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CASE STUDY · RESUSCITATION ACADEMY

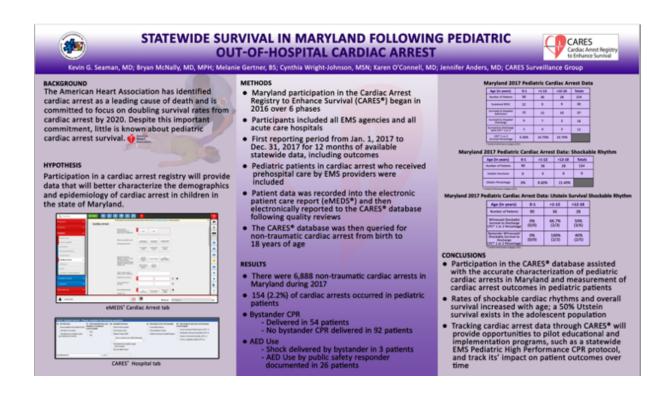# Implementing CARES in Maryland

BRIEF BACKGROUND

CARES was not deployed across the entire state of Maryland, making it difficult for the Maryland Institute for Emergency Medical Services System (MIEMSS) to capture statewide cardiac arrest outcomes and benchmark quality improvement efforts.

STEPS TAKEN

In 2016, the statewide CARES implementation process began in six different phases, until it was finally present in all EMS agencies and acute care hospitals in the state. By 2017, MIEMSS had gathered its first full year of publicly available data (available at http://www.miemss.org/home/documents).

CHALLENGES

First responder information on bystander CPR and AED use was not always accurately uploaded to CARES. In addition, the assessment of Cerebral Performance Category (CPC) for mild and moderate neurological deficits were not accurately and consistently assessed to reliably report the cardiac arrest patient outcome in CARES.

STATEWIDE SURVIVAL IN MARYLAND FOLLOWING PEDIATRIC OUT-OF-HOSPITAL CARDIAC ARREST

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BACKGROUND
The American Heart Association has identified cardiac arrest as a leading cause of death and is committed to focus on doubling survival rates from cardiac arrest by 2020. Despite this important commitment, little is known about pediatric cardiac arrest survival.

HYPOTHESIS
Participation in a cardiac arrest registry will provide data that will better characterize the demographics and epidemiology of cardiac arrest in children in the state of Maryland.

METHODS
- Maryland participation in the Cardiac Arrest Registry to Enhance Survival (CARES®) began in 2016 over 6 phases
- Participants included all EMS agencies and all acute care hospitals
- First reporting period from Jan. 1, 2017 to Dec. 31, 2017 for 12 months of available statewide data, including outcomes
- Pediatric patients in cardiac arrest who received prehospital care by EMS providers were included
- Patient data was recorded into the electronic patient care report (eMEDS®) and then electronically reported to the CARES® database following quality reviews
- The CARES® database was then queried for non-traumatic cardiac arrest from birth to 18 years of age

RESULTS
- There were 6,888 non-traumatic cardiac arrests in Maryland during 2017
- 154 (2.2%) of cardiac arrests occurred in pediatric patients
- Bystander CPR
  - Delivered in 54 patients
  - No bystander CPR delivered in 92 patients
- AED Use
  - Shock delivered by bystander in 3 patients
  - AED Use by public safety responder documented in 26 patients

CONCLUSIONS
- Participation in the CARES® database assisted with the accurate characterization of pediatric cardiac arrests in Maryland and measurement of cardiac arrest outcomes in pediatric patients
- Rates of shockable cardiac rhythms and overall survival increased with age; a 50% Utstein survival exists in the adolescent population
- Tracking cardiac arrest data through CARES® will provide opportunities to pilot educational and implementation programs, such as a statewide EMS Pediatric High Performance CPR protocol, and track its' impact on patient outcomes over time

RESULTS

The 2017 data was used to drive QI projects and studies. MIEMSS studied the CARES data and reported on pediatric cardiac arrest in an abstract at the National Association of EMS Physicians (NAEMSP). The data was also used to support efforts to:

- Include a pediatric HP-CPR in their Maryland Medical Protocol http://www.miemss.org/home/ems-providers/protocols

- Innovate an efficient way of minimizing CPR interruptions by interspersing ventilations between the 29th and 30th compression

- Roll out pediatric HP-CPR at regional conferences across the state

OUTLOOK

MIEMSS plans to implement quality checks on data reported to CARES by reviewing 700-800 randomly selected cases (10%) completely, including the pre-hospital report and the hospital CARES data, to evaluate successes and identify opportunities for improvement.

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