Chest Compression Only CPR

Save your Breath…
Save a Life

Sudden Cardiac Arrest — Any Age, Anybody

Chris Miller, at age 15, Erika Yee, a band mate who learned compression-only CPR in Girl Scout Camp, saves his life.

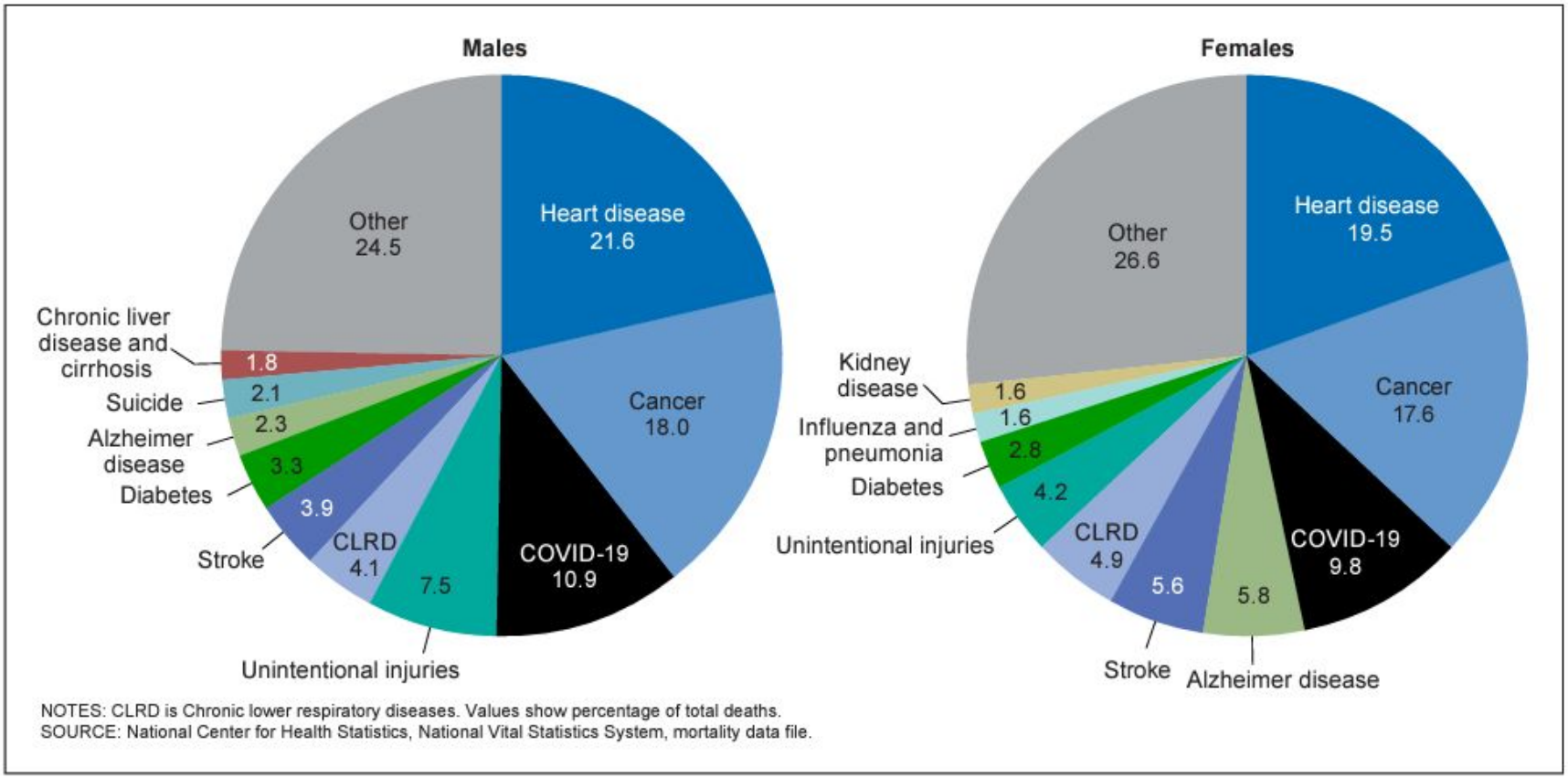
Russell Vossbrink, at age 36, a crime lab investigator is saved by a co-worker.

Rafael "Ralphie" Rendon, at age 14, collapsed during high school football practice. A volunteer coach responded.

Brian Duffield, at age 41, collapsed after a swimming workout. A paramedic was nearby.

Causes of Death (U.S.)

Figure 1. Percent distribution of the 10 leading causes of death, by sex: United States, 2020



NOTES: CLRD is Chronic lower respiratory diseases. Values show percentage of total deaths.
SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

https://www.cdc.gov/nchs/nvss/leading-causes-of-death.htm

Sudden Cardiac Arrest (U.S.)

- Every year >356,000 people have a cardiac arrest outside of a hospital.
  - 72.1% occur in a home or residence
  - Approximately 90% will not survive
- In 2022, 40% of OHCA patients received bystander CPR. A public AED was used in 11.3% of cases.
- There are large variations across the U.S. in hospital discharge and survival with functional recovery, which is partially due to the rates of layperson CPR and AED use. In 2022, 9.3% of adult OHCA patients survived to hospital discharge. 7.5% of adult OHCA patients had good functional status at hospital discharge.

2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association.

