



# *The Story of 2 Children: Rescue and CPR for Drowning Victims*

**AAP Webinar #2**



American Academy of Pediatrics  
Orange County Chapter  
INCORPORATED IN CALIFORNIA

**Presented by**  
**Mary Jo Quintero, RN**

# Disclosure

Neither I nor any member of my immediate family has a financial relationship or interest (currently or within the past 12 months) with any proprietary entity producing health care goods or services consumed by, or used on, patients related to the content of this CME activity.

I do not intend to discuss an unapproved/investigative use of a commercial product/device.

# Our job today ....

- Review why Cardiopulmonary Resuscitation (CPR) is important as an integral part of drowning prevention strategy.
- Discuss how COVID challenges for bystander and health care professional CPR have been addressed.
- Look at resources available for bystander CPR as a part of injury prevention strategy.

*Everyone has a reason why....*

# BARRETT SMADES FORREST



Barrett Smades Forrest, age 31, was born in Fresno, CA, and had suffered a tragic swimming pool accident at the age of two. He would have celebrated his thirty second birthday on November 1, 2016. He lived at Jan and Gail's Care Home in Tulare, CA, for the last 19 years where he passed away peacefully. He was preceded in death by his father, Theodore Forrest Jr.; and grandfathers, Harold Smades, and Robert Klein Sr. He is survived by his parents, Debbie and Cliff Henes; sisters, Julie, Brooke and Tiffany Henes; brothers, Chad, Brian, and Steven Forrest; grandmother, Helen Smades; aunts, Kathi Hintz, Patti Hutchins (Wade), and Cindy Smades. The family would like to thank Jan and Gail's Care Home. We are forever grateful to their loving staff. A Funeral Mass will be held at St. Anthony of Padua Catholic Church, 5680 N. Maroa Ave., Fresno, CA, on Friday, November 4, 2016, at 11:00 a.m. In lieu of flowers, donations may be made to the Barrett Smades Forrest Drowning Prevention Fund, c/o Valley Children's Hospital Foundation, 9300 Children's Place, Madera, CA 93636.

To Plant Memorial Trees in memory, please visit our [Sympathy Store](#).

Published in Fresno Bee from Nov. 2 to Nov. 3, 2016.

<https://www.legacy.com/obituaries/fresnobee/obituary.aspx?n=barrett-smades-forrest&pid=182254373>

*Not my patient...*



**GIRL SURVIVES CARDIAC ARREST**  
WAS ONLY 16 YEARS OLD

WVLT **8** 6:08  
64°



**GIRL SURVIVES CARDIAC ARREST**  
WAS ONLY 16 YEARS OLD

WVLT **8** 6:07  
64°

- Why did one survive and the other did not?
- How could Barrett's outcome been like Mandy's?



We have no better ICU / ALS resuscitation – we are just doing less today....



- If we can't fix the hypoxic injured brain in the PICU with all of our many therapeutic modalities, how could Barrett's outcome been like Mandy's?
- 3 things.....
  - Prevention (never happened)





- Last 2 things that could have changed Barrett's outcome.....

## Circulation

### Part 4: Pediatric Basic and Advanced Life Support

2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

- Shorter downtime

Shorter submersion times are associated with better outcomes after pediatric nonfatal drowning.<sup>22-25</sup> There is no clear association between patient age,<sup>23,26-31,38</sup> water type,<sup>30,32,33</sup> water temperature,<sup>23,25,34,35</sup> emergency medical services response times<sup>35,36</sup> or witnessed status,<sup>36-39</sup> and neurological outcome following nonfatal drowning. No single factor accurately predicts prognosis after nonfatal drowning.

