Cardiocerebral Resuscitation and the community

Why and How to implement in your community!

"Hey guys I have an idea! I propose that if patients become unresponsive and stop breathing that we not breathe for them, rather we just pound on their chest and hope for the best."

Dr. Thomas
Reasons for resistance

- Everyone Needs Oxygen
- Worried patients who need pulmonary resuscitation wouldn’t receive
- Afraid to stray away from AHA and ILCOR
- Ignorance

McPherson Case report May 17, 2012

- 48 year old white male.
- No previous cardiac history.
- No cardiac risk factors other than his weight which was 270 lbs at 5’11”.
- No family hx of heart disease.

“Knock it off!” = verbal order
What persuaded me?

- Everyone needs oxygen.
- Body contains enough oxygen to survive for up to 12 minutes.
- Worried respiratory failure wouldn’t be treated correctly.
- Respiratory distress is easy to identify.
- Afraid to stray away from AHA and ILCOR guidelines.
- Dr. Ewy’s studies justify a deviation and legally support.
- Ignorance
- Attended lecture by Dr. Ewy and read on my own.

An understanding of the 3 phase time sensitive model of cardiac arrest.

- Electrical Phase ~ 4 – 5 minutes
- Circulatory Phase ~ 5 – 10 minutes
- Metabolic Phase ~ > 10 minutes

Understanding that survival does not depend on:

- The pH!
- The partial pressure of oxygen!
What persuaded me

What it does depend upon is......

The Perfusion Pressure!!!
Seattle/King county

- In the 1970's King County embarked on an effort known as “Medic One” to improve survival of out of hospital cardiac arrests (OHCA).
- They have levied millions of tax dollars and have created the best integrated cardiac response system in the world.
- Numerous strategically placed paramedic stations.
- They boast the fastest response times in the world.
- They utilize 911 protocols to initiate bystander CPR and have high participation rates.
- They have high rates of community CPR education.
- They have numerous AED's distributed throughout the community.

Seattle/King County

In 2013 King County achieved a 62% survival rate for those who were found in V-tach/V-fib.

This prompted the following statement from a King County official:

“Someone who has a cardiac arrest in King County has a better chance of survival than anywhere else in the world.”

Statistics in McPherson Kansas

Receiving either CPR or CCR

<table>
<thead>
<tr>
<th>CPR protocols used from 01/01/08 through 05/31/11</th>
<th>CCR/CPR protocols utilized 06/01/11 through 11/04/2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Asystole (2/21) 10% survived to ED</td>
<td>• PEA (3/13) 23% survived</td>
</tr>
<tr>
<td>• PEA (3/10) 29% survived to ED</td>
<td>• PEA (4/13) 31% survived to ED</td>
</tr>
<tr>
<td>• V-fib/V-tach (9/17) 53% survived to ED</td>
<td>• V-fib/V-tach 83% survived (10/12)</td>
</tr>
<tr>
<td>• Unknown (0/1) 0% survived to ED</td>
<td>• V-fib/V-tach 92% survived to ED (11/12)</td>
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<tr>
<td>Keep in mind these numbers represent survival to E.D. Survival outcomes were not recorded at that time.</td>
<td>Unknown (0/2) 0% survived to ED</td>
</tr>
</tbody>
</table>

Over all survival for all comers to E.D. = 30%

Over all survival for all comers to E.D. = 36%

Over all survival (walked out of the...
CCR Stats from 06/01/11 to 11/04/14

- Asystole 17% Survived (1/6)
- PEA 33% Survived (3/9)
- V-tach/V-fib 83% Survived (10/12) Note: Every survival was WITNESSED!
- Unknown 0% Survived (0/2)

Over all survival rate for those receiving CCR is 48% (14/29)

Why you should implement CCR in your community

Seattle/King County
- EMS and Paramedics strategically placed throughout King County. (Expensive)
- 911 protocols instruct bystanders on CCR/CPR.
- High rates of public CPR education.
- Survival for V-fib/V-tach is 62%

McPherson/McPherson County
- AED’s placed in Police and Sheriffs cars. Total cost to date for entire county $26,000.
- Protocols available – Dr. Thomas to discuss.
- Physicians need to take the lead. Education of the public is relatively cheap and easy.
- Survival for V-fib/V-tach is 83%

