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Working to Improve Cardiac Arrest Survival

The Community is vital to improving cardiac arrest survival

"The system of care starts with the average citizen. That person's rapid action can be one of the most important parts of the whole system of care." *Clifton W. Callaway, MD, PhD*

In fact, increasing immediate bystander Hands-Only™ CPR and early Automated External Defibrillation (AED) improves the victim's chance of survival. For every 1 minute that goes by without these immediate interventions, the chance of survival decreases by 10 %.

The ultimate goal is to increase the number of cardiac arrest victims that receive immediate bystander Hands-Only™ CPR, obtain 911-dispatch assistance and immediate AED use.

Remember the 3C's: Check the victim, **C**all 911, **C**hest compressions

SaveMiHeart (SMH) has identified the following best practices for enhancing community response to out of hospital cardiac arrest (OHCA).

Best Practices

I. Improving citizen's knowledge and awareness of cardiac arrest, Hands-Only™ CPR and AED
II. Training citizens in Hands-Only™ CPR and AED use
III. Increasing and improving public access to AED
IV. Measuring important outcome measures to understand baseline data and to assess success of interventions

I. Improving citizens' knowledge and awareness of cardiac arrest, Hands-Only™ CPR and AED

A. Improve recognition of cardiac arrest

1. Cardiac Arrest definition

a. Occurs suddenly and often without warning. It is triggered by an electrical malfunction in the regular heartbeat. With the heart's pumping action disrupted, the heart cannot pump blood to the brain, lungs and other organs. Seconds later the person may lose consciousness, have abnormal breathing, or shake.

2. Abnormal Breathing

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a. Snoring or abnormal breathing pattern may be the only sign of a cardiac arrest and should not delay chest compressions, calling 911 or attaching and AED.

B. Methods to increase citizen cardiac arrest knowledge and awareness

1. Brief messaging

a. Brief self-directed on-line videos, have been shown to be useful in teaching Hands-Only™ and AED techniques. http://cpr.heart.org/AHAECC/CPRAndECC/Programs/HandsOnlyCPR/UCM_473196_Hands-Only-CPR.jsp

2. Incorporation of Television / Mass Media

a. Write op-ed and send to the local papers.
Have the op-ed piece ready and send to news outlets following a report of a cardiac arrest in the community may be particularly useful to increasing citizen awareness and knowledge.

b. Inform the mass media of any large events centered around cardiac arrest and CPR, such as mass CPR trainings or presentations.

3. Mailings
a. Develop and distribute information about Hands-Only™ CPR and AED use through community newsletters, newspapers, and utility bills.

4. Community leader / Celebrity Engagement
a. Encourage prominent figures such as sports leaders, celebrities, community leaders, politicians and religious leaders to help distribute the message as the message may have more importance coming from these trusted members of the community.

5. Cardiac arrest survivors and rescuer spokesperson

a. Addition of stories from cardiac arrest survivors and rescuers can have a big impact on the importance of the message as the public sees the real-life impact of improving immediate action by bystanders.

6. Message needs to include common themes that improve knowledge, overcome perceived barriers, encourage self-efficacy and enhance

message retention.

a. Recognition of cardiac arrest.

i. Commonly, cardiac arrest victims will have abnormal breathing such as gasping or snoring respirations. Also, at times the victim may experience muscle jerking and these should not delay chest compression and are often the first signs of cardiac arrest.

b. Address common barriers to performing bystander CPR.

i. Fear of injury to victim from compressions or defibrillation. Message should inform the public that when cardiac arrest occurs, the victim will die if nothing is done. Encourage immediate citizen action as this is the victims only chance of survival.

ii. Fear of legal consequences
Messages should include the protections that are in place for good Samaritan laws.

iii. Fear of infection. Message should address that there is no longer a need for mouth-to-mouth and that Hands-Only™ CPR is the preferred method of bystander action.

c. Utilize self-efficacy techniques and provide queues to make citizens act immediately.
   i. "Don't wait to let someone else do CPR"
   ii. "You can do Hands-Only™ CPR"
   iii. "You are the victim's only chance of survival"
   iv. "You can stop the deadly heart rhythm

d. Repeating ending with a simple message may improve retention.
   i. Ex: 3 C's 1. Check the victim, Call 911, Chest Compressions

II. Training citizens in Hands-Only™ CPR and AED use

A. Hands-Only™ CPR

1. Studies have shown that Hands-Only™ (no mouth-to-mouth) CPR is as good as conventional CPR
2. Hands-Only™ CPR should be the method taught to the community.