# The other...

JAMA Pediatrics | [Original Investigation](#)

## Association of Bystander Cardiopulmonary Resuscitation With Overall and Neurologically Favorable Survival After Pediatric Out-of-Hospital Cardiac Arrest in the United States A Report From the Cardiac Arrest Registry to Enhance Survival Surveillance Registry

Maryam Y. Naim, MD; Rita V. Burke, PhD, MPH; Bryan F. McNally, MD, MPH; Lihai Song, MS; Heather M. Griffis, PhD; Robert A. Berg, MD; Kimberly Vellano, MPH; David Markenson, MD; Richard N. Bradley, MD; Joseph W. Rossano, MD, MS

**CONCLUSIONS AND RELEVANCE** Bystander CPR is associated with improved outcomes in pediatric OHCA. Improving the provision of BCPR in minority communities and increasing the use of conventional BCPR may improve outcomes for children with OHCA.

2017



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Resuscitation

journal homepage: [www.elsevier.com/locate/resuscitation](http://www.elsevier.com/locate/resuscitation)



Clinical paper

## Bystander CPR is associated with improved neurologically favourable survival in cardiac arrest following drowning



Joshua M. Tobin<sup>a,\*</sup>, William D. Ramos<sup>b</sup>, Yongjia Pu<sup>b</sup>, Peter G. Wernicki<sup>c</sup>,  
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2010 AHA Guidelines for CPR

A Change From **A-B-C** to **C-A-B**

CPR is as easy as **A-B-C**

**A**irway: Tilt the victim's head back and lift the chin to open the airway

**B**reathing: Give mouth-to-mouth rescue breaths

**C**ompressions: Push hard and fast on the center of the victim's chest

2005

→

**CPR is as easy as C-A-B**

**C**ompressions: Push hard and fast on the center of the victim's chest

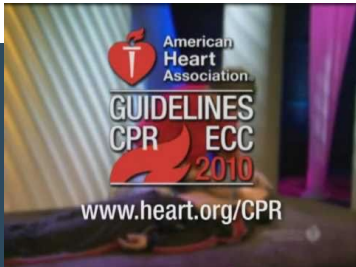
**A**irway: Tilt the victim's head back and lift the chin to open the airway

**B**reathing: Give mouth-to-mouth rescue breaths

American Heart Association  
Learn and Live

©2010 American Heart Association 10/100S3849

2010



2020 CPR & ECC GUIDELINES

NEWS FROM THE AMERICAN HEART ASSOCIATION

**CPR is as easy as C-A-B**

**C**ompressions: Push hard and fast on the center of the victim's chest

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American Heart Association  
Learn and Live

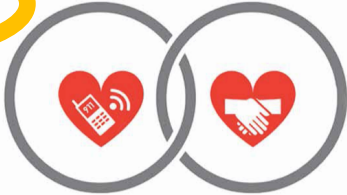
©2010 American Heart Association 10/100S3849

# 2015 + 2020 Guidelines

## SAVE A LIFE IN TWO STEPS WITH HANDS-ONLY CPR

Heart attacks can happen anywhere and be deadly without immediate action. Don't be afraid to help!

After calling 911, perform hands-only CPR on the person in distress: Push hard and fast in the center of the chest to the beat of the classic disco hit "Stayin' Alive" until help arrives.



EARLY ACCESS

EARLY CPR

Learn more at [UFHealth.org/heart](http://UFHealth.org/heart)

<https://www.heart.org/en/news/2018/07/12/drowning-can-be-fast-and-silent-but-it-can-be-prevented-too>

**LEARN CPR** | For drowning, the American Heart Association recommends rescue breaths along with compressions

**REMEMBER LIFE JACKETS** | Half of all boating deaths could be prevented with their use.

**LEARN TO SWIM** | Drowning is the second-leading cause of death in children between ages 1 and 4.

**SECURE THE POOL** | Install fencing with self-closing gates at least 4 feet high to separate the pool from the house and yard.

# STAYING SAFE

*in the water*

BY AMERICAN HEART ASSOCIATION NEWS

**TEACH SAFETY** | Talk about risky behavior: diving or swimming in unfamiliar water, and alcohol or drug use while in or near water.



**CLEAR OUT POOL TOYS** | Make sure children aren't tempted to play unsupervised.

NO DIVING!

NO RUNNING!