Summary of why CCR should be adopted in your community

- Dr. Ewy’s data is overwhelmingly convincing.
- We had not seen improvement in cardiac arrest survival rates; UNTIL CCR!
- The public is 4 X’s more likely to perform chest compressions without mouth to mouth.
- The body contains enough oxygen to survive for up to 12 minutes with effective CCR.
- CCR prolongs the electrical phase, can convert the circulatory phase back to the electrical and hence increases the chances of successful cardioversion and (ROSC).
- In 2008 AHA and ILCOR endorsed chest compression only for the lay public.
- It is cost effective and more importantly offers as good as if not better outcomes than traditional protocols.
Without CCR

With CCR
“BE SINCERE
BE BRIEF
BE SEATED”

—FRANKLIN ROOSEVELT

CARDIOCEREBRAL RESCUSITATION IN
THE COMMUNITY

THE HOW

EDUCATE THE MEDICAL COMMUNITY
Bystander CPR
ENABLE EMS
AED PROJECT

EDUCATE MEDICAL COMMUNITY

NOT ACLS—ABC’S
EVIDENCE FOR CONSENSUS OPINION 30:2
“There is a way that seems right to a man, but its end is the way to death”

—Proverbs 14:12

EDUCATE MEDICAL COMMUNITY

NOT ACLS—ABC’S
EVIDENCE FOR CONSENSUS OPINION 30:2
PRESENT DR EWY’S DATA

PRESENT DR EWY’S DATA

THERE IS OFTEN INITIAL RESISTANCE
CME’S LIKE THIS ONE
FP AUDIO ON CCR BY DR PRESCOTT AND DR KELLERMAN
DR. EWY’S PRESENTATION WILL BE AVAILABLE
BYSTANDER CCR

911—NEEDS TO BE CCR ORIENTED PROTOCOL
AHA/ACLS STANDARDS ARE CHEST COMPRESSION ONLY FOR LAY PUBLIC
PUBLIC FORUMS: OPERA HOUSE, COMMUNITY BUILDING, CHURCHES
BROCHURES ON KUMC WEB SITE

ENABLE EMS

THEY ARE READY
CCR IS NOT AHA/ACLS BUT NO LONGER EXPERIMENTAL
STANDING ORDERS

AED PROJECT

COMMUNITY FOUNDATION SUPPORT
CITY POLICE CARS
COUNTY SHERIFF CARS
FIRE RESCUE VEHICLES
COMMUNITY BUILDING, OPERA HOUSE, SCHOOLS, CITY POOLS

THE HOW

EDUCATE THE MEDICAL COMMUNITY
BYSTANDER CCR
ENABLE EMS
AED PROJECT
“Experience is the name everyone gives to their mistakes”

—Oscar Wilde
Cardio-Cerebral Resuscitation (CCR)

**CCR may only be performed on the following patients:**
- patients > 20 years of age who are not involved in any event where asphyxiation has occurred
- patients < 20 years of age who have a known history of congenital heart defects
- patients < 20 years of age who experience cardiac arrest while participating in any event with an excessive amount of physical exertion
- patients with known “down time” < 12 minutes OR “down time” > 12 minutes with compressions initiated prior to arrival

1) perform at least 200 chest compressions at a rate ≥ 100/minute
2) insert oropharyngeal / nasopharyngeal airway
3) oxygenate at 15 L/minute via non-rebreather mask
4) apply defibrillation pads to patient’s bare chest
5) obtain IV/IO access
6) administer **EPINEPRHINE 1 mg IV/IO for adults**
   **EPINEPHRINE 0.01 mg/kg IV/IO for pediatrics**

Assess cardiac rhythm

If shock is advised:
- Shock at 360 joules for adults or 2 joules/kg for pediatrics

Assess cardiac rhythm

If shock is advised:
- Shock at 360 joules for adults or 4 joules/kg for pediatrics

Assess cardiac rhythm

If shock is advised:
- Shock at 360 joules for adults or ≥ 4 joules/kg (not to exceed 10 joules/kg) for pediatrics
   Then:
   1) consider transport
   2) consider placement of supraglottic or endotracheal airway

If rhythm is asystole/PEA, follow appropriate protocol:
1) transition from CCR to CPR 30:2
2) consider transport
3) consider placement of supraglottic or endotracheal airway

If return of spontaneous circulation (ROSC) occurs at any time during resuscitative efforts, follow Post-Arrest Resuscitation protocol