MRC – Academy
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DISPATCH ASSISTED CPR
Objectives

- The importance of dispatch assistance
- Keys to success
- Perceived barriers to performing CPR
- Evidence of effectiveness
- Examples – good and bad
- The Hennepin County PSAP project
  - Matt Maxwell, Hennepin County Public Health
In other words

- Introduce you to the general concepts
- Briefly review some literature
- Cite some statistics...that most will forget

More important...

- Get you to **feel** the importance
- Then **you** can facilitate change and ensure good performance
This did it for me...

- Today show video
Cardiac arrest kills approximately 300,000 per year in the US

Survival is variable from ~5% to 20%
- Approaches 50% for witnessed V-fib
- Depends on many variables

Resuscitation involves a complex “chain” of events

Success depends on all
Patient care starts here...
Key elements for success

- Formal/systematic screening for cardiac arrest
- Confident and assertive instruction for providing Compression-only CPR (COCPR)
- Performance measure to ensure quality though call recording review
- Measurement of quality metrics for all stakeholders with appropriate feedback
<table>
<thead>
<tr>
<th>Categorical Measure</th>
<th>Time Component</th>
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</thead>
<tbody>
<tr>
<td>Dispatch of appropriate EMS resources</td>
<td>Interval from receipt of call to EMS dispatch</td>
</tr>
<tr>
<td>Adherence to the identification algorithm</td>
<td>Interval from receipt of call to completion of algorithm</td>
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<tr>
<td>Recognition of arrest/provision of CPR prearrival instructions</td>
<td>Interval from receipt of call to provision of CPR instructions</td>
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<tr>
<td>Performance of bystander CPR</td>
<td>Interval from receipt of call to performance of CPR</td>
</tr>
<tr>
<td>Primary obstacle to CPR</td>
<td>...</td>
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CPR indicates cardiopulmonary resuscitation; EMS, emergency medical services.

Bystander CPR

- First must be able to recognize over the phone
  - Movement does not r/o CA
    - Seizure like movement is common
  - Agonal breathing is common and can last for several minutes
  - Ask if “breathing normally”
  - Elaborate on uncertainties
    - Chest rise
    - Hold phone by pt.
Barriers

- Dispatcher uncertainty
- Emotional distress
- Lack of confidence
  - Tell them to do it vs asking
- Fear of harming
- Fear of exposure
  - Reassure that it’s compression only

Bystander CPR

- Hennepin
- Minnesota
- US
Fear of mouth to mouth

- Seinfeld video
Sometimes it IS needed

- Immediate dispatch
- Confidant
- Assertive
- Articulate
- Listens to caller
- Ensures understanding
- Clarifies any uncertainties
Current Guidelines

- Bring phone and get next to the person
- Knee by the persons side
- Place the person flat on their back
- Put heel of your hand on center of chest
- Put your other hand on top of that hand
- Push down firmly only on the heels 2 inches
- Do this 50 times like you’re pumping on the chest – count out loud (demonstrate rate)
- Keep doing it until help takes over
Dispatch Assisted CO-CPR

CPR with Chest Compression Alone or with Rescue Breathing

Thomas D. Rea, M.D., Carol Fahrenbruch, M.S.P.H., Linda Culley, B.A., Rachael T. Donohoe, Ph.D., Cindy Hambly, E.M.T., Jennifer Innes, B.A., Megan Bloomingdale, E.M.T., Cleo Subido, Steven Romines, M.S.P.H., and Mickey S. Eisenberg, M.D., Ph.D.

Compression-Only CPR or Standard CPR in Out-of-Hospital Cardiac Arrest

Leif Svensson, M.D., Ph.D., Katarina Bohm, R.N., Ph.D., Maaret Castrèn, M.D., Ph.D., Hans Pettersson, Ph.D., Lars Engerström, M.D., Johan Herlitz, M.D., Ph.D., and Mårten Rosenqvist, M.D., Ph.D.

Compression-only CPR vs Standard

<table>
<thead>
<tr>
<th>Condition</th>
<th>% Survival to D/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO-CPR</td>
<td>15</td>
</tr>
<tr>
<td>Std-CPR</td>
<td>10</td>
</tr>
</tbody>
</table>

Svensson et. al.

Rae et. al.

*NEJM 2010; 363*
Continuous Chest Compressions

Bobrow et al. JAMA 2008; 299
Another study

Bobrow et al. JAMA 2010; 304
And Finally...meta-analysis

2.4% Increased chance of survival with CO-CPR
Dispatcher-Assisted Cardiopulmonary Resuscitation
Risks for Patients Not in Cardiac Arrest

Lindsay White, MPH; Joseph Rogers, MS; Megan Bloomingdale; Carol Fahrenbruch, MSPH; Linda Culley, BA; Cleo Subido, RPL; Mickey Eisenberg, MD, PhD; Thomas Rea, MD, MPH

Background—Dispatcher-assisted cardiopulmonary resuscitation (CPR) instructions can increase bystander CPR and thereby increase the rate of survival from cardiac arrest. The risk of bystander CPR for patients not in arrest is uncertain and has implications for how assertive dispatch is in instructing CPR. We determined the frequency of dispatcher-assisted CPR for patients not in arrest and the frequency and severity of injury related to chest compressions.

