DOMINICAN UNIVERSITY of CALIFORNIA

Scholarly & Creative Works Conference

2026

Presenter: Cade Thygerson

Session & Time: Poster III

Room/Time: GLH / 3:30-4:30

Discipline: Nursing

Faculty Mentor: Rafael Romo

Digital Portfolio URL:
https://docs.google.com/document/d/18yX9z7oCn8kzDvXPLCwVacWrRcycmhj6B4xwOELcNo4/edit?tab=t.0

Title: Heliox Therapy throughout Cardiopulmonary Resuscitation: Method to improve survival outcomes in adult cardiac arrest patients within the ICU by Guadalupe Maravilla and Cade Thygerson

Abstract:

Research Question
We hypothesize that administering heliox therapy in adult ICU patients during cardiopulmonary resuscitation improves neurological outcomes in patients with cardiopulmonary arrest when compared to standard oxygen therapy.

Justification
Research could contribute to the development of advanced cardiac life support protocols and inform. Cardiac arrest continues to have poor survival and neurological recovery rates despite advancements in resuscitation science.

Current advanced cardiac life support (ACLS) protocols prioritize rapid oxygen delivery. However, new evidence suggests that high concentrations of oxygen during resuscitation may contribute to cerebral oxidative injury and worsen neurological outcomes. At the same time, inadequate ventilation during cardiopulmonary resuscitation (CPR) can lead to hypercapnia, increased intrathoracic pressure, and reduced perfusion, further compromising patient outcomes.

Heliox therapy offers potential advantages in this context due to its low density, which reduces airway resistance and facilitates improved airflow and gas exchange. Prior studies have demonstrated that heliox improves carbon dioxide removal, ventilation efficiency, and microcirculation in critically ill patients. Despite these documented physiologic benefits, there is limited research on the use of heliox during active cardiopulmonary resuscitation in adult patients.

There is a need to explore alternative respiratory strategies that optimize gas exchange while minimizing potential neurological injury during resuscitation. Investigating heliox administration during CPR may identify a new approach to improving return of spontaneous circulation (ROSC) and neurological recovery following cardiac arrest. Findings from research on future clinical trials to improve survival and neurological outcomes in patients with cardiac arrest.