Circulation Volume 149, Issue 8, 20 February 2024; Pages e347-e913 https://doi.org/10.1161/CIR.0000000000001209

Heart Attack vs Cardiac Arrest

Heart Attack :

- Blockage in coronary artery
- Person usually ***conscious***
- Upper body discomfort or pain

Cardiac Arrest:

- Heart stops
- Person is ***unconscious***
- Often no previous symptoms
- Person may be gasping or not be breathing at all

Often a cardiac arrest occurs due to a heart attack. Call 911

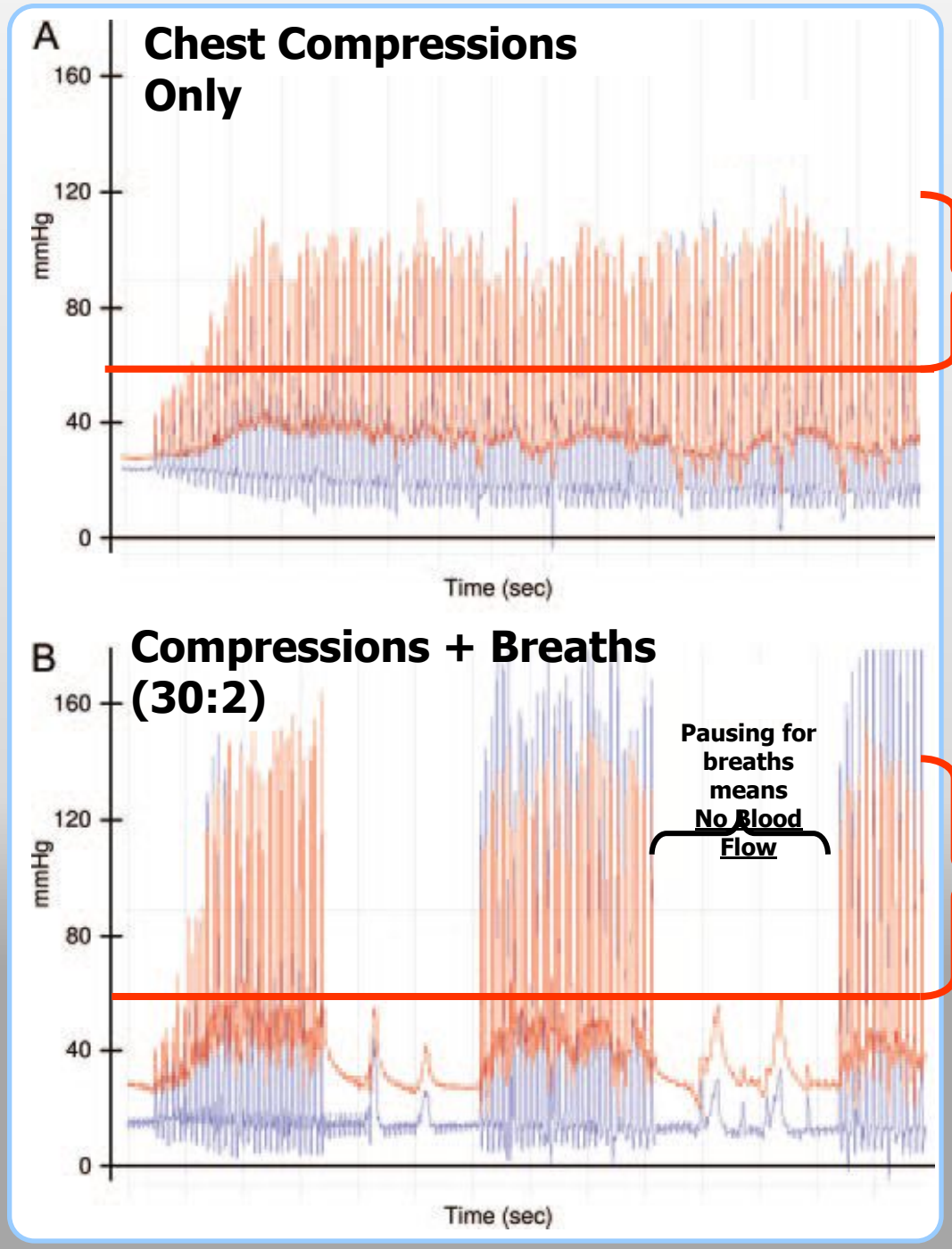
What *is* Chest Compression Only CPR?

- Compressions only for cardiac arrest without providing rescue breathing.
- For non-healthcare providers, or healthcare providers who are off duty without special equipment.
- In many cases of out of hospital cardiac arrest, immediate oxygen is not helpful and could be harmful.

Why isn't Rescue Breathing Necessary?

During Most Cardiac Arrest:

- Lungs are full of air
- Blood is full of oxygen
- Circulating the oxygenated blood is the key



Blood Flowing To The Brain

Blood Flowing To The Brain

Ewy GA, et al. Circulation. 2007;116(22):2525-30.

Why
Chest Compression Only CPR?

- It saves more lives
- Dramatically better than doing nothing.
- It takes 4-8 minutes for trained responders to get to a patient's side. Brain damage can already be starting.

