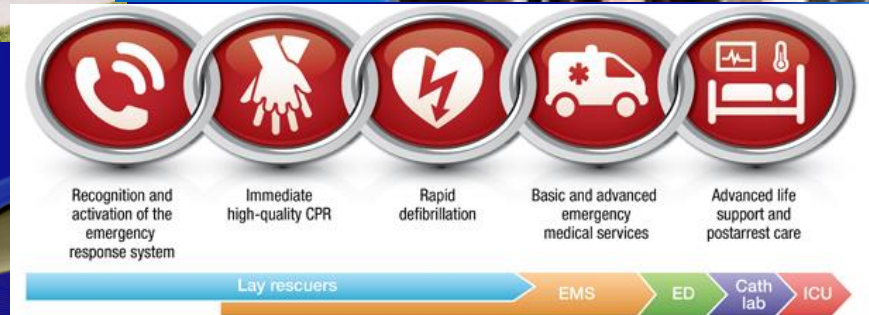


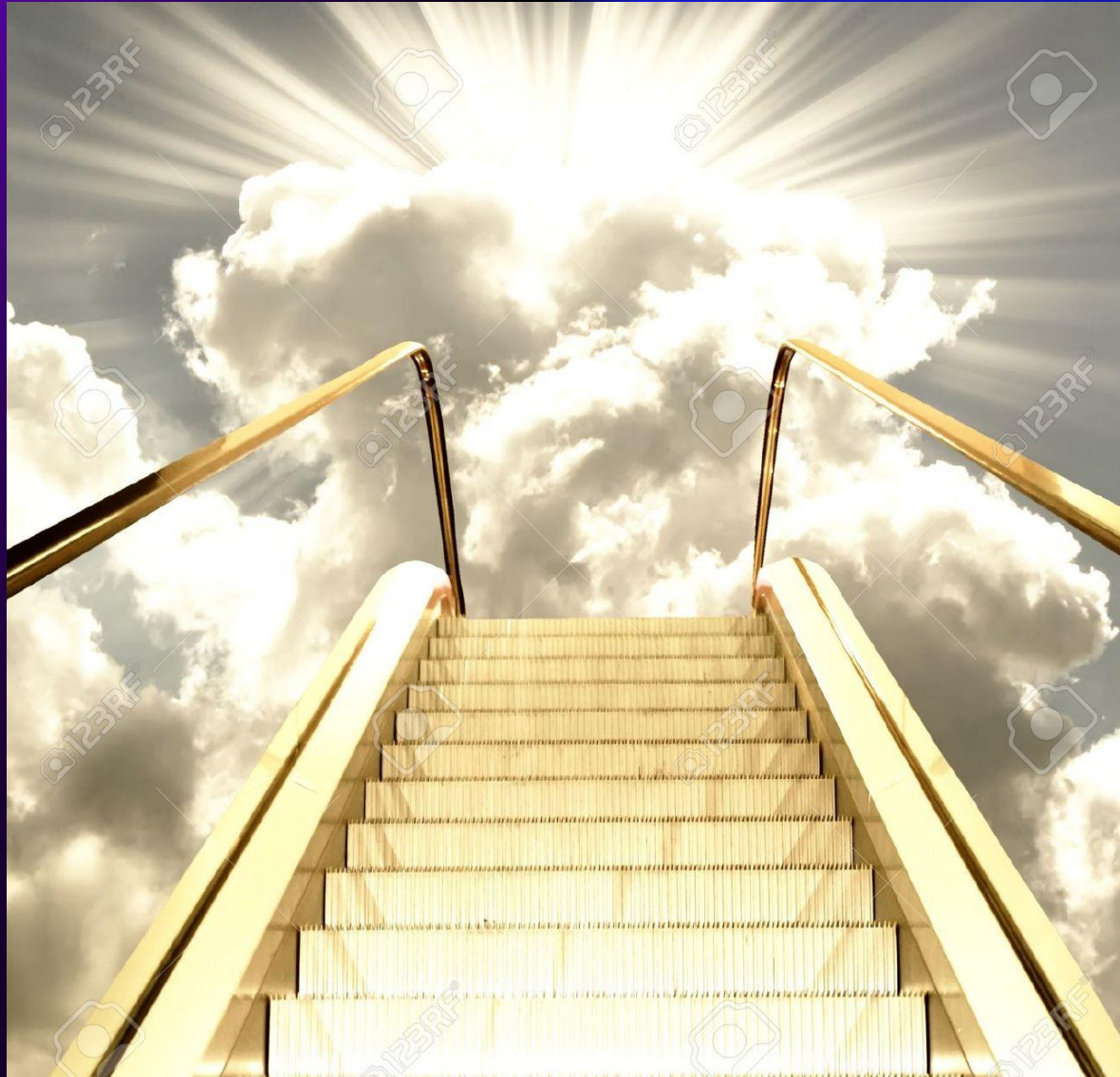
# ENSURING THE CHAIN OF SURVIVAL CARES REGISTRY



