2018 EMS STATE OF THE SCIENCE Gathering of Eagles

Registry-ing the Buckeyes
Instituting a Statewide CARES Program

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Adjunct Professor Ohio State University Wexner Medical Center
Disclosures

NO SOUP FOR YOU!!
What are the challenges in establishing a state wide CARES program and what are some of the benefits?
Why collect OHCA data?
“Most cities don’t measure their performance effectively, if at all. They don’t know how many lives they are losing, so they can’t determine ways to increase survival rates.”

- Bob Davis, “Six Minutes to Live” USA Today, 2005
Quality Improvement Elements of a Resuscitation System

Developing a culture of high quality resuscitation.
IOM Recommendations

Establish a National Cardiac Arrest Registry

Foster a Culture of Action Through Public Awareness and Training

Enhance the Capabilities and Performance of Emergency Medical Services (EMS) Systems

Set National Accreditation Standards Related to Cardiac Arrest for Hospitals and Health Care Systems

Adopt Continuous Quality Improvement Programs

Accelerate Research on Pathophysiology, New Therapies, and Translation of Science for Cardiac Arrest

Accelerate Research on the Evaluation and Adoption of Cardiac Arrest Therapies

Create a National Cardiac Arrest Collaborative
What is CARES?

Cardiac Arrest Registry to Enhance Survival
To help communities determine standardized outcome measures for out-of-hospital cardiac arrest allowing for quality improvement efforts and benchmarking capability to improve care and increase survival.
**CARES “Beginnings”**

**Need for a registry**

- Original idea “sparked” from AED placement in the community
- Began in Atlanta with Grady EMS
- Slowly expanded nationally and then internationally with PAROS

**CARES as the solution**

CARES is the data collection mechanism that could:

- Make the data collection process more efficient
- Provide the ability to:
  - Identify strengths and weaknesses to improve care
  - Benchmark outcomes with other communities

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**Circulation**

[Image of Circulation journal]

**Measuring Outcomes. Improving Care. Saving Lives.**

[Image of CARES website]

[Image of CARESregistry.org]

Copyright © 2008 American Heart Association. All rights reserved. Print ISSN: 0009-7322. Online ISSN: 1524-4539
COLUMBUS FIRE GO-LIVE DATE 9-1-2007
Geo-coded CARES data

Out-of-Hospital Cardiac Arrests with Bystander CPR
CARES data - Fulton County, Georgia, 2011-2013
2016 Footprint

- 106 million catchment area
- 33% US pop covered
- More than 1,400 EMS Agencies
- More than 2,000 Hospitals
- 64 communities in 23 states
- 19 statewide participants

CARES Annual Call Volume
What information does CARES collect?

IT'S NOT THE SIZE OF YOUR DATA THAT MATTERS

IT'S HOW YOU USE IT!
CARES has Two Methods for EMS data collection

Direct entry online and ePCR extraction

Direct Entry Online

• Data can be entered anywhere there is internet access
• Designated EMS contact
• Data is audited by CARES staff

ePCR Extraction

• CARES compliant vendors:
  – Physio-Control/HealthEMS
  – ImageTrend
  – Open/SafetyPad
  – ESO Solutions
  – Zoll
CARES event is:
- Non-traumatic cardiac arrest
- Resuscitation attempted by 911 responder

EMS entry “initiates” the event

Majority multiple choice fields

KEEP IT SIMPLE philosophy
### Part D: EMS Interventions (check all that apply)

**38 - Mechanical CPR device used:**
- Yes
- No

If 'Yes', please specify:
- Load-Distributing Band (AutoPulse)
- Mechanical Piston
- Active Compression Decompression (LUCAS™ Device)
- Other

**39 - Automated CPR feedback device used:**
- Yes
- No

**40 - Advanced airway successfully placed in the field:**
- Yes
- No

If 'Yes', please specify:
- Combitube
- Oral/Nasal ET
- King airway
- Other
- LMA

