Cardiac Arrest Registry to Enhance Survival

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CARES Funding Partners

- American Red Cross
- American Heart Association
- Emory University
- Medtronic Philanthropy
- Zoll Corporation
- CDC (2004-2012)
Improving Emergency Cardiac Care Saves Lives

CARES
Cardiac Arrest Registry to Enhance Survival

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention
CARES Mission Statement

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 Vision Statement

To become the standard out-of-hospital cardiac arrest registry for the United States allowing for uniform data collection and quality improvement in each state and nationally.
Impact of the Links in the Chain of Survival

New England Journal of Medicine, 2004; 351(7): 647-656
Disparate outcomes are almost certainly due to timeliness and quality of treatment.
You can’t manage what you can’t measure!

The first step to improving survival rates is to begin collecting data in order to better understand performance.
“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, 2003
“What is missing is a standard set of measures that can be used to assess the performance of the emergency and trauma care system within each community, as well as the ability to benchmark that performance against statewide and national performance metrics.”
Developing a culture of high quality resuscitation.

OHCA Registries

Danish Registry
OHCAR - Ireland
Swedish Registry
Japanese All Utstein Registry
EuReCa - Europe
PAROS – Asia
CARES - US
ROC - North America
The Cardiac Arrest Registry to Enhance Survival

In 2004, the Centers for Disease Control and Prevention (CDC) collaborated with Emory University to develop a registry that could help increase OHCA survival rates.

CARES is a secure, Web-based data management system in which participating communities enter local data and generate their own reports. Communicates compare their EMS system performance to be de-identified aggregate statistics at the local, state, or national level and discover practices that could improve emergency and cardiac care.
CARES as a uniform data collection system for OHCA

Need for a registry

- Data collection into a registry at the regional, state or national level enables providers or EMS systems to benchmark their outcomes and results with other communities

- Allows for identification of strengths and weaknesses used to improve the quality of care

- Steps toward making cardiac arrest a reportable disease

CARES

Data collection mechanism

- Makes the data collection process more efficient - linkage between EMS, Hospital and dispatch outcome

- Benchmarking capabilities

- Measurement tool for effectiveness
CARES software is web based

Allows for the consolidation of three separate silos of data

Sansio
- Mainframe housed in Duluth, MN USA

Internet database system
- https://mycares.net
- HIPAA compliant security

Reporting features
- Utstein Survival Reports
- EMS/FR response time reports
- Demographic reports
- Excel Export

Unifies EMS, 911 dispatch, and hospital data
- Any EMS system throughout US
CARES has two methods for EMS data collection

Direct entry online and mobile field entry

Direct entry online

• Data can be entered directly into the registry wherever there is an internet connection by CARES EMS contact or EMS field providers/supervisors

Mobile field entry

• Data can be automatically extracted from the electronic Patient Care Report which then auto-populates the CARES registry.
# Cardiac Arrest Registry

## Part A: Demographic Information
1. Street Address (Where Arrest Occurred)
2. City
3. State
4. Zip Code
5. First Name
6. Last Name
7. Age
8. Date of Birth
9. Gender
10. Race/Ethnicity
11. Hispanic/Latino
12. Emergency Medical Services (EMS) Personnel
13. Firefighter
14. Police Officer
15. Other

## Part B: Basic Information
14. Date of Arrest
15. Incident #

## First Responding Agency
16. First Responder
17. Destination Hospital

## Part C: Arrest Information
18. Location Type
- Home/Residence
- Public/Commercial Area
- Place of Recreation
- Street/Highway
- Nursing Home
- Other Specified

## Arrest Witnessed
19. Arrest Witnessed
20. Arrest After Arrival of 911 Responder
21. Presumed Cardiac Arrest Etiology
- Cardiac Biology
- Trauma
- Respiratory
- Drowning
- Electrocution
- Other