Sources: Centers for Disease Control and Prevention, National Drowning Prevention Alliance  
Published June 15, 2018

# Bystander-initiated conventional vs compression-only cardiopulmonary resuscitation and outcomes after out-of-hospital cardiac arrest due to drowning

Tatsuma Fukuda   • Naoko Ohashi-Fukuda • Kei Hayashida • Yutaka Kondo • Ichiro Kukita

Published: October 19, 2019 • DOI: <https://doi.org/10.1016/j.resuscitation.2019.08.026> •



## Methods

This nationwide population-based observational study using prospectively collected government-led registry data included patients with OHCA due to drowning who were transported to an emergency hospital in Japan between 2013 and 2016. The primary outcome was one-month neurologically favorable survival.

## Results

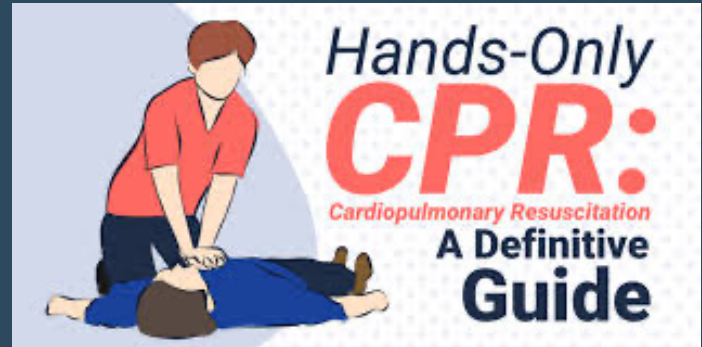
The full cohort (n = 5121) comprised 2486 (48.5%) male patients, and the mean age was 72.4 years (standard deviation, 21.6). Of these, 968 (18.9%) received conventional CPR, and 4153 (81.1%) received compression-only CPR. 928 patients receiving conventional CPR were propensity-matched with 928 patients receiving compression-only CPR. In the propensity score-matched cohort, one-month neurologically favorable survival was not significantly different between the two groups (7.5% in the conventional CPR group vs. 6.6% in the compression-only CPR group; risk ratio, 1.15; 95% confidence interval, 0.82–1.60;  $P = 0.4147$ ). This association was consistent across a variety of subgroup analyses.

## Conclusions

Among patients with OHCA due to drowning, there were no differences in one-month neurologically favorable survival between bystander-initiated conventional and compression-only CPR groups, although several important data (e.g., water temperature, submersion duration, or body of water) could not be addressed. Further study is warranted to confirm our findings.



# CORONAVIRUS



# COVID-19 and Child and Infant CPR

If a child or an infant's heart stops and you're worried that they may have COVID-19, you can still help.



American Heart Association.

## Step 1

Make sure the scene is safe.

Check to see if the child or infant is awake and breathing normally.

## Step 2

Shout for help.

If you're alone, phone 9-1-1 from a cell phone, perform CPR with 30 compressions and then 2 breaths (if you're willing and able) for 5 cycles, and get an AED.

If help is available, phone 9-1-1. Send someone to get an AED while you start CPR.

## Step 3

Provide CPR with compressions and breaths (if you're willing and able).



### Start child CPR

Push on the middle of the chest 30 times at a depth of 2 inches with 1 or 2 hands. Provide 30 compressions and then 2 breaths. Repeat cycles.