Kenneth A Scheppke, MD  
Chief Medical Officer  
Palm Beach County Fire Rescue

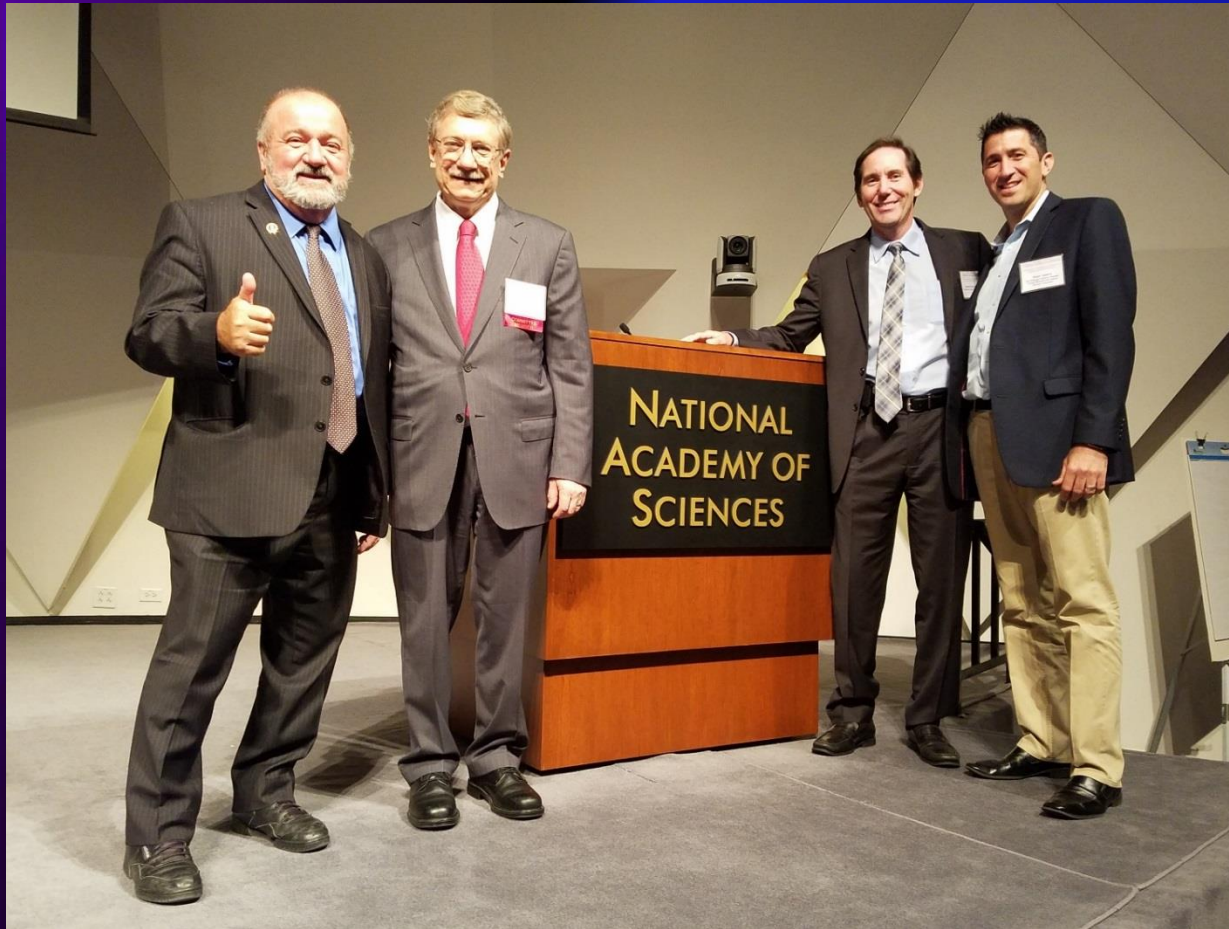


NO MAGIC BULLET...  
BUT THERE ARE GOLDEN STEPS



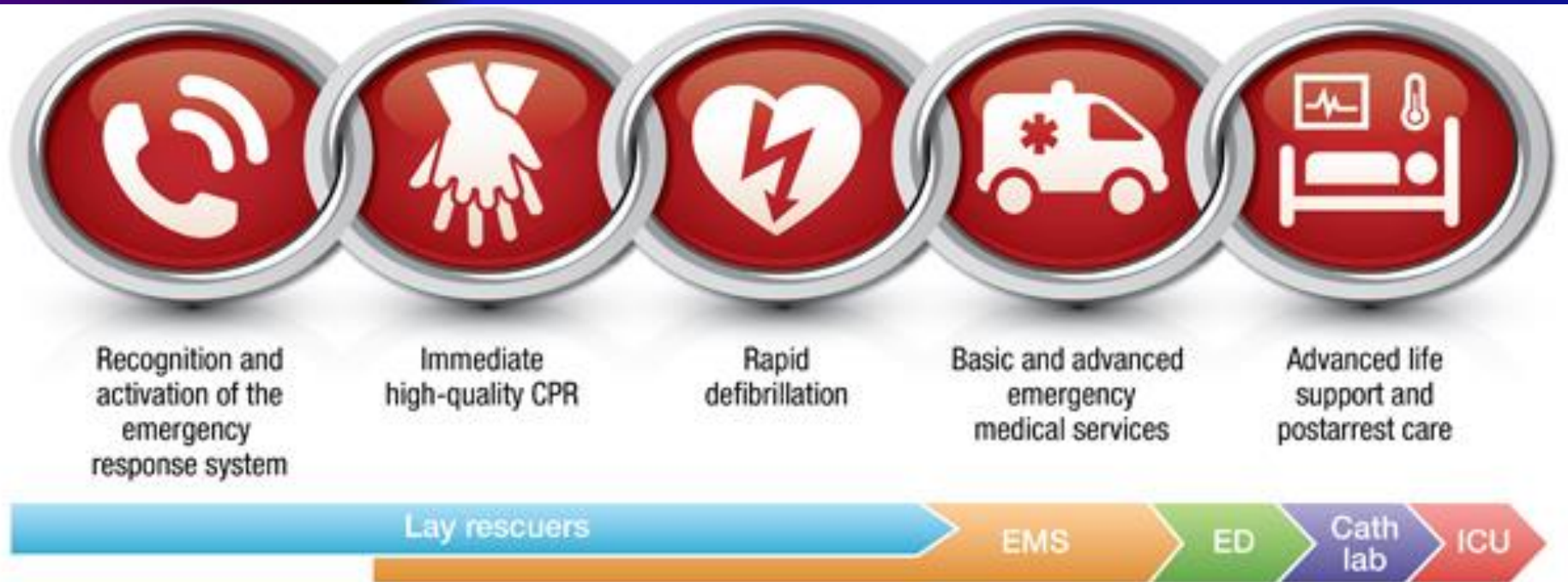


# NATIONAL INSTITUTE OF MEDICINE



<https://www.ncbi.nlm.nih.gov/books/NBK321497/>