## Resuscitation Information
22. Cardiac Arrest: Attempted by Police
23. Who Initiated CPR
- Not Applicable
- Lay Person
- Lay Person Family Member
- Lay Person Medical Provider
- First Responder (non-EMS)
- Responding EMS Personnel

## Type of Sustained CPR Provided
- Compressions and ventilations
- Compressions Only
- Ventilations Only

## Were Usual CPR Instructions Provided?
- Yes
- No

## First Aid Applied Prior to EMS Arrival
- Yes
- No

## Who First Applied the AED
- Lay Person
- Lay Person Family Member
- Lay Person Medical Provider
- First Responder (non-EMS)
- Responding EMS Personnel

## Who First Defibrillated the Patient
- Yes
- No

## Type of Sustained CPR Provided
- Compressions and ventilations
- Compressions Only
- Ventilations Only

## End Event
- Pronounced on Arrival
- Pronounced in the Field
- Effort ceased due to CPR
- Ongoing Reassess on ED

## First Cardiac Arrest Rhythm of Patient and ROSC Information
30. First Cardiac Arrest Rhythm of Patient
- Ventricular Fibrillation
- Ventricular Tachycardia
- Asystole
- Idioventricular Rhythm
- Unknown Shockable Rhythm

## Was Hypothermia Care initiated or continued on hospital
- Yes
- No

## End Event
- Pronounced on Arrival
- Pronounced in the Field
- Effort ceased due to CPR
- Ongoing Reassess on ED

## Part 5: Hospital Information
40. Hospital Outcome
41. Hospital Outcome
42. Discharge from the Hospital
- Home Residence
- Rehabilitation Facility
- Skilled Nursing Facility/Hospital

## Neurological Outcome at Discharge From Hospital
45. Neurological Outcome at Discharge From Hospital
- Good/Cerebral Performance (CPC 1)
- Moderate Cerebral Disability (CPC 2)
- Severe Cerebral Disability (CPC 3)
- coma, vegetative state (CPC 4)
Part E: Hospital Section - Please complete the following questions

46 - ER Outcome
- Resuscitation terminated in ED
- Admitted to hospital
- Transferred to another acute care facility from the ED

47 - Was hypothermia care initiated or continued in the hospital
- Yes
- No

48 - Hospital Outcome
- Died in the hospital
- Discharged alive
- Patient made DNR

If yes, choose one of the following:
- Transferred to another acute care hospital
- Not yet determined

49 - Discharge From The Hospital
- Home/Residence
- Rehabilitation facility
- Skilled Nursing Facility/Hospice

50 - Neurological Outcome At Discharge From Hospital
- Good Cerebral Performance (CPC 1)
- Moderate Cerebral Disability (CPC 2)
- Severe Cerebral Disability (CPC 3)
- Coma, Vegetative State (CPC 4)
CARES International Collaboration
The registry covers a population of over 75 million. This represents more than 25% of the US population.
It is estimated that once all 2013 data is entered & audited, there will be > 35,000 with >130,000 cumulative records in the registry.
SUMMARY OF AGGREGATE NATIONAL CARES DATA

2005-2012

N=73,075

* Presumed Cardiac Etiology
Demographics

N=72,924

Age

Median 65
Mean 64

Gender

Male 61%
Female 39%

N=73,054
Demographics

Race/Ethnicity

- American-Indian/Alaskan: 1%
- Asian: 2%
- Black/African-American: 27%
- Hispanic/Latino: 6%
- Native Hawaiian/Pacific Islander: 40%
- White: 1%
- Unknown: 1%

N=72,915
Location of Arrest

Location Type

- 68% Place of Recreation
- 13% Public/Commercial Building
- 7% Other
- 5% Nursing Home
- 3% Industrial Place
- 2% Home/Residence
- 1% Transport Center
- 1% Street/Highway

N=73,075
AED Application & First Defibrillation

AED application prior to EMS arrival

- Yes: 25%
- No: 75%

Who first defibrillated the patient

- Not Applicable: 26%
- Total Bystanders: 7%
- First Responder: 65%

N=72,259  N=34,706
First Arrest Rhythm & ROSC

First Arrest Rhythm

- Vfib/Vtach/Unknown Shockable: 23.40%
- Asystole: 46.70%
- Idioventricular/PEA: 20.30%
- Unknown Unshockable: 9.60%