### Start infant CPR

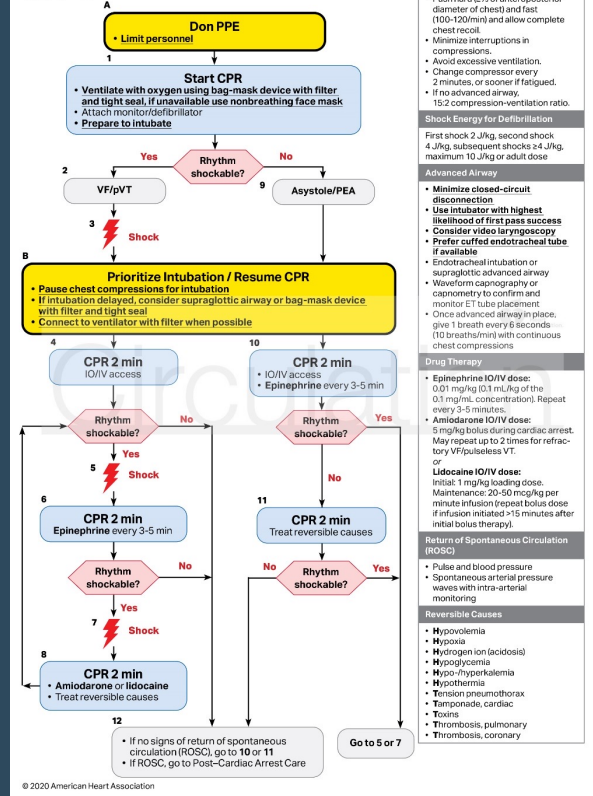
Push on the middle of the chest 30 times at a depth of 1½ inches with 2 fingers. Provide 30 compressions and then 2 breaths. Repeat cycles.

Use the AED as soon as it arrives. Continue CPR until EMS arrives.

KJ-1424 4/20 © 2020 American Heart Association

## Pediatric Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



## COVID-19 and Adult CPR

If an adult's heart stops and you're worried that they may have COVID-19, you can still help by performing Hands-Only CPR.



### Step 1



Phone 9-1-1 and get an AED.

### Step 2



Cover your own mouth and nose with a face mask or cloth.



Cover the person's mouth and nose with a face mask or cloth.

### Step 3



Perform Hands-Only CPR. Push hard and fast on the center of the chest at a rate of 100 to 120 compressions per minute.

### Step 4



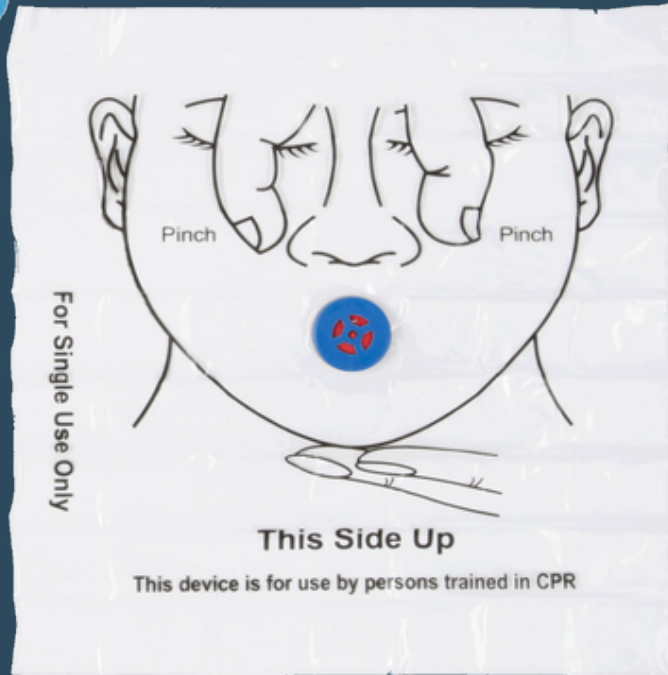
Use an AED as soon as it is available.