Bobrow, et al. JAMA October 2010

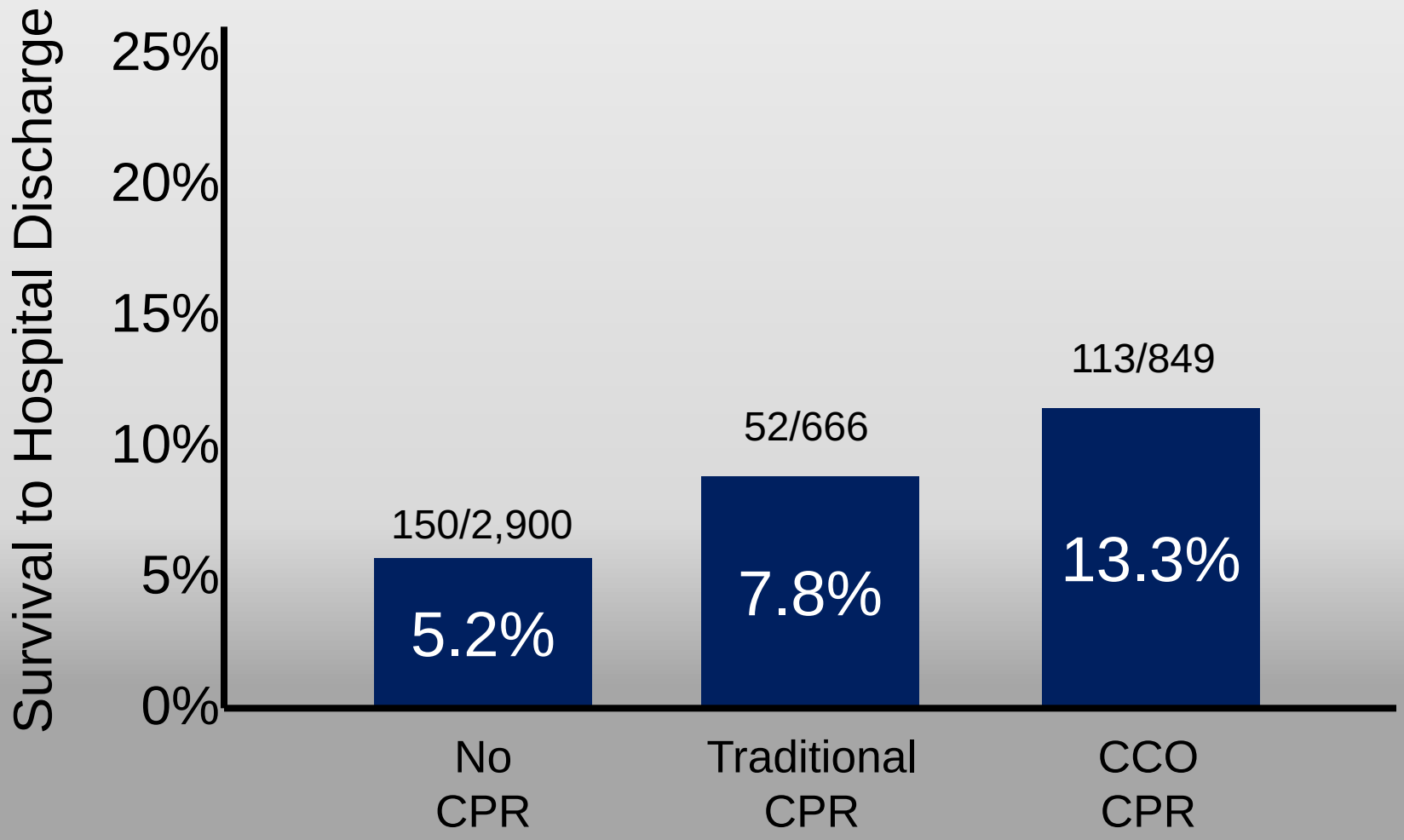
What Stops People from Doing CPR?

Fear / Concern	Solution
Mouth-to-Mouth	Chest Compressions Only
Harming the Person	Better than dead
Legal Consequences	Good Samaritan Law
Won't Perform Properly	Easier to Do
Physically Unable	Do Your Best / Call For Help

Coons SJ, et al. *Resuscitation* 80;334-340:2009

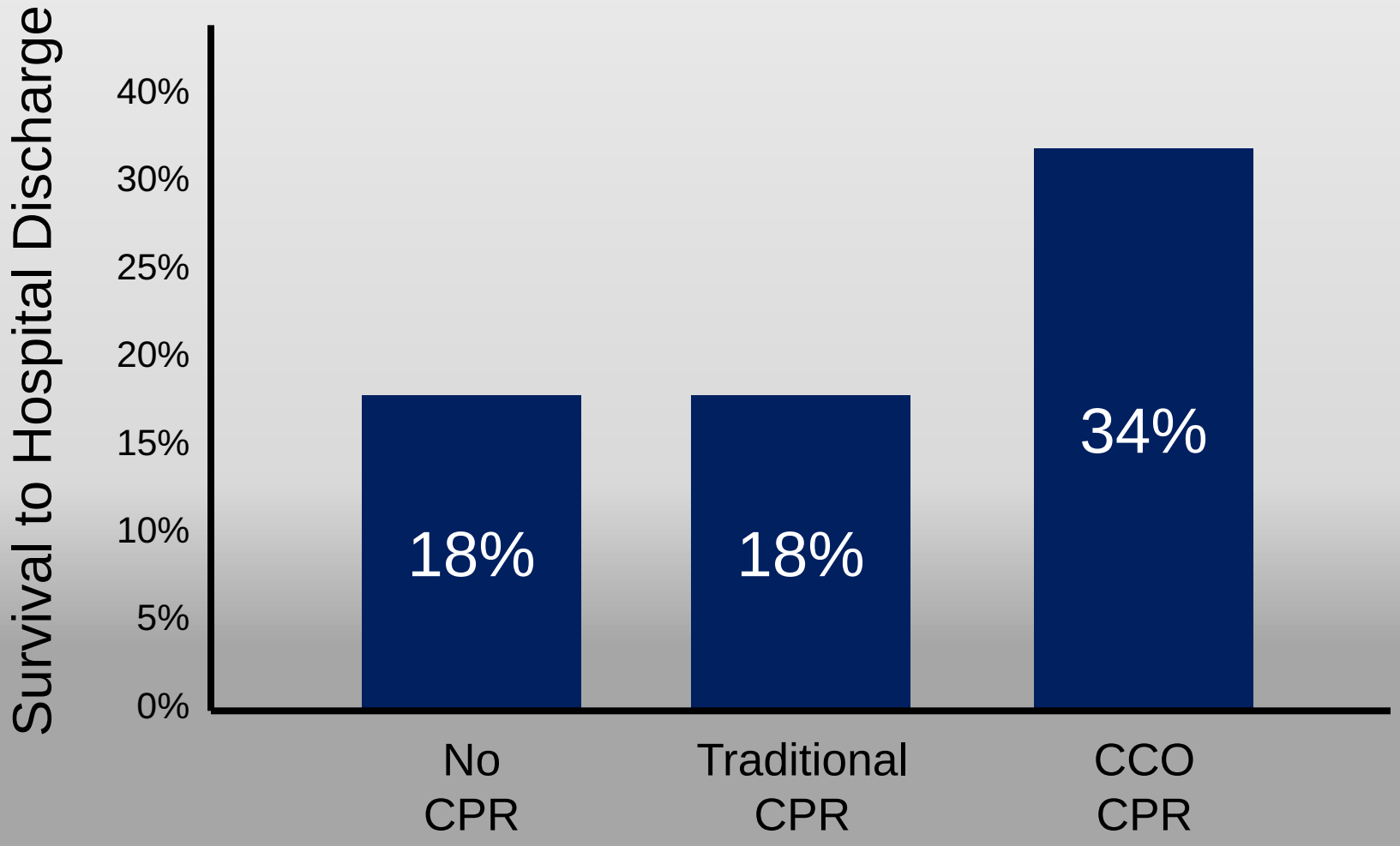
This study was designed and funded by the Sarver Heart Center
The University of Arizona College of Medicine and SHARE