# FIXING THE CHAIN OF SURVIVAL

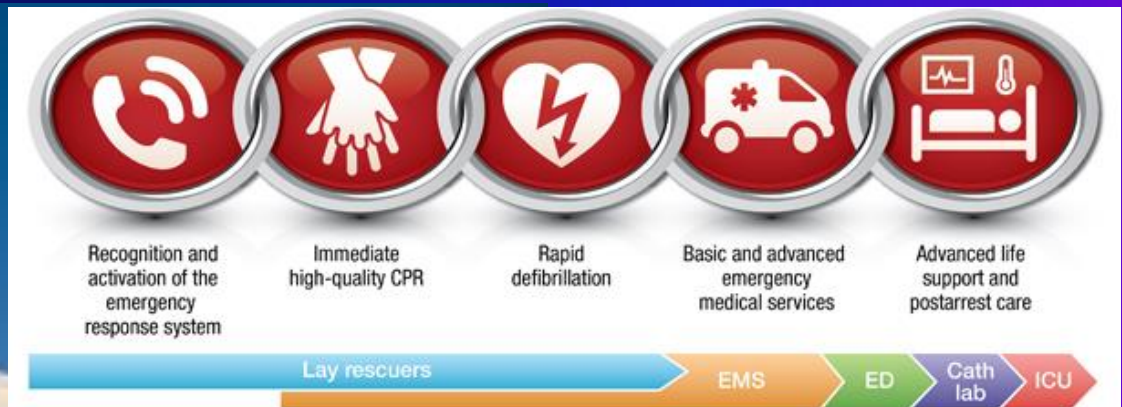


# PRE-HOSPITAL PROJECTS

- Hands Only CPR in Schools etc.
- No No GO Dispatcher Life Support
- Pit Crew CPR by EMS
- Mechanical CPR
- Active Compression Decompression CPR
- Head Up CPR



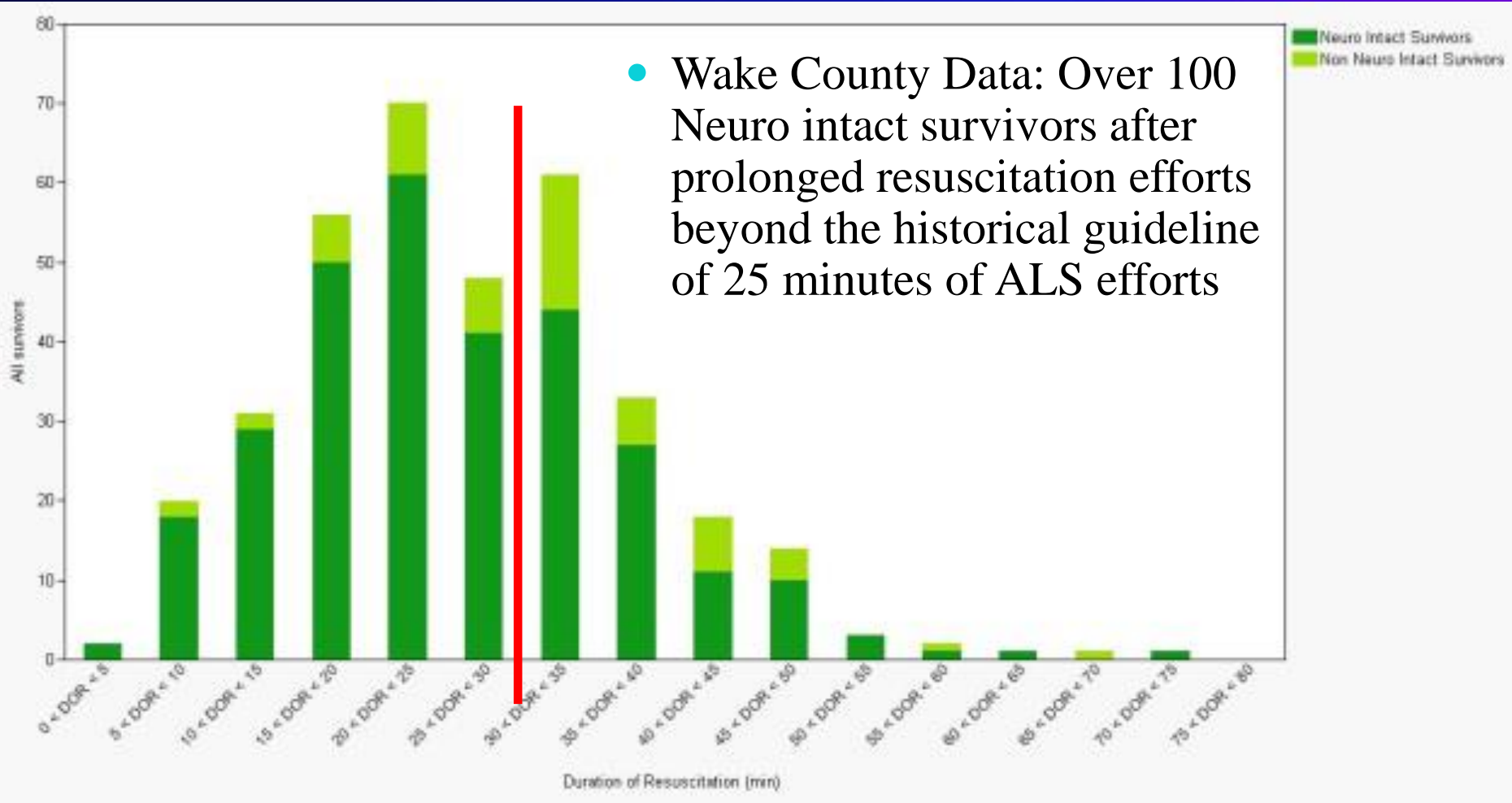
# What about resuscitation centers?