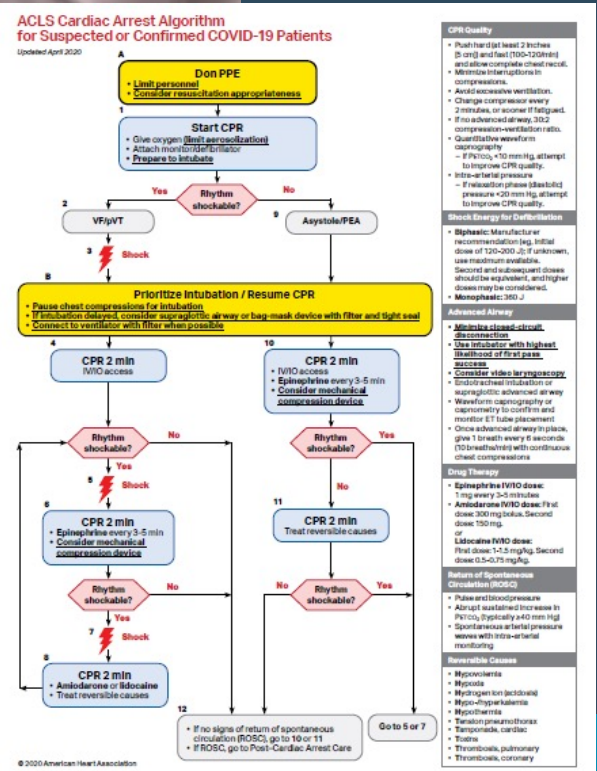
## 2020 GUIDELINES

NEWS FROM THE AMERICAN HEART ASSOCIATION





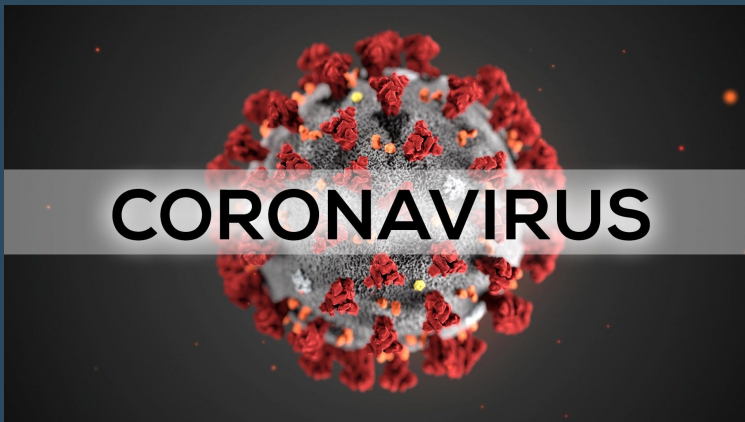
# mCPR (with LUCAS device)












**CORONAVIRUS**





58°  Hollywood, Los Angeles

**KTLA 5**

WATCH LIVE  ELECTION GUIDE  RESULTS  CORONAVIRUS  NEWS  MORNING NEWS  WEATHER

**CALIFORNIA**

**8-year-old girl rescued from Fresno County river is on life support, has tested positive for COVID-19**

<https://ktla.com/news/california/8-year-old-girl-rescued-from-fresno-county-river-is-on-life-support-has-tested-positive-for-covid-19/>



## Prevention of Drowning

Sarah A. Denny, MD, FAAP;<sup>a</sup> Linda Quan, MD, FAAP;<sup>b</sup> Julie Gilchrist, MD, FAAP;<sup>c</sup> Tracy McCallin, MD, FAAP;<sup>d,e</sup> Rohit Shenoi, MD, FAAP;<sup>f</sup> Shabana Yusuf, MD, Med, FAAP;<sup>g</sup> Benjamin Hoffman, MD, FAAP;<sup>h</sup> Jeffrey Weiss, MD, FAAP;<sup>h</sup> COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION

**TABLE 1** Top Tips for Pediatricians

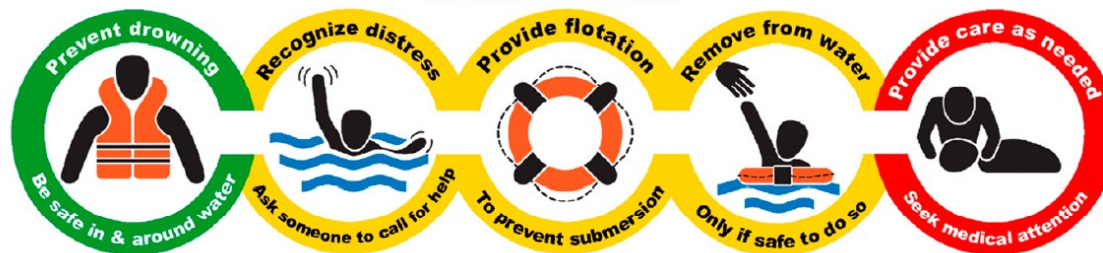
Assess all children for drowning risk on the basis of risk and age and prioritize evidence-based strategies:

- barriers;
- supervision;
- swim lessons;
- life jackets; and
- CPR.