**41 - ITD used:**
- Yes
- No

If 'Yes', select how:
- Bag valve mask
- King Airway
- Other
- Endotracheal tube
- LMA
- Combitube
- Oral/Nasal ET

**42 - Were drugs administered:**
- Yes
- No

If 'Yes', select drugs given:
- Epinephrine
- Bicarbonate
- Vasopressin
- Atropine
- Dextrose
- Lidocaine
- Amiodarone
- Other

**43 - Vascular access:**
- No IV
- IV
- IO

**44 - 12 Lead:**
- Yes
- No

**45 - STEMI:**
- Yes
- No
- Unknown

If 'Yes', select location:
- Anterior
- Inferior
What is the output?
# CARES Summary Report

Demographic and Survival Characteristics of OHCA

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<tr>
<th>Data</th>
<th>EMS Agency</th>
<th>State</th>
<th>National</th>
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<td>N - 42</td>
<td>N - 510</td>
<td>N - 4993</td>
<td>N - 4993</td>
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<tr>
<td><strong>Age</strong></td>
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<td></td>
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<tr>
<td>Mean</td>
<td>57.8</td>
<td>67.3</td>
<td>63.8</td>
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<td>Median</td>
<td>61.5</td>
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<td>66.0</td>
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<tr>
<td><strong>Gender (%)</strong></td>
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<td></td>
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<tr>
<td>Female</td>
<td>32 (76.2)</td>
<td>330 (64.7)</td>
<td>2585 (56.8)</td>
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<td>Male</td>
<td>10 (23.8)</td>
<td>180 (35.3)</td>
<td>2005 (40.2)</td>
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<td><strong>Race (%)</strong></td>
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<td></td>
<td></td>
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<td>American-Indian/Alaskan</td>
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<td>2 (0.4)</td>
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<td>Asian</td>
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<td>Black/African-American</td>
<td>30 (71.4)</td>
<td>24 (4.7)</td>
<td>1066 (21.3)</td>
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<td>Hispanic/Latino</td>
<td>0 (0.0)</td>
<td>5 (0.9)</td>
<td>266 (5.0)</td>
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<td>Native Hawaiian/Pacific Islander</td>
<td>0 (0.0)</td>
<td>3 (0.6)</td>
<td>48 (0.9)</td>
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<tr>
<td>White</td>
<td>8 (18.0)</td>
<td>180 (35.3)</td>
<td>2294 (45.9)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (4.6)</td>
<td>224 (43.9)</td>
<td>1185 (23.1)</td>
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<tr>
<td><strong>Location of Arrest (%)</strong></td>
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<td></td>
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<tr>
<td>Home/Residence</td>
<td>27 (64.3)</td>
<td>377 (73.9)</td>
<td>3933 (78.6)</td>
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<tr>
<td>Nursing Home</td>
<td>0 (0.0)</td>
<td>37 (7.3)</td>
<td>563 (11.3)</td>
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<td>Public Setting</td>
<td>15 (35.7)</td>
<td>96 (18.9)</td>
<td>897 (18.0)</td>
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<tr>
<td><strong>Arrest witnessed (%)</strong></td>
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<tr>
<td>Bystander Witnessed</td>
<td>9 (21.4)</td>
<td>185 (36.3)</td>
<td>1826 (36.0)</td>
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<tr>
<td>Witnessed by 911 Responder</td>
<td>5 (11.9)</td>
<td>65 (12.7)</td>
<td>579 (11.8)</td>
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<td>Unwitnessed</td>
<td>28 (64.7)</td>
<td>200 (41.0)</td>
<td>2050 (41.8)</td>
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<td><strong>Who initiated CPR (%)</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Not Applicable</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>6 (0.1)</td>
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<tr>
<td>Bystander</td>
<td>15 (35.7)</td>
<td>195 (37.4)</td>
<td>2027 (40.5)</td>
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<tr>
<td>First Responder</td>
<td>10 (23.8)</td>
<td>140 (26.8)</td>
<td>1416 (28.6)</td>
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<tr>
<td>Emergency Medical Services (EMS)</td>
<td>17 (40.5)</td>
<td>171 (33.5)</td>
<td>1544 (30.9)</td>
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<tr>
<td><strong>Was an AED applied prior to EMS arrival (%)</strong></td>