N=73,060

Sustained ROSC

- Yes: 29%
- No: 71%

N=72,570
Hypothermia & Pre-Hospital Outcome

Hypothermia care provided in the field

- Yes: 86%
- No: 14%

N=50,179

Pre-hospital outcome

- Dead in the field: 24%
- Dead in the ED: 20%
- Ongoing Resuscitation in the ED: 56%

N=73,073
Survival Statistics

Overall Survival

- Survival to Hospital Admission: 26.40%
- Survival to Hospital Discharge: 9.90%
- Good to Moderate CPC: 7.50%
- Missing Hospital Outcome: <1%

Utstein Survival

- Utstein Survival: 30.80%
- Utstein Survival Bystander: 35.20%

N=73,075

N=73,073
Survival Rates by Response Time

Survival Rates by Response Time Interval (minutes):

- **ALL**
- **UNWITNESSSED**
- **WITNESSSED**
- **WITNESSSED VF/VT**
### TABLE 5. Number and percentage of persons who experience and those who survive a bystander witnessed out-of-hospital cardiac arrest and are found in a shockable rhythm, by clinical characteristics - United States, 2005-2010

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experience</th>
<th>Survive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>(%)</td>
</tr>
<tr>
<td><strong>Who first initiated CPR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bystander</td>
<td>2,076</td>
<td>49.0</td>
</tr>
<tr>
<td>911 Responder</td>
<td>2,164</td>
<td>51.0</td>
</tr>
<tr>
<td>Total</td>
<td>4,240</td>
<td>100</td>
</tr>
<tr>
<td><strong>Who first applied AED/monitor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bystander</td>
<td>376</td>
<td>8.9</td>
</tr>
<tr>
<td>911 Responder</td>
<td>3,867</td>
<td>91.1</td>
</tr>
<tr>
<td>Total</td>
<td>4,243</td>
<td>100</td>
</tr>
</tbody>
</table>
### 2010 Cohort – Who Initiated CPR?

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td>N=12217</td>
<td>N=12606</td>
<td>N=13453</td>
</tr>
<tr>
<td>Total Bystanders*</td>
<td>4009 (32.8)</td>
<td>4731 (37.5)</td>
<td>5102 (37.9)</td>
</tr>
<tr>
<td>First Responder</td>
<td>4561 (37.3)</td>
<td>3520 (27.9)</td>
<td>3907 (29.0)</td>
</tr>
<tr>
<td>Emergency Medical Services (EMS)</td>
<td>3633 (29.7)</td>
<td>4334 (34.4)</td>
<td>4421 (32.9)</td>
</tr>
</tbody>
</table>

Communities Participating in 2010
Population of 26,688,033
### 2010 Cohort - Survival

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Survival (%)</td>
<td>N=12219</td>
<td>N=12607</td>
<td>N=13453</td>
</tr>
<tr>
<td>Overall Survival to Hospital Admission</td>
<td>3373 (27.6%)</td>
<td>3401 (27.0%)</td>
<td>3668 (27.3%)</td>
</tr>
<tr>
<td>Overall Survival to Hospital Discharge</td>
<td>1269 (10.4%)</td>
<td>1356 (10.8%)</td>
<td>1430 (10.6%)</td>
</tr>
<tr>
<td>With Good or Moderate Cerebral Performance</td>
<td>958 (7.8%)</td>
<td>999 (7.9%)</td>
<td>1096 (8.1%)</td>
</tr>
<tr>
<td>Missing hospital outcome</td>
<td>101</td>
<td>97</td>
<td>96</td>
</tr>
<tr>
<td>Utstein Survival (%)</td>
<td>N=1681</td>
<td>N=1673</td>
<td>N=1831</td>
</tr>
<tr>
<td>Witnessed by bystander and found in shockable rhythm</td>
<td>31.6%</td>
<td>32.6%</td>
<td>33.5%</td>
</tr>
<tr>
<td>Utstein Bystander Survival (%)</td>
<td>N=803</td>
<td>N=921</td>
<td>N=1001</td>
</tr>
<tr>
<td>Witnessed by bystander, found in shockable rhythm, and received some bystander intervention (CPR by bystander and/or AED applied by bystander)</td>
<td>34.7%</td>
<td>36.5%</td>
<td>40.6%</td>
</tr>
</tbody>
</table>
CARES Utstein Survival Report