# Not Dead...Just Mostly Dead!!!



# Delayed Termination of Resuscitation





# Mild hypothermic neuroprotection in focal ischemic model

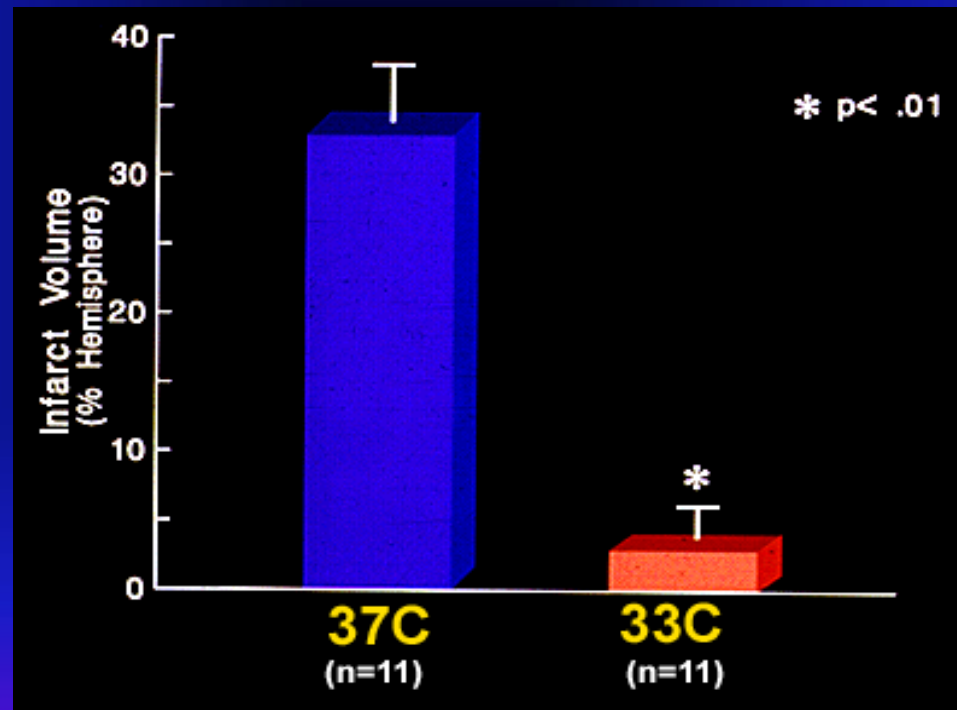
37°C



33°C



\*p < 0.05  
\*\*p < 0.01

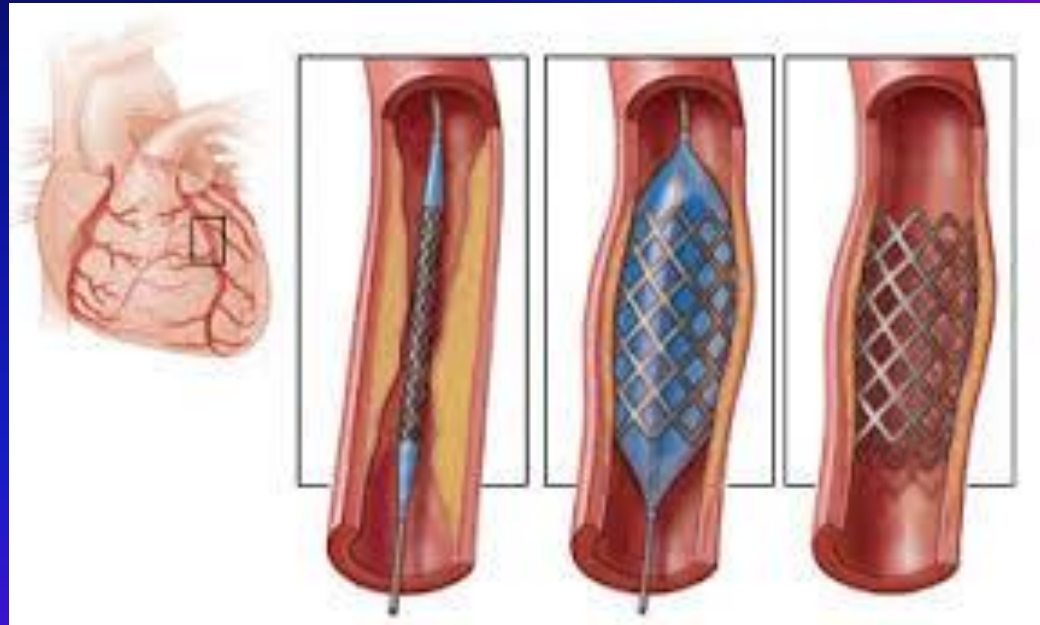
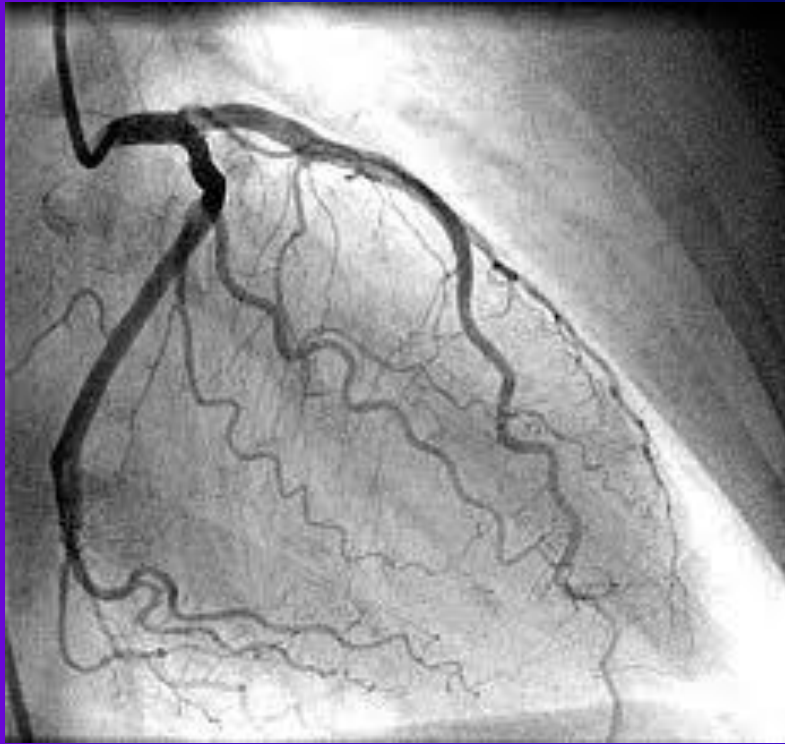