<td>42</td>
<td>310</td>
<td>4993</td>
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<tr>
<td>Yes</td>
<td>10 (23.8)</td>
<td>70 (14.7)</td>
<td>1492 (29.4)</td>
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<tr>
<td>No</td>
<td>32 (76.2)</td>
<td>430 (85.3)</td>
<td>3542 (70.6)</td>
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<td><strong>Who first applied automated defibrillator (%)</strong></td>
<td>10</td>
<td>87</td>
<td>1481</td>
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<tr>
<td>Bystander</td>
<td>2 (20.0)</td>
<td>14 (16.1)</td>
<td>268 (18.1)</td>
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<tr>
<td>First Responder</td>
<td>8 (80.0)</td>
<td>52 (83.9)</td>
<td>1222 (81.9)</td>
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<td><strong>Who first defibrillated the patient (%)</strong></td>
<td>38</td>
<td>510</td>
<td>4772</td>
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<tr>
<td>Not Applicable</td>
<td>24 (63.2)</td>
<td>352 (69.0)</td>
<td>3261 (69.3)</td>
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<tr>
<td>Bystander</td>
<td>0 (0.0)</td>
<td>6 (1.2)</td>
<td>82 (1.7)</td>
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<tr>
<td>First Responder</td>
<td>8 (18.6)</td>
<td>26 (5.1)</td>
<td>318 (6.7)</td>
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<tr>
<td>Responding EMS Personnel</td>
<td>8 (21.1)</td>
<td>126 (24.7)</td>
<td>1146 (24.1)</td>
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<tr>
<td><strong>First Arrest Rhythm (%)</strong></td>
<td></td>
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<tr>
<td>VF/VT/VTSh/Unknown Shockable Rhythm</td>
<td>11 (26.8)</td>
<td>95 (18.6)</td>
<td>913 (18.6)</td>
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<td>Asystole</td>
<td>26 (61.9)</td>
<td>250 (49.0)</td>
<td>2457 (49.2)</td>
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<td>Idioventricular/PEA</td>
<td>4 (9.5)</td>
<td>136 (26.5)</td>
<td>1049 (21.0)</td>
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<td>Unknown Unshockable Rhythm</td>
<td>1 (2.4)</td>
<td>21 (4.1)</td>
<td>574 (11.5)</td>
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<td><strong>Sustained ROSC (%)</strong></td>
<td></td>
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<tr>
<td>Yes</td>
<td>13 (31.0)</td>
<td>150 (28.4)</td>
<td>1592 (31.9)</td>
</tr>
<tr>
<td>No</td>
<td>29 (69.0)</td>
<td>360 (70.6)</td>
<td>3401 (68.1)</td>
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<tr>
<td><strong>Was hypothermia care provided in the field (%)</strong></td>
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<td>507</td>
<td>4987</td>
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<tr>
<td>Yes</td>
<td>2 (4.8)</td>
<td>19 (3.7)</td>
<td>594 (10.1)</td>
</tr>
<tr>
<td>No</td>
<td>40 (95.2)</td>
<td>488 (96.3)</td>
<td>4483 (89.9)</td>
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<tr>
<td><strong>Pre-hospital Outcome (%)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pronounced in Field</td>
<td>5 (11.9)</td>
<td>307 (60.0)</td>
<td>1492 (29.0)</td>
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<tr>
<td>Pronounced in ED</td>
<td>10 (23.8)</td>
<td>51 (10.0)</td>
<td>676 (13.5)</td>
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<tr>
<td>Ongoing Resuscitation in ED</td>
<td>27 (64.3)</td>
<td>252 (49.4)</td>
<td>2625 (52.6)</td>
</tr>
<tr>
<td><strong>Overall Survival (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Survival to Hospital Admission</td>
<td>9 (21.4)</td>
<td>133 (26.5)</td>
<td>1359 (27.2)</td>
</tr>
<tr>
<td>Overall Survival to Hospital Discharge</td>
<td>7 (16.7)</td>
<td>54 (10.9)</td>
<td>508 (10.2)</td>
</tr>
<tr>
<td>With Good or Moderate Cerebral Performance</td>
<td>5 (11.9)</td>
<td>45 (8.8)</td>
<td>396 (8.0)</td>
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<tr>
<td>Missing hospital outcome</td>
<td>1</td>
<td>2</td>
<td>16</td>
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<tr>
<td><strong>Utstein Survival (%)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 (12.2)</td>
<td>53 (10.6)</td>
<td>544 (10.9)</td>
</tr>
<tr>
<td>No</td>
<td>40 (87.8)</td>
<td>445 (89.4)</td>
<td>4485 (90.1)</td>
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<tr>
<td><strong>Utstein Bystander Survival (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (2.4)</td>
<td>44 (8.8)</td>
<td>44 (8.8)</td>
</tr>
<tr>
<td>No</td>
<td>41 (97.6)</td>
<td>501 (91.2)</td>
<td>461 (91.2)</td>
</tr>
</tbody>
</table>
CARES Funding “History” & Subscription Fee

