



Emergency Cardiac Care Centers (ECC) for Georgia

Outline for Drafting an ECC Law

1) Rationale

Cardiovascular (CV) disease is the number one cause of death in the United States and in Georgia. Between one in four to one in three Georgians die from a heart attack or its complications, and Georgia ranks as the 38th worst in the nation for numbers of CV deaths.¹ Approximately 40% of cardiac deaths occur suddenly, the result of a heart attack that is manifest by an “Out of Hospital Cardiac Arrest” (OHCA). Several states, but notably Arizona and Washington, have designated hospitals that are expert in CV care, much in the way that Georgia has stroke and trauma centers. Washington and Arizona have some of the lowest death rates for patients who have heart attacks, in part due to their designated cardiac centers. In Georgia, we have designations for trauma and stroke centers, but these medical catastrophes account for only 5-7% of all deaths, respectively.² The OASIS database for Georgia in 2015 confirms these national data almost exactly. In 2015, there were 79,901 deaths in Georgia.³ Deaths from CV disease (excluding stroke) accounted for 23.6% of all Georgia deaths. For trauma it was 7.7% and for stroke 5.2%. While stroke and trauma are important clinical entities and deserve specific “Center” status, their mortality rates pale in comparison to the number of deaths from CV disease in Georgia. **Despite this, we have no “Centers” for the care of heart attack and cardiac arrest patients in Georgia.** We anticipate that designating “Emergency Cardiac Care Centers” in Georgia will reduce the death rate for the number one killer of men and women in our state over a three year time period.

2) Goals

The primary goal of ECCs is to reduce death from heart attack and OHCA in Georgia by:

- A) Designating hospitals that meet specific criteria as Emergency Cardiac Care Centers (ECCs)
- B) Assigning designated “levels” for ECC Centers for public and EMS awareness of hospitals complying with ECC criteria
- C) Requiring that all designated hospitals submit heart attack (STEMI) data to a “yet-to-be-determined” database (see section 4-1, below) and all OHCA data to the CARES Registry (<https://www.cdc.gov/mmwr/pdf/ss/ss6008.pdf>; see section 4-2, below).

¹ American Heart Association. Georgia State Fact Sheet. 2013.

² *Ibid.*

³ Georgia OASIS. Mortality data. 2015.

While simply designating hospitals as ECC Centers in Georgia will not single-handedly reduce the CV death rate from heart attacks, doing so will significantly strengthen a key link in the “chain of survival” for victims of these acute events. By measuring the patient data and then changing care protocols, lives can be saved. Indeed, the medical consensus statement on implementing strategies to improve survival after heart attack recommends establishing designated hospitals for the care of these types of patients.⁴

3) Designated Levels/Requirements for ECC Centers in Georgia:

Level I ECC Centers must:

- A) Have 24/7/365 cardiac catheterization and angioplasty (PCI) facilities and report data from these to a national database (e.g. NCDR)
- B) Have on-site 24/7/365 cardiothoracic surgery (CTS) capability
- C) Have established protocols for therapeutic hypothermia for Out of Hospital Cardiac Arrest (OHCA) patients
- D) Have the ability to implant percutaneous Left Ventricular Assist Devices (pLVAD) for support of hemodynamically unstable patients with OHCA and heart attack (MI)
- E) Have neurologic protocols to measure functional status at hospital discharge
- F) Have the ability to implant Automatic Implantable Cardioverter Defibrillators (AICD)
- G) Report data in a timely basis on all OHCA patients to the CARES Registry and report all MI patients to a “yet-to-be-determined” database
- H) Have a written system included in the protocol for timely submission of all data

Level II ECC Centers must:

- A) Have 24/7/365 cardiac catheterization and PCI, but no on-site CTS capability, and report cath and PCI data to a national database (e.g. NCDR)
- B) Have established protocols for therapeutic hypothermia for OHCA patients
- C) Have neurologic protocols to measure functional status at hospital discharge
- D) Have written transfer plans with Level I program for patients who need LVAD or cardiac surgery
- E) Report data in a timely basis on all OHCA patients to the CARES Registry and report all MI patients to a “yet-to-be-determined” database
- F) Have a written system included in the protocol for timely submission of all data

Level III ECC Centers must:

- A) Have established protocols for therapeutic hypothermia for OHCA patients
- B) Have a written plan for systematic transfer to a Level I facility
- C) Report data in a timely basis on all OHCA patients to the CARES Registry and report all MI patients to a “yet-to-be-determined” database
- D) Have a written system included in the protocol for timely submission of all data

⁴ Neumar RW, et. al. Implementation strategies for improving survival after out-of-hospital cardiac arrest in the United States. Consensus recommendations from the 2009 AHA Cardiac Arrest Survival Summit. *Circulation*. 2011;123;2898-2910; see table 1 below; high-lighted in red, under Hospital System Component.