# Brain Death Determination Post TTM

Quality Standards Subcommittee of the American Academy of Neurology:

- **Neurological recovery cannot be predicted in the first 72 hours following hypothermic resuscitation**
- **Cardiopulmonary support should be maintained until adequate assessment of the patient's neurological prognosis.**
- **Do Not Resuscitate status should not be established and care should not be withdrawn based on neurologic prognosis before a minimum of 3-5 days after rewarming**

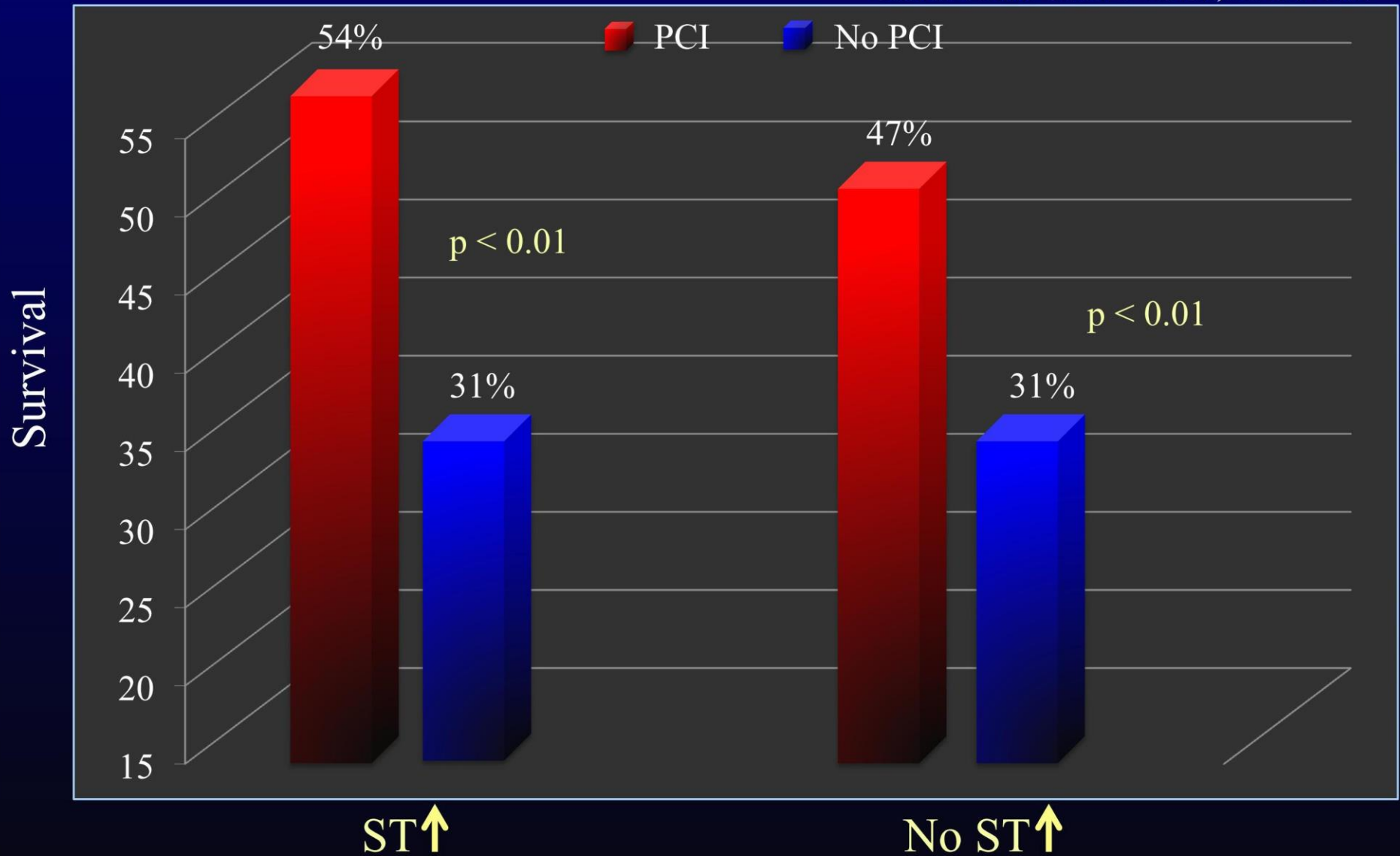
# What about PCI?





# Immediate PCI s/p Arrest – Survival Benefits

*Cardiovasc Interv 2010;3:200-207*



# VF Cardiac Arrest to Cath Lab



# Mechanical CPR as Bridge to Cath Lab



- Use ETCO<sub>2</sub> as marker of viability rather than time of efforts
- 50% Neuro Intact Survival in ongoing Minneapolis trial
- If unsuccessful considered an ER rather than Cath lab death (AHA)



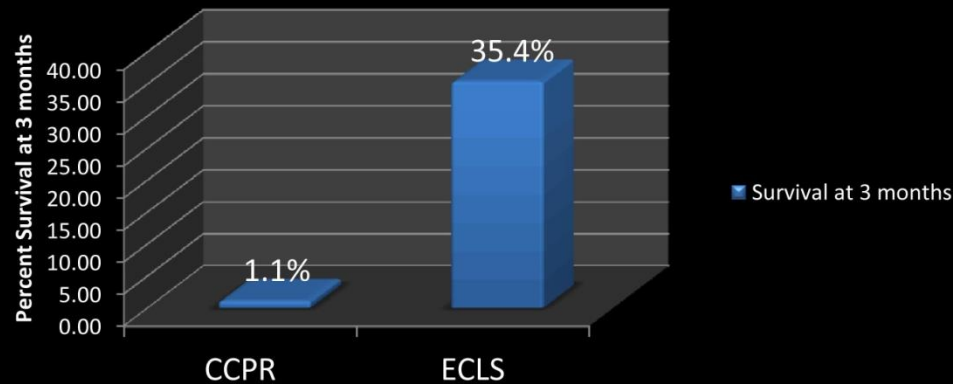
# ECLS

## **Extracorporeal CPR can extend the critical time window for successful resuscitation in out-of-hospital cardiac arrest**

