Advanced EMS Treatment and Survival After Cardiac Arrest

Callie Heyne  
*Clemson University*

Spenser Staub  
*Clemson University*

Tom Mroz PhD  
*Clemson University*

Windsor Sherrill PhD  
*Clemson University*

Follow this and additional works at: https://tigerprints.clemson.edu/hehd_awards

Part of the Medicine and Health Sciences Commons

Recommended Citation
Heyne, Callie; Staub, Spenser; Mroz, Tom PhD; and Sherrill, Windsor PhD, "Advanced EMS Treatment and Survival After Cardiac Arrest" (2014). *Health, Education and Human Development Awards*. 7.
https://tigerprints.clemson.edu/hehd_awards/7
ABSTRACT
Successful cardiac arrest management requires the simultaneous coordination of a number of advanced treatments. In order to improve this process and related patient outcomes, Greenville County Emergency Medical Services (GCEMS) implemented a multiple protocol and training changes between 2011 and May 2012. Changes included the introduction of streamlined guidelines and treatment processes, increased scope of care for paramedics, care to an evidence-based training program, and introduction of an annual survivor conference. These modifications were targeted both the professionalism of paramedics and EMS system culture. Impact of the new cardiac arrest management program was assessed at both the individual and population health levels.

PROBLEM STATEMENT
Cardiac Arrest is one of the leading causes of death and hospitalization in the country. In order to improve cardiac arrest outcomes, Greenville County Emergency Medical Services developed and implemented an evidence-based training and cultural shift. Steps were taken to properly assess and analyze the immediate and long-term impact of these changes.

STUDY METHODOLOGY
1. Develop study sample using specific inclusion criteria
2. Collected data for complete continuum of care
3. Perform 10% check to check for systematic errors
4. De-identify data
5. Analyze using Stata Software

RESULTS
Regression Analysis (Linear Probability Model) Controlling for Age, Race, and Gender using Dummy Variables

A NEW EVIDENCE BASED APPROACH
Culture Change
- Survivor Ceremony to show work has tangible benefit
- Quality CPR is vital
- Paramedic autonomy increased

Streamline Protocol
- Transport Cardiac Arrest patients exclusively to PCI Hospitals
- Run 12-Leads on every post-arrest transport
- Standardized Therapeutic Hypothermia inclusion criteria for every receiving hospital

Focused Simulation Lab Training
- More days focused specifically on post-resuscitation skills
- Approach like going to get ROSC and continue care
- 25 minutes resuscitation
- 2 results of ACLS resuscitation
- Airway
- Agonal glotic device or intubation
- Patient in systole
- At a private residency

DISCUSSION
Life-saving Cultural Shifts
- Survivor Ceremony creates a meaningful, hopeful culture of care.
- Shifting priority to high-quality CPR emphasizes the importance of fundamental skills.
- Training community, bystander CPR has the potential to improve impact survivability.
- Simulation lab training is now regularly focused on Cardiac Arrest training.

Shockable Rhythms: Biggest Opportunity for Improvement
- Ventricular Fibrillation and Ventricular Tachycardia are both shockable rhythms.
- Care options available to EMS are more likely to be effective on these types of cardiac arrest.
- The already high survivability of these particular rhythms allows for a bigger margin of improvement.

Full Care Reduction: Direct and Indirect Impacts
- Reducing full care decreases unnecessary cost to the patient, community, and hospital.
- Family and friends do not get false sense of hope from seeing their loved being transported to the hospital.
- Hospital care providers have less emotional and mental stress because they are not having to deal with processing the loss of life as often.
- Streamlined EMS processes allow paramedics to be ready to respond to new cases faster.
- Subjects who died as admitted patients did not change significantly from the control to treatment; however, the number that died in the emergency room did. This demonstrates the effectiveness of the "terminate in field" protocols put into place.

The Power Behind Evidence Based Practices
- Effective use of shockable rhythms
- Increased autonomy among paramedics improves job satisfaction and performance
- The significant changes in protocol practice with the increase in survival rates indicate the effectiveness of the new training program.

WORK CITED