B. Targeted populations

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1. The Average Citizen (general population)

   a. Should be educated and empowered to learn and perform bystander CPR, call 911 for dispatcher assistance and use AED.

2. High risk populations
   a. People with cardiac risk factors, such as hypertension, high cholesterol, diabetes, smokers, or a family history of heart disease should encourage their friends and family members to be trained to perform Hands-Only™ CPR.

   b. Target friend and family members of people with cardiac risk factors. They can be identified at physician's offices, emergency departments or health and wellness fairs, etc.

3. Minorities
   a. Often have poorer outcomes from cardiac arrest.
   b. Interventions should include information and take into consideration cultural and language variations within the target community.
      i. Latino
      ii. African America
      iii. Arab America

4. Older adults

   a. Many high risk individuals have older caregivers and training this population is important.
   b. Targeting social groups, churches etc to reach this population.

5. High School Students

   a. Requiring hands-only CPR training as graduation requirement is recommended
   b. Increase number of first responders in schools and communities.

6. Rural communities / high-rise buildings

   a. Many have longer EMS response times due to logistics and distance
   b. Identify and train personnel in these areas who may be able to respond prior to EMS arrival

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C. CPR training resources

1. Links to local CPR training resources
   a. Sources within the State of Michigan include:

American Heart Association Emergency Cardiac Care:
Learn the latest in CPR
Cindie DeWolf - Cindie.DeWolf@heart.org
Sr. Community CPR Manager Text or Call: 517-455-9303

American Red Cross:
CPR news and training programs in your area

2. Measure and track CPR training numbers to assess training efforts
   a. AHA Registry

III. Increasing and improving public access to AED

A. Automated external defibrillators (AEDs) are an important part of the emergency response for cardiac arrest victims.
   i. Heart Rescue Project

B. AEDs should be placed in optimal locations.
   a. In public areas
      i. Sports facilities
      ii. Airports
      iii. Office complexes
      iv. Casinos
      v. Schools http://bethebeat.heart.org/
      vi. Any other public or private place with larger numbers of people or high risk populations
   b. State requirements:
      i. Health clubs[1] to have an AED

C. Purchasing an AED

   a. Ensure that the AED company/manufacturer has received FDA Pre-Market Approval - 510(k) for an AED (or multiple AEDs).
      i. i. The American Heart Association maintains a list: FDA approved AED companies

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b. Cost
    i. Determine up-front cost of purchase
    ii. Ensure budget for ongoing maintenance costs and needs (i.e., batteries, pads, software updates)

D. Ensure that location of AED is easily accessible even after business hours

a. It should not be locked in an office
b. It should be mounted or kept in a highly visible location (by fire extinguishers or elevators are some options)
c. Is it available after hours?
d. For schools, is the AED accessible for after school events and sporting activities
e. Optimal location would allow for AED to reach the victim within 3 minutes of collapse

IV. Measuring important outcome measures to understand baseline and success of interventions

A. Encourage local groups to submit data to CARES if possible. https://mycares.net/

B. Common measurements that would allow for comparisons with national statistics would include:

1. Bystander CPR rate.
2. Number of victims who obtain return of spontaneous circulation (ROSC).
3. Survival rate.
4. Neurologic status at time of discharge from the hospital.
5. Community knowledge / willingness to perform Hands-Only™ CPR (Survey)
6. Bystander characteristics- Age, Race/ ethnicity, Sex
7. Geographic surveillance- where did the cardiac arrest occur and where are the AED's in relation to the cardiac arrest?