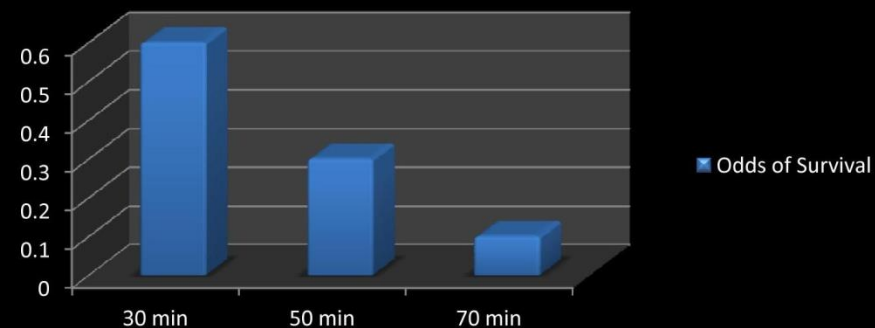
Maekawa K., Tanno K., Hase M., Mori K., Asai Y.

*Traumatology and Critical Care Medicine, Sapporo Medical University, Japan*

**Survival at 3 months**



**ECLS Patients Odds of Survival vs Downtime**



# What is a Resuscitation Center (AKA Cardiac Arrest Center)?

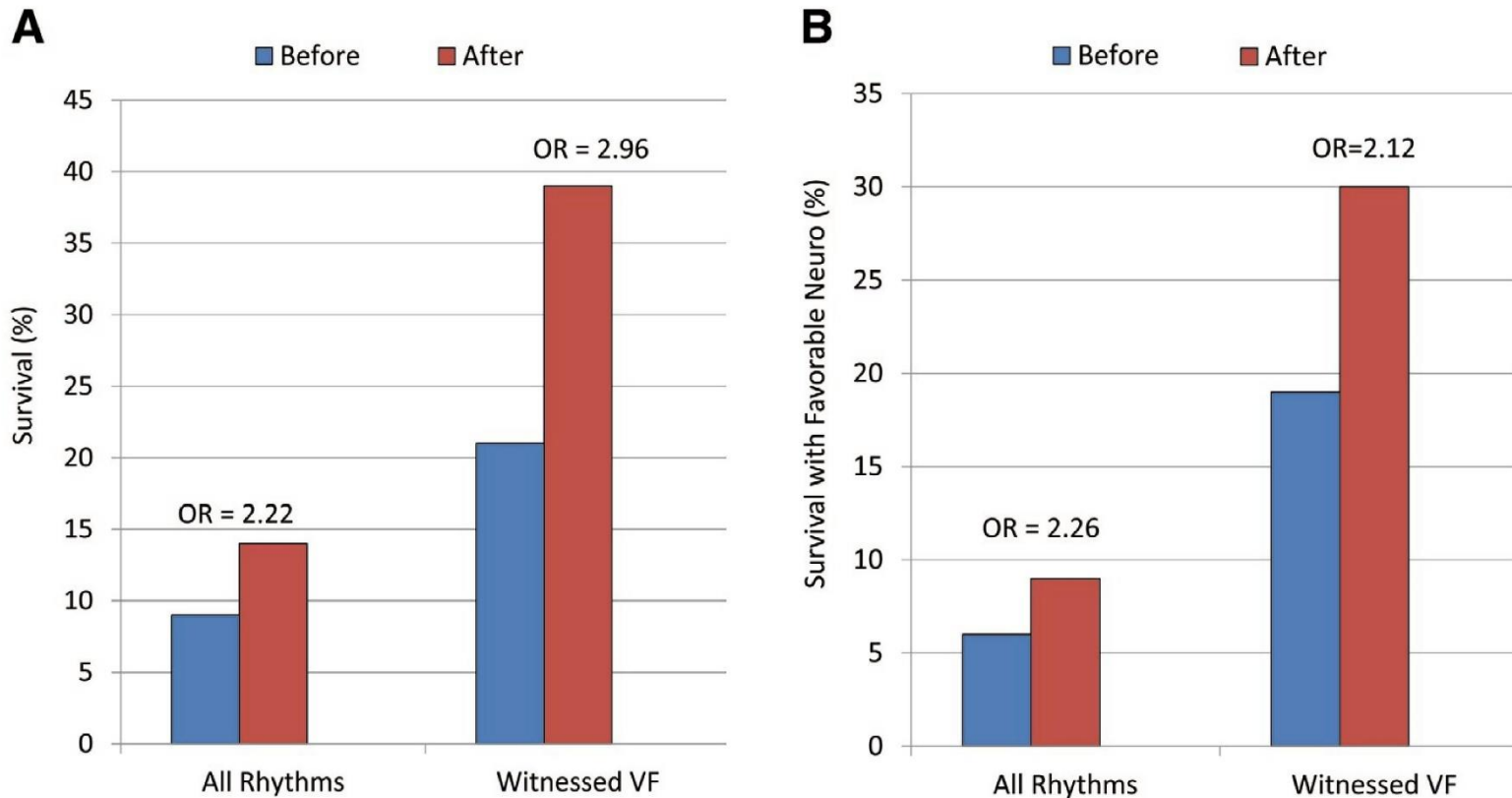
**Table 2. Requirements for Being Recognized as an Arizona Cardiac Receiving Center\***

In order to be recognized as a Cardiac Receiving Center, a hospital must have:

