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Association of Patient Demographics, Code Characteristics, and Survival to Discharge After In-Hospital Cardiac Arrests in the Pediatric Intensive Care Unit

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IRB Number: STUDY00001945

Describe role of Submitting/Presenting Trainee in this project:

Primary Investigator

Background:

Lower socioeconomic status and minority background have been linked to worse outcomes after out-of-hospital and in-hospital cardiac arrests (IHCA). Despite this, there has not been a focus on IHCA within a pediatric intensive care unit (PICU) evaluating patient demographics and code characteristics.

Objectives/Goal:

The primary objective is to describe patient demographics, code characteristics, and survival to discharge of patients that suffer IHCA in a quaternary PICU. The goal of this descriptive, retrospective study is to identify possible differences in outcomes related to patient demographics, laying the foundation for further QI initiatives.

Methods/Design:

Participants included patients between 24 hours and 18 years of age experiencing IHCA in the PICU from 2015 to 2021. Cardiac arrests outside the PICU were excluded from this study to minimize variability. Patient demographics included race/ethnicity, age, and gender. Code characteristics included defibrillator shocks delivered (yes/no), use of continuous renal replacement therapy (yes/no), and use of extracorporeal support (yes/no). Data was obtained from the Virtual Pediatric System (VPS)©. Outcome was survival to discharge or death. Associations were analyzed using the chi-square test.

Results:

213 individual patients experienced IHCA at the CMH PICU from 2015 to 2021. Age ranged from 0 to 259 months (median 10 months). Of these, 124 (58%) were identified as White, 34 (16%) Black, 21 (10%) Hispanic, 6 (3%) Asian, and 16 (7.5%) as some other race or multiple races (5.6%); 123 (57.7%) were male.

111 (47.4%) of those who experienced an IHCA had an outcome of survival to discharge: 53.2% of White patients, 41.2% of Black patients, 33.3% of Hispanic patients, and 46.4% of patients of some other race or multiple races. There were no statistically significant differences in survival rate by patient demographics.

Conclusions:

Many variables affect the outcome of pediatric IHCA, especially given the multidisciplinary approach to caring for a child in a PICU. To optimize care for patients that experience IHCA we must ensure standardized care regardless of patient demographics. While our data suggest possible variation in outcome based on patient demographics, sample sizes were small. Further analysis is required to determine potential risk factors for mortality amongst these patients and improve our cardiac arrest outcomes.