Bystander CPR in Arizona
All out-of-hospital cardiac arrests



Rates are for all cardiac arrests; from Bobrow, et al. JAMA October 2010

Bystander CPR in Arizona Witnessed Cardiac Arrest



Rates are for ventricular fibrillation; from Bobrow, et al. JAMA October 2010

When to use Chest Compression Only CPR?

- Someone who unexpectedly collapses and is unresponsive.
- This includes almost all cardiac arrest victims

When in doubt, do compressions!!

When to use
Chest Compression with Rescue Breathing

- If the rescuer is trained to provide rescue breathing with CPR and has the appropriate equipment and personal protective equipment.

AND

- The victim who has suffered a cardiac arrest due to lack of oxygen
  - Drowning
  - Choking
  - Drug overdoses – victim stops breathing and goes into cardiac arrest
  - Children (less than 8) assumed to have stopped breathing, causing cardiac arrest.

When in doubt, do compressions!!

What to do:

Check

Shake & Shout

Are they breathing normally?

Call 911

Send Someone for an A.E.D. (if available)

Dispatcher can often help coach CPR

Compress

at 100-120 Per Minute

What to do:

The first step is to check to see if the patient is conscious and breathing normally

Are They Conscious?

- Yell at the victim, tap or shake to try and get a response.
- If the patient is not conscious or is semi-conscious then move on to check for normal breathing.

Are They Breathing?

- “Breathing normally” means appearing to breath normally or talk.
- The victim can be short of breath, but if they are still talking they don’t immediately need chest compressions
- Agonal, really slow, or gasping is the same as no breathing.

So if the victim is not conscious and not breathing normally or is gasping, immediately begin chest compressions

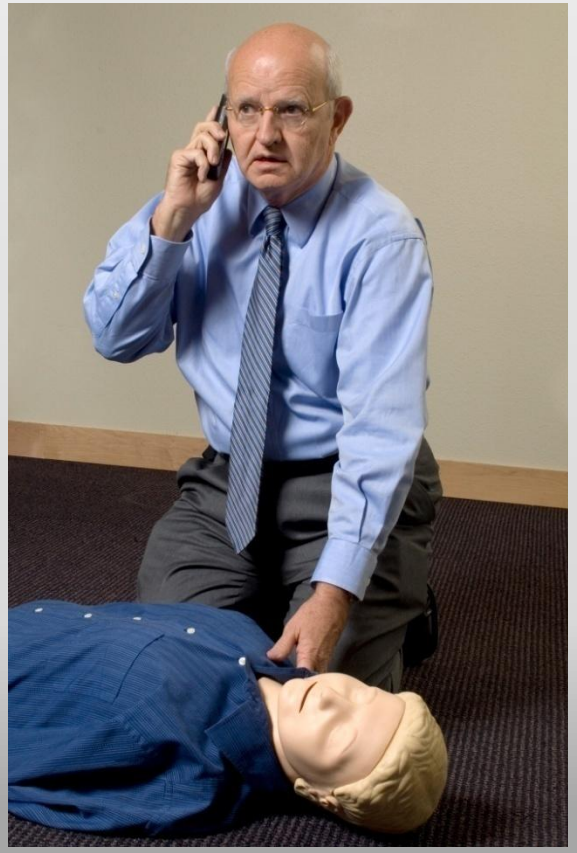
Are They Breathing?

- Gasping is a sign of cardiac arrest
- Majority of people with cardiac arrest gasp
- Can be a sign of minimal, but adequate blood flow to the brain.
- **DO NOT** stop chest compressions if they gasp

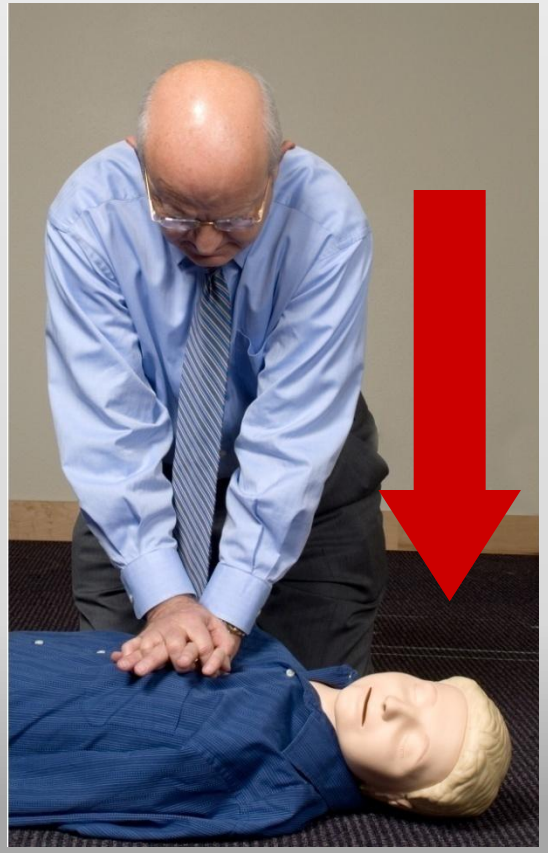
How to Do Chest Compression Only CPR

- Hand position – heel of the hand in the center of the chest on the breastbone, with the other hand on top
- Body position – knees next to the victim and shoulders over hands.
- Push hard and fast
- Switch rescuers every 1-2 minutes – you can coach someone else how to do this.