Prompt initiation of bystander CPR, with a focus on airway and rescue breathing before compressions<sup>43</sup> and activation of prehospital advanced cardiac life support for the pediatric submersion victim, have the greatest impact on survival and prognosis.<sup>4,44</sup> Current guidelines recommend that drowning victims who require any form of resuscitation (including only rescue breaths) be transported to the emergency department for evaluation and monitoring, even if they appear alert with effective cardiopulmonary function at the scene.<sup>43</sup>

## DROWNING CHAIN OF SURVIVAL

A call to action



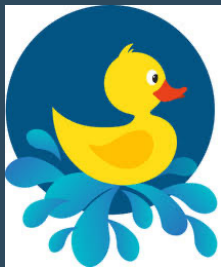
**FIGURE 1**

Drowning chain of survival. (Reprinted with permission from Szpilman D, Webber J, Quan L, et al. Creating a drowning chain of survival. *Resuscitation*. 2014;85[9]:1151.)

Goldman  
Swim School



Water Safety Awareness Week!



Children's Water Safety Awareness

Continuing Education in Boating & Water Safety

NATIONAL WATER SAFETY CONGRESS

Since 1951

Circle of Drowning Prevention  
Layers of protection are essential to help prevent drowning.  
Plan ahead for aquatic activities:



www.Bobber.info



Stew Leonard III Water Safety FOUNDATION



Chain of Drowning Survival  
A person who is drowning has the greatest chance of survival if these steps are followed:



Live by the ABCDs of Water Safety

- A** Adult Supervision, Always Swim With A Buddy
- B** Bathrooms, Backwards, Barriers, Beach, & Boating Safety
- C** Classes: Swim & CPR Lessons, Canal Safety
- D** Drain Safety & Driving Safety

Be Water Smart!

Exciting Volunteer Opportunities Available



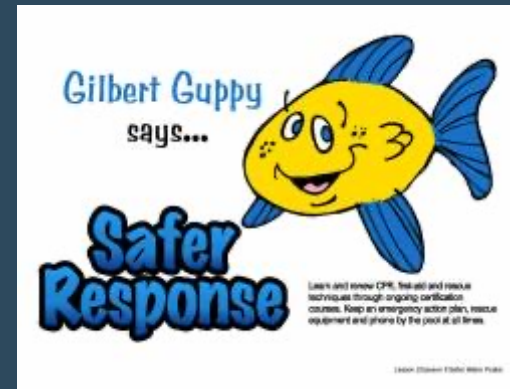
Contact Us  
Palm Beach County Board of County Commissioners  
Drowning Prevention Coalition of Palm Beach County  
405 Pike Rd., WPB, FL 33411  
(561) 616-7068  
www.pbcgov.com/dpc

Children's Services Council  
Healthy. Safe. Strong.



**Safer Response** overviews emergency response techniques and emergency action plans as a path to water safety.

Learning cardiopulmonary resuscitation (CPR) and first aid, as well as having a phone by the pool at all times, are just a few of the water safety tips covered here.



## Sink or Swim—Clinicians Don't Often Counsel on Drowning Prevention

Shari Barkin, MD, MSHS\*, and Lillian Gelberg, MD, MSPH‡

**Abstract.** *Objective.* Drowning is one of the leading causes of injury death for young children in the United States. This study examined primary care providers' knowledge of and counseling on drowning prevention.

*Methods.* A random sample of 465 Los Angeles County pediatricians, family physicians, and pediatric nurse practitioners who serve families with young children received mailed questionnaires; 325 (70%) responded.