### Utstein Survival Report

**All Agencies/National Data**

**Service Date From 1/1/12 Through 12/31/12**

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall: 8.0% (25116)</td>
</tr>
<tr>
<td>Bystander Wt'd: 10.0% (9653)</td>
</tr>
<tr>
<td>Unwitnessed: 4.1% (12824)</td>
</tr>
<tr>
<td>Utstein: 31.7% (3434)</td>
</tr>
<tr>
<td>Utstein Bystander: 37.3% (1922)</td>
</tr>
</tbody>
</table>

#### Non-Cardiac Etiology 3288

- Resuscitations Attempted 28404

#### Cardiac Etiology 25116

- Unwitnessed Arrest 12824 *see page 2
- Witnessed Arrest (Bystanders) 9653

#### Initial Rhythm Asystole 3296

- Sustained ROSC in field = 929

#### Initial Rhythm VF/VT 3434

- Sustained ROSC in field = 1817

#### Other Initial Rhythm 2923

- Sustained ROSC in field = 1172

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired in Field 735 (16 incomplete)</td>
</tr>
<tr>
<td>Expired in ED 625</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired in Field 1798 (62 incomplete)</td>
</tr>
<tr>
<td>Expired in Hospital 649</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired in Field 962 (25 incomplete)</td>
</tr>
<tr>
<td>Expired in Hospital 642</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitted to Hospital 1087</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharged Alive 94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological Status CPC 1 or 2 47</td>
</tr>
<tr>
<td>CPC 3 or 4 37</td>
</tr>
<tr>
<td>Unknown = 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological Status CPC 1 or 2 952</td>
</tr>
<tr>
<td>CPC 3 or 4 95</td>
</tr>
<tr>
<td>Unknown = 40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cardiac Etiology Survival Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological Status CPC 1 or 2 203</td>
</tr>
<tr>
<td>CPC 3 or 4 74</td>
</tr>
<tr>
<td>Unknown = 18</td>
</tr>
</tbody>
</table>
### CARES State Based Reports

<table>
<thead>
<tr>
<th>Data</th>
<th>National N=25116</th>
<th>Washington N=1818</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-hospital Outcome (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronounced in the Field</td>
<td>6336 (25.2)</td>
<td>Pronounced in the Field</td>
</tr>
<tr>
<td>Pronounced in ED</td>
<td>3962 (15.8)</td>
<td>Pronounced in ED</td>
</tr>
<tr>
<td>Ongoing Resuscitation in ED</td>
<td>14817 (59.0)</td>
<td>Ongoing Resuscitation in ED</td>
</tr>
<tr>
<td>Overall Survival (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Survival to Hospital Admission</td>
<td>6664 (26.5)</td>
<td>Overall Survival to Hospital Admission</td>
</tr>
<tr>
<td>Overall Survival to Hospital Discharge</td>
<td>2519 (10.0)</td>
<td>Overall Survival to Hospital Discharge</td>
</tr>
<tr>
<td>With Good or Moderate Cerebral Performance</td>
<td>1986 (7.9)</td>
<td>With Good or Moderate Cerebral Performance</td>
</tr>
<tr>
<td>Missing hospital outcome</td>
<td>188</td>
<td>Missing hospital outcome</td>
</tr>
<tr>
<td>Utstein Survival (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Witnessed by bystander and found in shockable rhythm</td>
<td>31.7%</td>
<td>Witnessed by bystander and found in shockable rhythm</td>
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<tr>
<td>Utstein Bystander Survival (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Witnessed by bystander, found in shockable rhythm, and received some bystander intervention (CPR by bystander and/or AED applied by bystander)</td>
<td>37.3%</td>
<td>Witnessed by bystander, found in shockable rhythm, and received some bystander intervention (CPR by bystander and/or AED applied by bystander)</td>
</tr>
<tr>
<td>Who Initiated CPR? (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Applicable</td>
<td>44 (0.2)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Total Bystanders*</td>
<td>9491 (37.8)</td>
<td>Total Bystanders*</td>
</tr>
<tr>
<td>First Responder</td>
<td>7136 (28.4)</td>
<td>First Responder</td>
</tr>
<tr>
<td>Emergency Medical Services (EMS)</td>
<td>8445 (33.6)</td>
<td>Emergency Medical Services (EMS)</td>
</tr>
</tbody>
</table>
# CARES Hospital Report