How to Do Chest Compression Only CPR



Call for help



Push down hard

Take all your weight off

Chest Compression Rate & Depth

100-120
Compressions per Minute

2-2.4 in.
in depth

- This is the optimal chest compression rate and depth – but is hard to achieve without special equipment.
- Err on the side of too deep and take all your weight off the chest with each compression.

Things to remember

- Push deep and come up all the way.
  - Err on the side of too deep
- Keep a beat
  - There are a bunch of songs
  - Use a metronome – there's an app for that
- Don't worry about hurting the patient
  - Ribs may break – Keep going!
  - The patient may make funny sounds – Keep going!

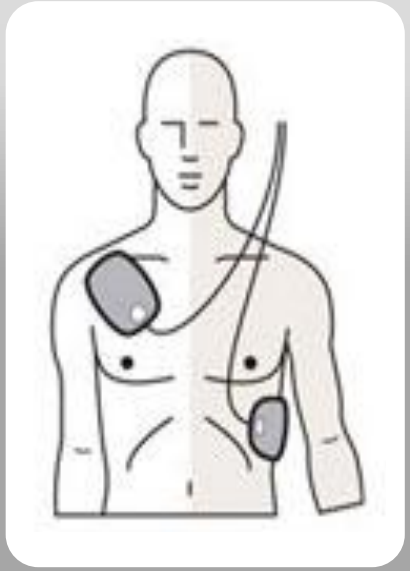
Automatic External Defibrillators (AEDs)

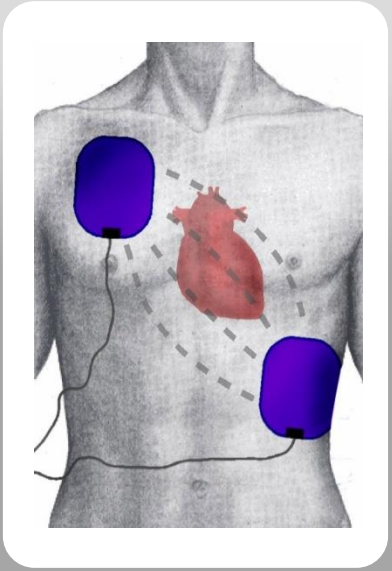
AEDs

They may look different, but they all function the **Same**!

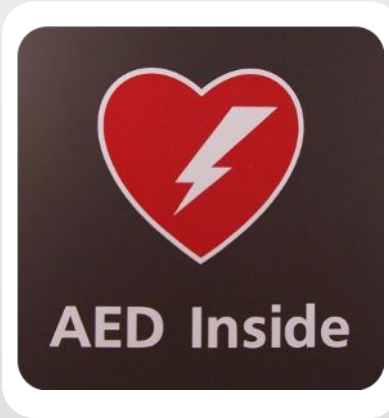
Open and Follow Instructions

- Turn AED ON
- Apply Pads to Bare Chest
- Plug in Pads (*if necessary*)
- Analyze Patient (*CLEAR*!)
- Push Shock to defibrillate, if directed (*CLEAR*!)
- Immediately resume CPR





The Universal Symbol



- Safe
- Easy
- Voice Prompted

Thank You

Save your Breath…
Save a Life

THE UNIVERSITY OF ARIZONA®

Sarver Heart Center

REACT
Resuscitation Education and CPR Training Group

University of Arizona College of Medicine Students
Dedicated to Teaching People Lifesaving Skills

What to do:

Check

Shake & Shout

Are they breathing normally?

Call 911

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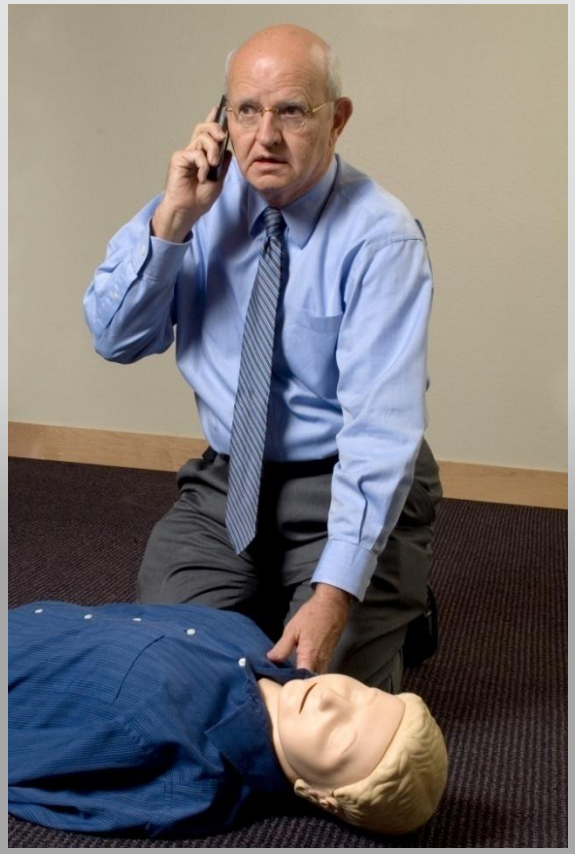
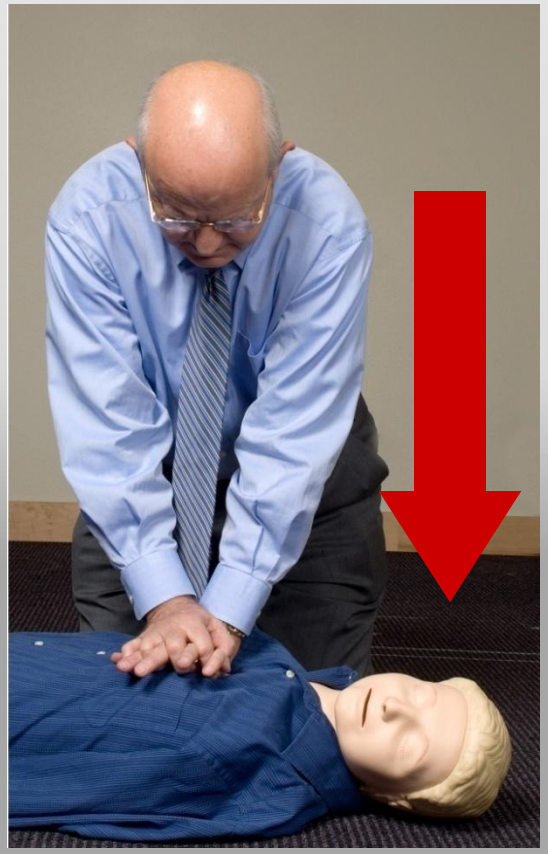
at 100-120 Per Minute