4) A number of operational issues need to be included in our draft of the law:

- 1) We need a database to record all ST-Elevation Myocardial Infarction (STEMI) patients in Georgia. This will be the largest data gathering function of hospitals that desire to be designated Emergency Cardiac Care Centers (ECC). STEMI's outnumber Out of Hospital Cardiac Arrest (OHCA) by a factor of greater than two to one. Several possibilities exist:
 - a. The AHA ACTION Registry. This database is "located" at the American Heart Association and the data would not really be "owned" by the State of Georgia. It is a hospital-based registry and comes at an extra cost (> \$15,000/hospital) to the individual hospitals. It is not a submission of data to the State of Georgia and therefore could not be reliably used as a "condition" of being an Emergency Cardiac Care Center (ECC). It does allow for comparisons to other hospitals but does not necessarily compare State to State outcomes. So this database does not, in my mind, meet our need for gathering and sharing data amongst the hospitals in Georgia for the purpose of improving care and reducing cardiovascular death rates over the next 3 years.
 - b. The Minneapolis Heart Institute (MHI) STEMI Database. This is a large and well known database that is housed in Minneapolis, MN by the MHI Foundation. Dr. Tim Henry initiated this database more than 10 years ago and he would be willing to "help" Georgia initiate a separate STEMI-Database. He has suggested that several possible solutions could be accomplished.
 - c. The OASIS Database could be amended to accommodate STEMI patients in a prospective manner instead of the retrospective manner, by which it now tracks MI patients. Currently the OASIS Database uses hospital, administrative discharge data and death certificates to tabulate deaths from MI.
- 2) For patients who have OHCA where 911 is called, the CARES Registry is the only and probably the best solution for our State to gather all OHCA data. This will require an investment at the State level to employ CARES data managers to input and maintain a much larger data set. Additionally, hospitals who opt-in to become ECC hospitals will need additional personnel to interact with and input data for the CARES, State-wide initiative. Hospitals may also choose to submit survival data to other registries with more long term neurologic follow up of OHCA patients, but these supplemental registries do not gather data from all OHCA calls received by ambulances because all of these patients don't survive to hospital arrival. For this reason I believe our Committee should designate the CARES Registry as the State-Wide Georgia Database for inclusion in the ECC designation.
- 3) How will the law secure long-term funding for: i) a State-wide, "yet-to-be-determined" STEMI database solution and ii) the CARES data managers necessary to manage a more robust, State-Wide CARES Registry?
- 4) Should we give paramedics guidelines on which patients, based on clinical complexity, should be transported to hospitals with different ECC Levels of care; or should we avoid this completely? Washington chose to specify some guidelines or procedures (see Appendix A). Should we mirror the State of Washington Prehospital Cardiac Triage Destination Procedure or a similar plan to help medics decide where to transport patients with OHCA and STEMI patients? There are good data showing that timely treatment and transport can save lives in

- STEMI and OHCA patients. The guidelines/procedures for the State of Washington suggest accomplishing all ground transport within 30 minutes if possible. We should discuss several transport issues, but maybe the most contentious will be those between Level I and Level II hospitals in patients that are low risk vs patients that are high risk for cardiovascular death. In high risk patients (patients who have STEMI, cardiogenic shock or those who have return of spontaneous circulation [ROSC] after OHCA) transport to a Level I Center, including bypassing a closer Level II hospital, seems medically reasonable if it can be completed in 30 minutes or less. If high risk patients cannot arrive at a Level I hospital in less than 30 minutes, then a closer Level II hospital is appropriate. For low risk patients, transfer to the closest Level II or Level I hospital is appropriate. These guidelines may need to be adjusted for more rural areas in North and South Georgia. In patients with OHCA and no ROSC in the field, then transport to the closest ECC hospital is appropriate for continued CPR, with hopeful ROSC and transfer to an in-house cath lab or transfer to a hospital with which a pre-arranged transfer agreements are in place for rapid door-in to door-out time intervals. In situations where transport times will exceed 30 minutes, air transport should be considered.
- 5) We need to highlight the imperative to collect State-wide data on STEMI and OHCA patients with the goal of improving survival over the initial 3 years, by analyzing prospectively-collected data, giving feedback, improving processes and protocols for best practices in the chain of survival for patients who need ECCs in Georgia.
 - 6) We need to establish the application process. Do we need electronic validations or should there be visits to hospitals that complete applications? How does the law enforce compliance with data submission to STEMI and CARES databases? Should there be yearly or biannual reapplications?

(The Committee agreed at Meeting 4 that the realities of transport times needs more discussion. Additionally, discussion between potential Level I and Level II centers should be encouraged. This will help address any potential conflicts between transport to Level I and Level II centers.)