Methods and Results—The investigation was a prospective cohort study of adult patients not in cardiac arrest for whom dispatchers provided CPR instructions in King County, Washington, between June 1, 2004, and January 31, 2007. The study focused on those who received chest compressions. Information was collected through review of the audio and written dispatch report, written emergency medical services report, hospital record, and telephone survey. Of the 1700 patients for whom dispatcher CPR instructions were initiated, 55% (938 of 1700) were in arrest, 45% (762 of 1700) were not in arrest, and 18% (313 of 1700) were not in arrest and received bystander chest compressions. Of the 247 not in arrest who received chest compressions and had complete outcome ascertainment, 12% (29 of 247) experienced discomfort, and 2% (6 of 247) sustained injuries likely or possibly caused by bystander CPR. Only 2% (5 of 247) suffered a fracture, and no patients suffered visceral organ injury.

Conclusions—In this prospective study, the frequency of serious injury related to dispatcher-assisted bystander CPR among nonarrest patients was low. When coupled with the established benefits of bystander CPR among those with arrest, these results support an assertive program of dispatcher-assisted CPR. (Circulation. 2010;121:91-97.)
What if it’s not an CA

- 1700 pts for whom dispatch assisted CPR instructions were initiated
- 45% (762) were NOT in cardiac arrest
- 18% of those (313) received chest compressions (247 had complete follow up info)
  - 29 (12%) had chest “discomfort”
  - 6 (2%) sustained “injuries” from CPR
  - 5 (2%) sustained a fracture
  - No patients had organ injury
Non-Cardiac Arrest

- Moriwaki j. Emerg Trauma Shock 2012; 5
  - Population based observational study
  - 910 received bystander CPR
  - 26 (2.9%) did not suffer cardiac arrest
  - 3 of 26 (11.5%) had complications of CPR
    - Tracheal bleeding
    - Minor gastric mucosal tear
    - Chest wall pain (minor Rib Fx vs muscle damage)
  - No case required special treatment
Seizure mimic

Proportion of OHCA among calls for seizure

*Dami et.al. Emerg Med J 2011*

- 2 year prospective observational study
- > 18yo chief complaint seizure
- 12/561 (2.1%) were subsequently classified as CA by paramedics

- Code as Seizure only if certain
Other considerations

- Advanced directives (DNR/POLST)
- Danger to bystander
- Language barrier
- Physical limitations (don’t assume)
- Presumed dead
  - Need specifics
  - Rigor, lividity, cold
The cup is half EMPTY

- 0704 Time of call – Dispatched as “Poss DOA”
- 0706 Police en route
- 0708 Start Ambulance/Rescue
- 0713 Rescue in service
- 0719 Rescue on scene
- 0720 Cancel rescue – Ambulance to “routine”
- 0721 Ambulance cancelled - Rescue cancelled
- 0723 Ambulance called back to “routine”
- 0726 Start Rescue back to scene – Code 3
- 0730 Rescue on scene
Lessons Learned

- “Listen” to the caller
- Strive to find signs of life... don’t strive to find signs of death
- Assume viability...it exists until proven otherwise
- Setting the stage...affects downstream actions
Lesson Learned

- Eliminate the term “Possible DOA”
  - One unresponsive
- Use MPDS(or similar)
- Providers
  - Assess patient before changing response
  - If uncertain, begin CPR
Time is Critical

Survival decreases by **10%** for every **minute** treatment is delayed.
Current Statistics

- Hennepin Count EMS system
  - Overall survival 17%
  - VF/VT 47%
  - First responder arrive in 3.5 ± 1.5 min
  - Addt. EMS follows in 3-4 min

- One of the highest in the country

- Always room for improvement
  - AED use
  - Bystander CPR
MRC

- Lead by Univ. of MN Resuscitation Center Director Dr. Demetris Yannopoulos
- Includes local EMS medical directors and cardiologists
- Goal: Improve survival for out-of-hospital SCA by 50% within 5 years
- Several similar programs throughout the US
MRC

- Affiliated w/ The HeartRescue project funded by Medtronic Foundation $15 million over 5yrs
- Dedicated to improving SCA survival through
  - Improved AED access and bystander CPR performance and education
  - Standardized Dispatch and EMS protocols throughout the state
  - Encourage up-to-date CPR methods
  - Increase the percentage of patients that receive hypothermia, angioplasty and ICD placement
Summary

- Dispatch is the anchor on the chain
  - Need to recognize CA and provide PAI
  - All stakeholders need to ensure good performance
- Many of the barriers are non-issues
- Chest compression only CPR works
- Change can be difficult...but it can be done!
  - Hennepin County EMS system initiative