How to Do Chest Compression Only CPR

With the victim on the floor:

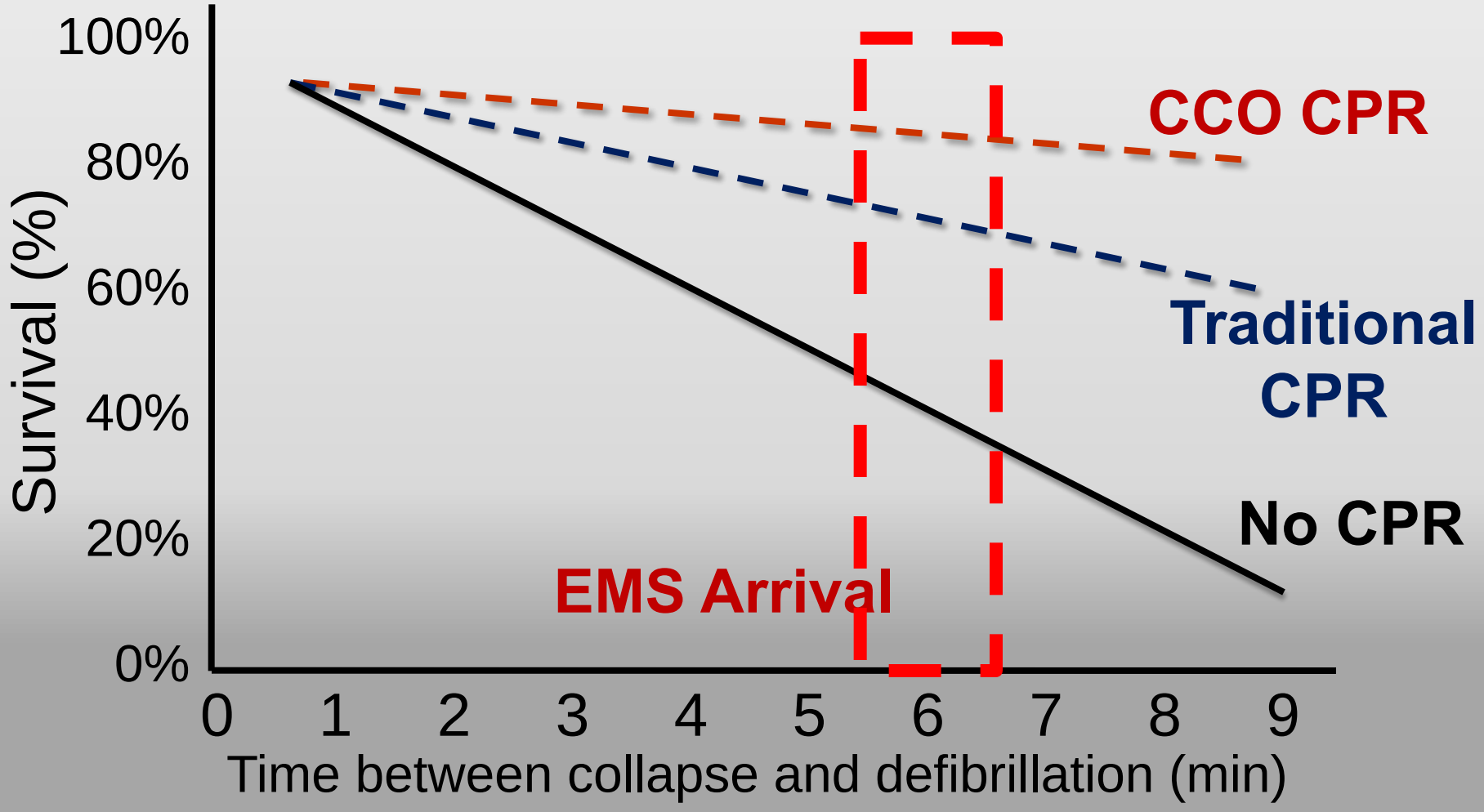
1. Kneel beside them
2. Place one hand on top of the other
3. Lock your elbows
4. Aim for the middle of the chest (on the sternum between the nipples)
5. Push hard and fast (try for 100/min.)
6. Take turns with another person when tired.