- 1) A TTM method and associated protocol for OHCA patients
- 2) Primary 24/7 PCI capability with protocol for OHCA, including consultation with a Cardiology Interventionist for consideration of emergency PCI
- 3) A system, included in the protocol, for timely completion of the data form for EACH OHCA patient (NOT just cooled patients) and a data form for ALL EMS and ALL walk-in suspected STEMI patients. These forms are completed electronically on the CEDaR site
- 4) An evidence-based termination of resuscitation protocol (including a 72-h moratorium on termination of care for patients receiving TTM). Sample wording available: <http://azdhs.gov/azshare/documents/termination-of-resuscitation.pdf>
- 5) Daily EEG monitoring of post-cardiac arrest patients who undergo TTM to monitor neurological status. Daily EEG at a minimum, but continuous if available
- 6) A protocol to address organ donation
- 7) CPR training for the community (hands-only CPR or certification classes)
- 8) 6 months of baseline OHCA data – please contact Margaret Mullins to receive access to the online data submission system. [mjmmullins@medadmin.arizona.edu](mailto:mjmmullins@medadmin.arizona.edu) (520-837-9590)
- 9) At least 1 hospital representative involved in cardiac care attending the bi-annual Cardiac Center meetings to ensure all Cardiac Receiving and Referral Centers operate and maintain their recognition in a consistent manner.

\*From the [www.azshare.gov](http://www.azshare.gov) website on March 3, 2015. CEDaR, Cardiac Event Data and Reporting; CPR, cardiopulmonary resuscitation; EEG, electroencephalography; EMS, emergency medical service; OHCA, out-of-hospital cardiac arrest; PCI, percutaneous coronary intervention; STEMI, ST-elevation myocardial infarction; TTM, targeted temperature management.