Overview

• CDC funded CARES from 2004-2012
• In 2012, CARES transitioned to private funding
  • Funders asked CARES to pursue a more sustainable funding model
• CARES implemented a subscription model in 2016
• Participants can subscribe as an individual site/community

<table>
<thead>
<tr>
<th>Site &amp; State Fees for Subscription Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Subscription</strong></td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Site</td>
</tr>
<tr>
<td>Site</td>
</tr>
<tr>
<td>Site</td>
</tr>
<tr>
<td>State</td>
</tr>
</tbody>
</table>
What Do Sites/States Get for their Participation?

- A customized CARES account with 24/7 access to the registry
- As many unique users as needed for your account
- Real-time automated reporting features that allow for benchmarking against a national de-identified dataset and state de-identified dataset (as applicable)
- The ability to export your raw dataset into Excel at anytime
- Training and ongoing support from CARES staff
- An annual, finalized national report generated in April each year
- Access to CARES optional dataset modules: Dispatcher Assisted CPR Training, Targeted Temperature Management and CPR Quality Metrics
- Access to all CARES ongoing software updates
- An established network and community of high performing EMS agencies
- Legitimacy with hospitals and the community by participating and reporting through a neutral third party national database
Two years of conference calls
$15,000 ANNUAL SUBSCRIPTION FEE
• Key stakeholders identify a person who is the designated “state coordinator”
  • 1 FTE or a portion of an FTE

• Key stakeholders identify pilot agency/city/county and eventually develop a plan for state roll-out

• CARES trains and provides ongoing support to the state coordinator
  • Training is organized into “modules”
  • Conducted via web meetings & phone calls
  • Ability for in-person “crash course”

• State coordinator oversees day to day implementation and operation of the registry in their state
  • Ongoing support from CARES Liaison
  • Primary contact for all participating agencies and hospitals
  • Participates in CARES State Coordinator User Group
In order to engage in statewide participation, key stakeholders in the state must identify a **local coordinator** who oversees CARES operations in the state. This role can be a full FTE or a portion thereof depending on the state population and plans for expansion.
“They all die anyway, don’t they?..”

Urban and Rural Partnerships
**Key goals:**

Improve care and outcomes for out-of-hospital cardiac arrest through the “measure and improve” strategy.

Measure cardiac arrest care through the use of CARES

Improve SCA survival rates through use of the Resuscitation Academy model to educate providers and stakeholders on best practices.
“What a community can gain from measuring & truly understanding the quality of its cardiac arrest care and cardiac arrest patient outcomes is invaluable – and I think CARES is the best way to do that.”

Douglas Kupas, MD
Commonwealth EMS Medical Director, PA
Department of Health
ULTIMATE GOAL