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
FIXING THE CHAIN OF SURVIVAL

- Recognition and activation of the emergency response system
- Immediate high-quality CPR
- Rapid defibrillation
- Basic and advanced emergency medical services
- Advanced life support and postarrest care
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

- Wake County Data: Over 100 Neuro intact survivors after prolonged resuscitation efforts beyond the historical guideline of 25 minutes of ALS efforts
Mild hypothermic neuroprotection in focal ischemic model

37°C

33°C

*p < 0.05
**p < 0.01

Maier, Sun, Kunis, Yenari, Steinberg, *J Neurosurg* 94:90-96, 2001
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- Do Not Resuscitate status should not be established and care should not be withdrawn based on neurologic prognosis before a minimum of 3-5 days after rewarming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

54% PCI

47% No PCI

p < 0.01

31% No ST↑

31% No ST↑

p < 0.01
VF Cardiac Arrest to Cath Lab
Mechanical CPR as Bridge to Cath Lab

- Use ETCO2 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)
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
What is a Resuscitation Center (AKA Cardiac Arrest Center)?

<table>
<thead>
<tr>
<th>Table 2. Requirements for Being Recognized as an Arizona Cardiac Receiving Center*</th>
</tr>
</thead>
<tbody>
<tr>
<td>In order to be recognized as a Cardiac Receiving Center, a hospital must have:</td>
</tr>
<tr>
<td>1) A TTM method and associated protocol for OHCA patients</td>
</tr>
<tr>
<td>2) Primary 24/7 PCI capability with protocol for OHCA, including consultation with a Cardiology Interventionist for consideration of emergency PCI</td>
</tr>
<tr>
<td>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</td>
</tr>
<tr>
<td>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</td>
</tr>
<tr>
<td>6) A protocol to address organ donation</td>
</tr>
<tr>
<td>7) CPR training for the community (hands-only CPR or certification classes)</td>
</tr>
<tr>
<td>8) 6 months of baseline OHCA data – please contact Margaret Mullins to receive access to the online data submission system. <a href="mailto:mjmullins@medadmin.arizona.edu">mjmullins@medadmin.arizona.edu</a> (520-837-9590)</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

*From the 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.
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

- ROSC
- Neuro Intact Survival

<table>
<thead>
<tr>
<th>Location</th>
<th>Year</th>
<th>ROSC</th>
<th>Neuro Intact Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>2011</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>2013</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>2014</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>PBCFR</td>
<td>2014</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>PBCFR</td>
<td>2015</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>PBGFR</td>
<td>2014</td>
<td>51.5</td>
<td></td>
</tr>
</tbody>
</table>
Total Number of Out of Hospital Cardiac Arrest Patients Resuscitated by EMS (by Year)

- 2014
- 2015
- 2016

Palm Beach County Fire Rescue
IF YOU DON’T MEASURE IT YOU CAN’T IMPROVE IT

CARES
Cardiac Arrest Registry to Enhance Survival

Emory University School of Medicine

Centers for Disease Control and Prevention
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

Monica Rajdev
Data Upload
mmehta5@emory.edu

Chief Thomas DiBernardo
Florida CARES Coordinator
Thomas.DiBernardo@flhealth.gov

https://mycares.net
Questions?