Implementing Change to Improve Survival from Cardiac Arrest

Kevin G. Seaman, M. D., FACEP
Medical Director
Howard County Dept. of Fire and Rescue

It’s Simple but It’s not Easy!

Four Important Factors

1. Pick ONE improvement to work on
2. Measure-report-change-remeasure
3. Celebrate the gains/successes
4. Look for the unique opportunities in your community for improvements or programs

Suggested Readings

The Resuscitation Academy
www.resuscitationacademy.org

SLIDES/CONCEPTS COURTESY OF DR. MICKEY EISENBERG AND THE FACULTY OF

Avoiding Common Prehospital Errors

Combination system
Career 392
EMT-B 272
EMT-P 120
Volunteer
Approx. 600 total
Operational 100 – 200
**Determinants of a successful resuscitation**

- Patient and event factors are important but cannot be changed by the EMS system
- System and therapy factors can be changed, most are time related

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**Goal**

- Maximize survival from Sudden Cardiac Arrest

**Components:**
- Rapid, effective Dispatch telephone CPR
- Coordinated, crew-based High Performance CPR by field providers
- Community CPR and Public Access Defibrillation (PAD)

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**The Value of Team**

- EMS is a Team “Sport”
- Improving CA Survival is a Team “Sport”

- 2010 sent three to the RA
  - BC EMS
  - EMS Field Supervisor
  - Medical Director

- 2012 sent 9 to the RA
  - Reps from two shifts
  - Community CPR team

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**Maryland 1960**

CPR at the Johns Hopkins Hospital

-Demonstration of cardiopulmonary resuscitation at the Johns Hopkins Hospital (circa 1960) Dr. William R. Kouwenhoven explicating primary cardiac massage. "Anyone, anywhere, can now initiate cardiac resuscitative procedures. All that is needed are two hands."
Cardiac Arrest Survival

<table>
<thead>
<tr>
<th>Detroit</th>
<th>NYC</th>
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<tr>
<td>0%</td>
<td>5%</td>
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- Detroit: 0%
- NYC: 5%

U.S. cardiac arrest survival

- All rhythms: 5%
- VF: 15%

Why is there such a large difference in survival from VF cardiac arrest?

Factors Determining Survival Following Cardiac Arrest

- Patient
- Event
- System
The importance of bystander CPR

Everybody in VF survives

It takes a SYSTEM to save a victim

Focus: Witnessed VF

Survival from witnessed VF is the best metric to measure an EMS system's performance
Medical Review: The Good

**Therapy Factors**
- CPR within 4 minutes
- AED/defibrillator on first arriving unit
- ALS within 6 minutes
- Defibrillation within 9 minutes
- Intubation – confirmed endotracheal on-scene/ED

A Success Story

Medical Review: The Not So Good

**THERAPY FACTORS**
- CPR within 4 minutes
- ALS on-scene within 6 minutes
- Defibrillation within 11 minutes
- Outcome: ROSC, admitted to ICU, died in ICU

Low Hanging Fruit

- Dispatcher-assisted CPR*
- High-performance CPR*
- Rapid dispatch

[Graph showing percentage of outcomes over time]
High Hanging Fruit

- Voice record all attempted resuscitation
- Police defibrillation*
- Public access defibrillation*
- Local foundation for training and QI*
- Hypothermia
- Culture of excellence

High Performance CPR

- Give it to the crews that are the end users
  - Code Resource Mgmt
  - “The Dance”
- They make it their own
- Celebrate their successes
- Competition

High Performance CPR: 10 components

1. EMTs own CPR
2. Minimize interruptions in CPR at all times
3. Ensure proper compression depth (>2 inches)
4. Ensure full chest recoil
5. Ensure proper compression rate (100-120/min)
6. Rotate Compressors every 2 minutes
7. Hover hands over chest during shock administration and be ready to compress as soon as pt is cleared
8. Intubate or place advanced AW with ongoing CPR
9. Place IV or IO with ongoing CPR
10. Coordination and teamwork between BLS and ALS

Provider and Company Feedback For Cardiac Arrest Performance

- Manually count and calculate
  - CPR Rate
  - CPR Fraction (CPR Density)
- Feedback by Letter
- Device Manufacturer products
  - Physio-Control Code Stat
  - Still needs human review and QA: Code Stat Annotator
  - Code Stat reports

Feedback on Individual Cases Letter from the Medical Director

Factors that decrease survivability:

- Patient-related factors:
  - Age: >90
  - Co-morbidity present?
  - Massive MI
  - Etiology:
    - Lack of zone 1 CPR prior to ENMS arrival?
    - CPR started >5 minutes after arrest?
    - CPR started <3 minutes after arrest?

Determined from the arrest to ROSC time, not BLS arrival time.
LP 12 Transmit to Code Stat

Code Stat CPR: Good vs. Poor – which one?

Code Stat CPR Report

Return of Spontaneous Circulation
A vision of the future

- 75% bystander CPR
- AED applied < 4 minutes 50% of the time
- 60% survival from VF for all communities

Maryland Resuscitation Academy

- May 16-17, 2013
- Marriottsville, MD
- For information:
  - www.ramaryland.org

Questions?

Four Things to Remember

- Measure Performance
- Feedback is Essential
- Many ways to accomplish feedback
- You’re the expert on your system
  - Select the method that works best for you

Thanks and have a great day!

Kevin G. Seaman, MD, FACEP
kseaman@howardcountymd.gov

Dale E. Becker, NREMT-P
dbecker@howardcountymd.gov