**Presumed Cardiac Etiology**

### Inclusion Criteria
- Etiology: Presumed Cardiac
- Resuscitation Attempted by 911 Responder
- End of Event: Pronounced in ED or Ongoing Resuscitation in ED
- Final Destination Hospital: [Hospital] [State]
- Service Date: From 10/1/2005 Through 12/31/13

<table>
<thead>
<tr>
<th>Total Number of CARES Patients - Hospital Column</th>
<th>276</th>
<th>273</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct from EMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transferred from another facility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Hospital Characteristics</th>
<th>Hospital</th>
<th>State</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>150 (56.2)</td>
<td>119 (43.1)</td>
<td>6829 (44.0)</td>
</tr>
<tr>
<td>Female</td>
<td>96 (34.8)</td>
<td>54 (19.9)</td>
<td>3466 (22.0)</td>
</tr>
<tr>
<td><strong>Mean Age</strong></td>
<td>63.0</td>
<td>66.2</td>
<td>63.5</td>
</tr>
<tr>
<td><strong>Initial Rhythm</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shockable</td>
<td>98 (35.5)</td>
<td>53 (19.7)</td>
<td>2357 (34.5)</td>
</tr>
<tr>
<td>Unshockable</td>
<td>178 (64.5)</td>
<td>66 (20.3)</td>
<td>4470 (65.5)</td>
</tr>
<tr>
<td><strong>Witnessed Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unwitnessed</td>
<td>146 (29.9)</td>
<td>69 (37.9)</td>
<td>2671 (31.9)</td>
</tr>
<tr>
<td>Bystander Witnessed</td>
<td>90 (32.6)</td>
<td>53 (20.3)</td>
<td>3196 (36.4)</td>
</tr>
<tr>
<td>Witnessed by 911 Responder</td>
<td>40 (14.5)</td>
<td>6 (12.0)</td>
<td>572 (12.0)</td>
</tr>
<tr>
<td><strong>Sustained ROSC</strong> in field**</td>
<td>118 (42.8)</td>
<td>66 (21.0)</td>
<td>2506 (26.8)</td>
</tr>
<tr>
<td><strong>In-Hospital Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Died in ED</td>
<td>157 (56.9)</td>
<td>119 (43.1)</td>
<td>4048 (43.3)</td>
</tr>
<tr>
<td>Admitted to hospital</td>
<td>119 (43.1)</td>
<td>44 (15.6)</td>
<td>2704 (24.7)</td>
</tr>
<tr>
<td>Hypothermia care initiated/continued in hospital</td>
<td>30 (11.9)</td>
<td>18 (6.7)</td>
<td>974 (11.0)</td>
</tr>
<tr>
<td>Discharged alive</td>
<td>44 (15.9)</td>
<td>1032 (37.1)</td>
<td>9245 (36.6)</td>
</tr>
<tr>
<td>Discharged with good/moderate CPC</td>
<td>36 (13.0)</td>
<td>867 (29.7)</td>
<td>7641 (28.2)</td>
</tr>
</tbody>
</table>