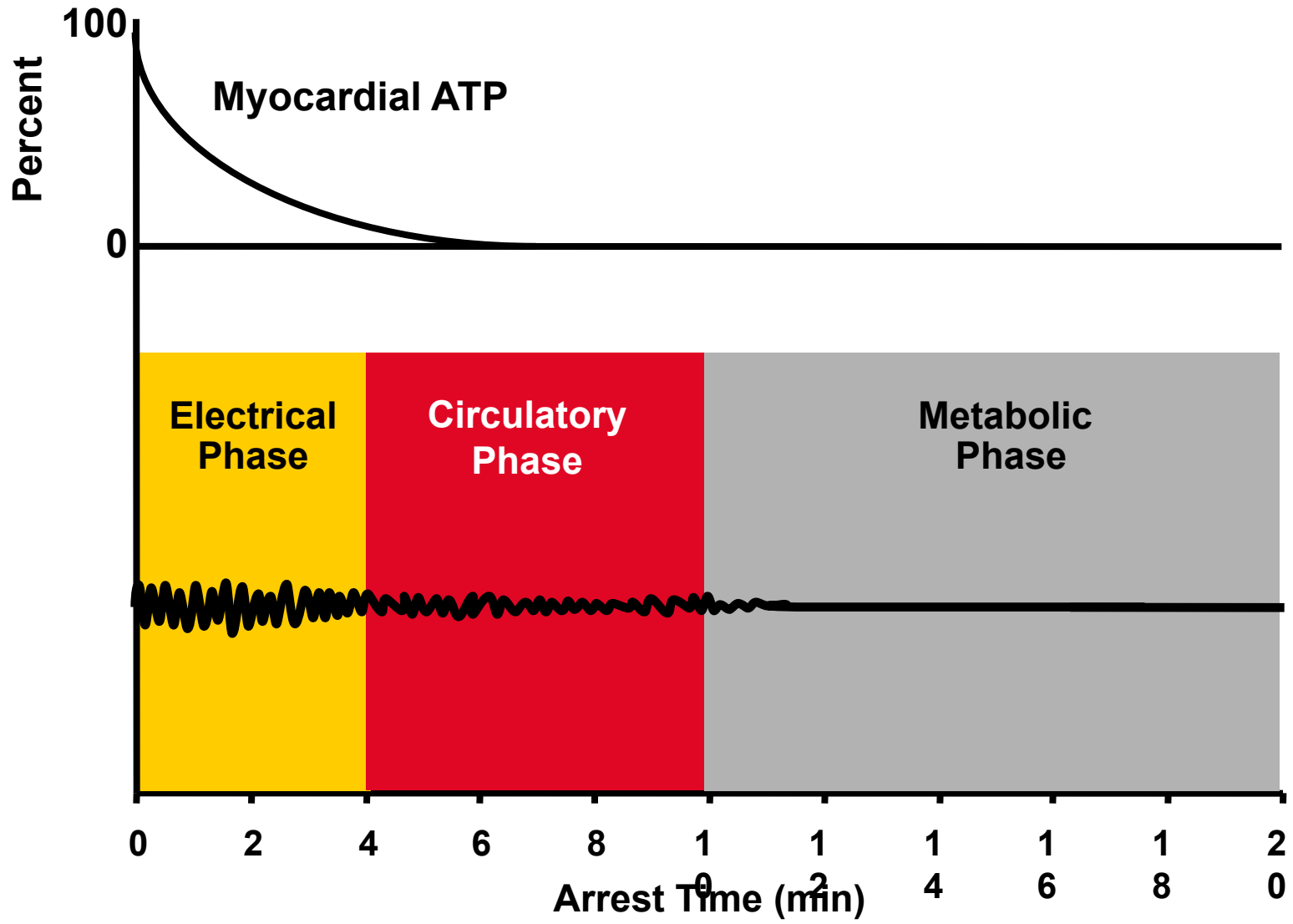
Appendix

Bystander CCO CPR Improves Chance of Survival from Cardiac Arrest

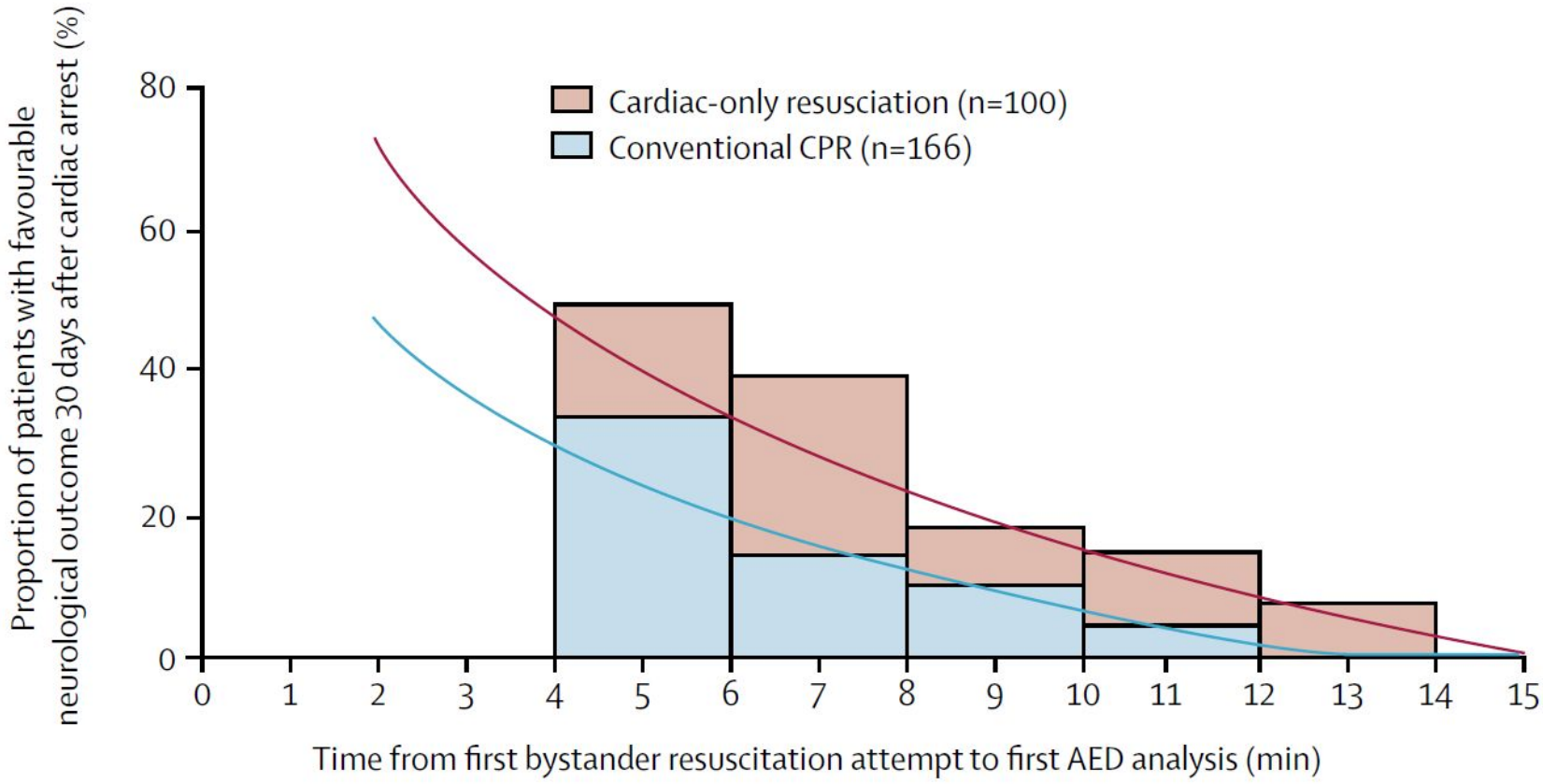


Nagao, K Current Opinions in Critical Care 2009
EMS Arrival Time based on TFD 90% Code 3 Response in FY2008. Standards of Response Coverage 2008.

Three-Phase Model of Resuscitation

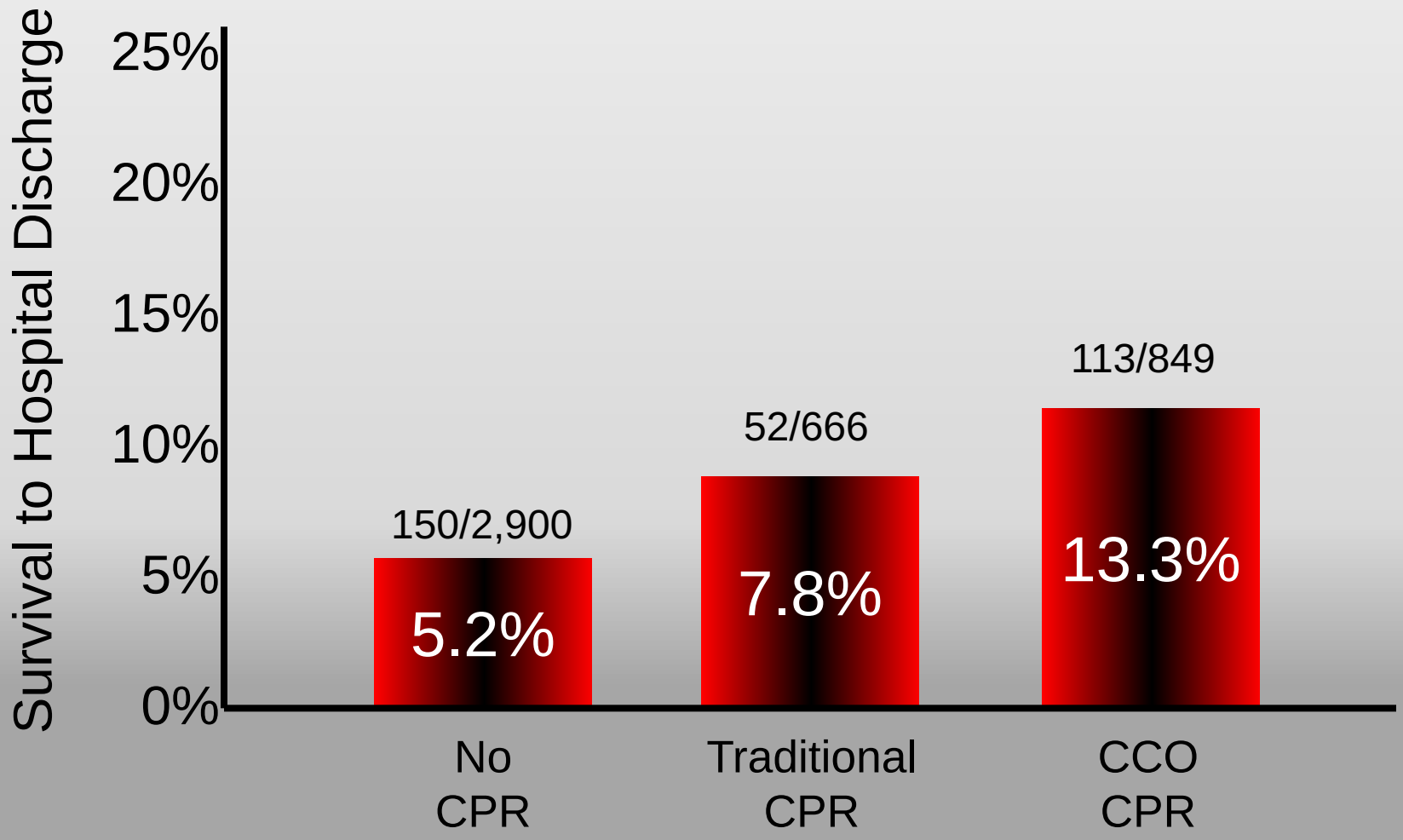


Weisfeldt ML, Becker LB. *JAMA* 2002: 288:3035-8



SOS-Kanto study group. Cardiopulmonary resuscitation by bystanders with chest compression only (SOS-KANTO): an observational study. Lancet. 2007;369:920-6.

Bystander CPR in Arizona (2005 to 2010)
All out-of-hospital cardiac arrests



Rates are for all cardiac arrests; from Bobrow, et al. JAMA October 2010

- FAST for Stroke if people ask about stroke
- Face –Does one side droop? Smile?
- Arms – Raise arms? Is one weak or numb?
- Speech – Slurred? Repeat a simple sentence?
- Time – Have symptoms? Call 911! Get to hospital immediately!