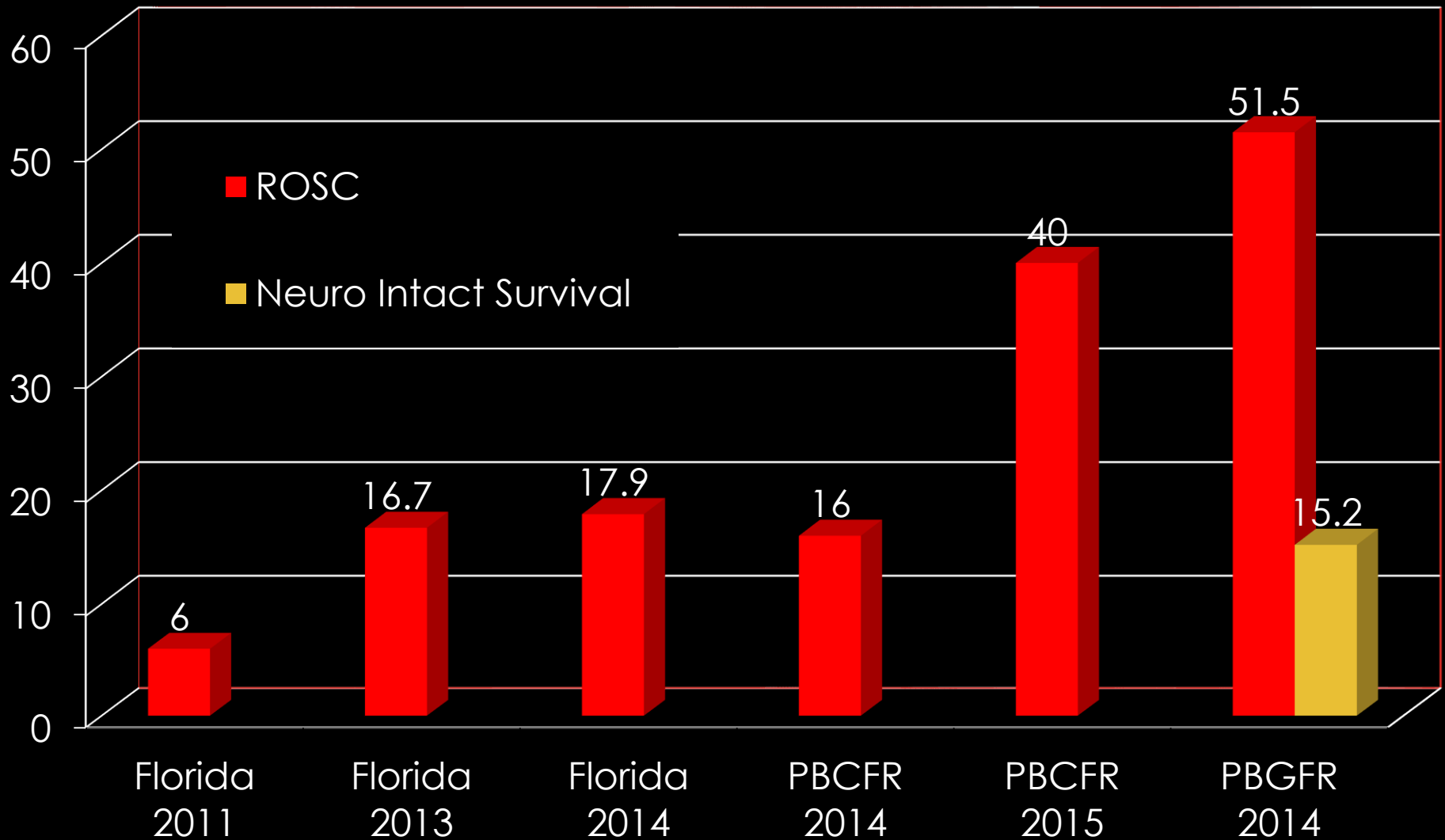
# Resuscitation Center Outcomes



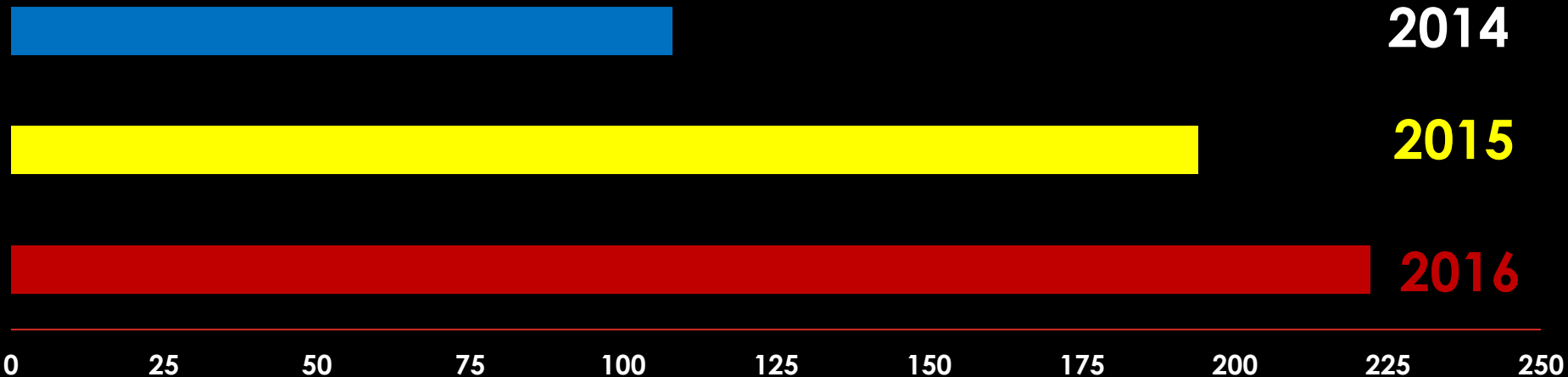
**Figure 4.** (A,B) Improved outcomes after instituting State-wide cardiac arrest centers (CACs). Both survival and survival with favorable neurological function increased in Arizona medical centers after their designation as CACs. After, designation as a CAC; Before, before designation as a CAC; OR, odds ratio; VF, ventricular fibrillation.



# EFFECT OF SYSTEM CHANGES ON ROSC



# Total Number of Out of Hospital Cardiac Arrest Patients Resuscitated by EMS (by Year)

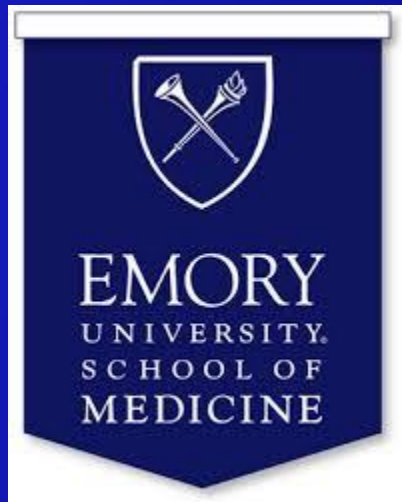


IF YOU DON'T MEASURE IT YOU  
CAN'T IMPROVE IT



CARES

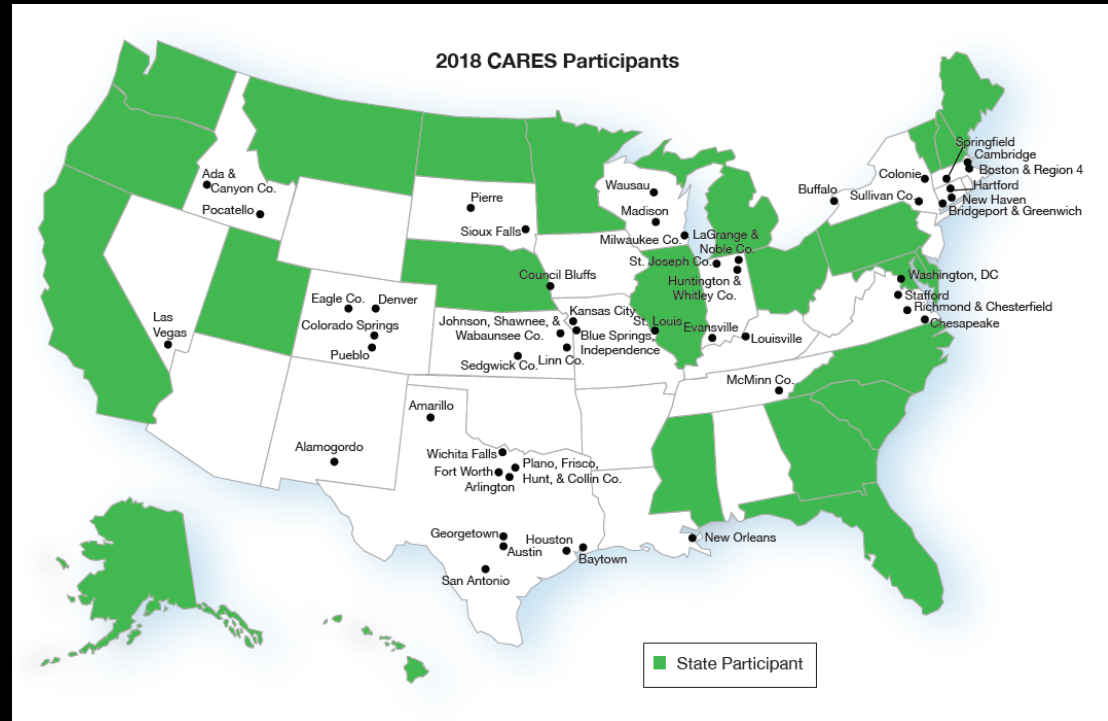
Cardiac Arrest Registry  
to Enhance Survival





# CARES COVERAGE

- 24 States
- 1800 Hospitals
- 1400 EMS Agencies
- 106 Million People Covered



**<https://mycares.net>**

# CARES DATA FIELDS

## Mandatory Fields

- ER Outcome
- Hypothermia
- Hospital Outcome
- Discharge Location
- Neuro Outcome

## Optional Fields

- Final Diagnosis MI?
- Coronary Angiography Performed?
- CABG Performed?
- ICD Placed?

**<https://mycares.net>**

# CARES CONTACTS

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Data Upload

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Chief Thomas DiBernardo

Florida CARES Coordinator

[Thomas.DiBernardo@flhealth.gov](mailto:Thomas.DiBernardo@flhealth.gov)

[\*\*\*https://mycares.net\*\*\*](https://mycares.net)

# Questions?