**Supplemental Hospital Elements (limited to questions with Yes or No response only)**
- **Mycardial Infarction diagnosis**
- **Coronary angiography performed**
- **Cardiac arrest prior**
- **CABG performed**
- **ICD placed/scheduled**

**PLEASE NOTE:**
- Patients are included in the report of the final facility of care. Patients transferred out of your facility (from the ED or after hospital admission) are not included in this report.
- This report includes only those calls with completed hospital data.
- From 2009-2012, CARES collected arrests of presumed cardiac etiology. In 2013, CARES expanded to include non-traumatic arrests.
- CARES case: A non-traumatic out-of-hospital cardiac arrest event where resuscitation was attempted by a 911 responder and/or defibrillation. This would also include patients that received an AED shock by a bystander prior to the arrival of 911 responders.

*Return of Spontaneous Circulation (ROSC) is defined as the restoration of a palpable pulse or a measurable blood pressure. Qualified ROSC is determined to have occurred when chest compressions are not required for 20 consecutive minutes and signs of circulation persist.
*Fixed and hospital hypothermia became mandatory CARES questions on November 1, 2010. Hypothermia data prior to this date may be incomplete.

**Jutstein patient** arrest witnessed by a bystander and found in a shockable rhythm.
Predicted probability of Bystander Initiated CPR

A. Predicted probability of Bystander-Initiated CPR vs. Proportion of Black Residents in Neighborhood

B. Predicted probability of Bystander-Initiated CPR vs. Median Household Income in Neighborhood (U.S. $)

CARES - New England Journal of Medicine 2012
Mean hospitalization cost twice national average

African American hospitalization cost almost double Caucasian.

Hospital payment for top male + female patient > CARES Budget
## CARES AIRWAY DATA

<table>
<thead>
<tr>
<th>Outcome</th>
<th>No Advanced Airway (n=1,929)</th>
<th>Supraglottic Airway (n=3,110)</th>
<th>Endotracheal Intubation (n=5,591)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Termination of Resuscitation (%)</td>
<td>33.8</td>
<td>34.6</td>
<td>22.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sustained ROSC (%)</td>
<td>36.5</td>
<td>25.5</td>
<td>33.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ED Survival (%)</td>
<td>33.4</td>
<td>21.4</td>
<td>26.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital Survival (%)</td>
<td>21.9</td>
<td>6.7</td>
<td>8.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hospital Survival with Good Neurological Outcome (%)</td>
<td>18.6</td>
<td>5.2</td>
<td>5.4</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Airway management and OHCA outcome in the CARES registry

AIRWAY STUDY PROPOSAL

Adult OHCA

Primary ETI
- BLS: BVM only
- ALS: ETI first (BVM or SGA Rescue)

Primary SGA
- BLS: BVM or SGA first (BVM Rescue)
- ALS: SGA first (BVM or ETI Rescue)

CONTINUE RESUSCITATION

Figure: Protocol Summary
Figure 3. Survival Following Out-of-Hospital Cardiac Arrest, 2001-2010

- Survival
- 30-day
- 1-year

- Shockable rhythm
- All patients
- Nonshockable rhythm

Japanese Utstein Registry

Figure 2. Temporal trend in survival after witnessed VF cardiac arrest.
Dispach Chain of Survival

Bystander CPR instructions for emergency medical dispatchers
T-CPR

CPR - Be The Link to Life

https://mycares.net/sitepages/dispatchtraining.jsp
CARES

- Allows communities to determine **OHCA outcomes** & **identify high risk groups and neighborhoods**

- Enables **clinical benchmarking** to identify opportunities for improvement and track the diffusion of new therapies

- Promotes **accountability** to improve the quality and impact of prehospital care

- Observational data for **effectiveness research**
CARES WEBSITE

https://mycares.net

bmcnall@emory.edu