*Results.* About two thirds of clinicians did not know that injury deaths attributable to drowning were more common than those attributable to toxic ingestions and firearm injuries in young children. Only one third of clinicians stated they counseled on drowning prevention. Counseling drowning prevention was positively associated with female gender (odds ratio: 1.97; 95% confidence interval: 1.64, 2.30) and negatively associated with an attitude that drowning prevention counseling was less important than other injury prevention topics (odds ratio: .73; 95% confidence interval: .61, .85). Clinician specialty, age, years out from training, proportion of well-child examinations in a typical week, having children, practice setting, and knowledge of drowning injury deaths were not significant in multivariate analysis.

*Conclusion.* The belief of clinicians that it is less important to counsel on drowning prevention than other injury prevention topics poses a substantial challenge to their providing such education to families with young children. *Pediatrics* 1999;104:1217–1219; *drowning, counseling, physician's role.*

1999



# A Pilot Study on Water Safety Education of Providers and Caregivers in Outpatient Pediatric Clinical Settings to Increase Drowning Prevention Knowledge

Clinical Pediatrics  
2020, Vol. 59(4-5) 490-495  
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DOI: 10.1177/0009922820903412  
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Tracy McCallin, MD<sup>1,2</sup>, Mickinzie Morgan, MD<sup>3</sup>, Elizabeth A. Camp, PhD<sup>2</sup>,  
and Shabana Yusuf, MD, MEd<sup>2</sup> 



Figure 3. Intervention process.

Overall, pediatricians demonstrated increased water safety counseling with their patients after a brief, targeted educational intervention. Both provider and caregiver knowledge of drowning prevention and water safety increased at the end of the pilot phase.

# COMMUNITY RESOURCES



FREE CPR  
CLASSES LIST



**LIST OF THE BEST**










**FREE**

**ONLINE COURSES AND  
CERTIFICATIONS**

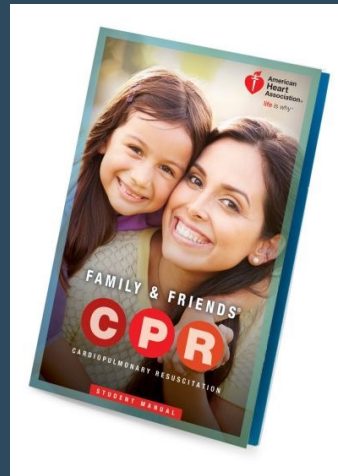
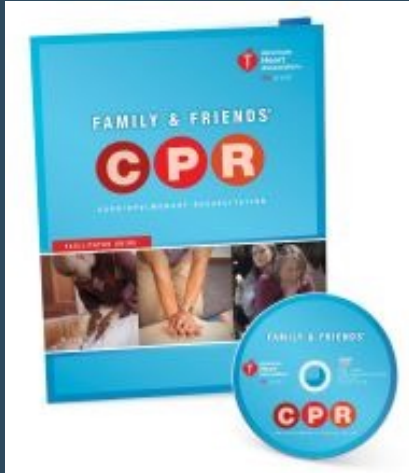
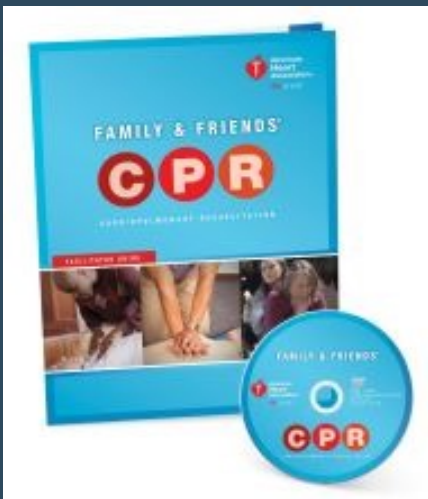


# Redcross CPR training in your neighborhood

[www.redcross.org/take-a-class/cpr](http://www.redcross.org/take-a-class/cpr)

