothermia. Blood pressure will be raised or lowered to test autoregulatory function and the limits of autoregulation. Blood pressure management that supports autoregulation is integral to improving neurologic outcomes after cardiac arrest. Data derived from these experiments will provide critical evidence for improving clinical guidelines in pediatric resuscitation.