 <b>American Red Cross</b> Training Services		<b>TRAINING + CERTIFICATION:</b> Individuals ▾ Organizations ▾		<b>SUPPLIES &amp; PRODUCTS</b> ▾		CPR ▾	CLOVIS, CA	
<b>Online</b>	<b>1-Year Online Provisional Adult And Pediatric FA/CPR/AED-OL</b> Class can be taken at your convenience <span style="float: right;">★★★★★ 4.4 (287)</span>	ONLINE	\$80.00	SEE DETAILS ▾	SIGN ME UP 			
<b>Online</b>	<b>1-Year Online Provisional Adult FA/CPR/AED-OL</b> Class can be taken at your convenience <span style="float: right;">★★★★★ 4.4 (247)</span>	ONLINE	\$60.00	SEE DETAILS ▾	SIGN ME UP 			
<b>Online</b>	<b>Adult, Child And Baby First Aid/CPR/AED Online</b> Class can be taken at your convenience <span style="float: right;">★★★★★ 4.6 (2595)</span>	ONLINE	\$35.00	SEE DETAILS ▾	SIGN ME UP 			
<b>Online</b>	<b>Adult First Aid/CPR/AED Online</b> Class can be taken at your convenience <span style="float: right;">★★★★★ 4.5 (1883)</span>	ONLINE	\$35.00	SEE DETAILS ▾	SIGN ME UP 			
<b>AUG 21</b> SATURDAY	09:00 AM - 03:00 PM <b>Adult First Aid/CPR/AED</b> FRESNO CA (6.35 Miles Away) <span style="float: right;">★★★★★ 4.7 (5663)</span>	CLASSROOM <b>1 SEAT LEFT</b>	\$105.00	SEE DETAILS ▾	SIGN ME UP 			
<b>AUG 21</b> SATURDAY	09:00 AM - 03:30 PM <b>Adult And Pediatric First Aid/CPR/AED</b> FRESNO CA (6.35 Miles Away) <span style="float: right;">★★★★★ 4.7 (9037)</span>	CLASSROOM <b>1 SEAT LEFT</b>	\$126.00	SEE DETAILS ▾	SIGN ME UP 			
<b>AUG 21</b> SATURDAY	09:00 AM - 12:00 PM <b>Adult CPR/AED</b> FRESNO CA (6.35 Miles Away) <span style="float: right;">★★★★★ 4.8 (2484)</span>	CLASSROOM <b>1 SEAT LEFT</b>	\$84.00	SEE DETAILS ▾	SIGN ME UP 			

<https://www.redcross.org/take-a-class/search?cgid=cpr&zip=fresno%2C+ca&latitude=36.7377981&longitude=-119.7871247&zipcode=&searchtype=class>



Infant CPR Anytime

AHA/Laerdal Adult & Child CPR Anytime Kit

**\$38.50**  
Common Cents EMS Supply

**\$38.50**  
WorldPoint



## Policy Statement: CPR training in the school

The American Academy of Pediatrics recommends that students receive training in cardiopulmonary resuscitation (CPR) at some time during grades 8 through 12.

In the last 20 years, there has been a dramatic decrease in the number of deaths from cardiovascular disease. This reduction in mortality has been occasioned by multiple factors, not the least of which is the early detection of, and prompt intervention in, a vaso-occlusive event. Immediate cardiopulmonary resuscitation is lifesaving for 30 percent to 45 percent of victims of cardiac arrest.<sup>1</sup> However, despite all this positive movement, each year approximately 700,000 Americans die of cardiovascular disorders.<sup>2</sup>

In addition, as part of our attempt to reduce this problem further, the medical profession has introduced cardiovascular risk reduction programs to an ever-younger population and promoted "healthy life-styles" among our youth. The next step is to train these same young people in CPR intervention techniques. Such programs are already in place in several states,<sup>3</sup> and there has been at least one demonstrable record of success.<sup>4</sup>

With evidence of the ability of the schools to implement these programs and with an indication of their effectiveness, the AAP recommends that local school districts undertake the implementation of CPR training programs for students between grades 8 and 12. We further recommend that:

1. All instructors be certified as CPR instructors by either the American Red Cross or the American Heart Association.

2. All students completing the course be certified as having been trained in CPR.

3. All students complete a recommended annual update of the CPR training.

4. All students completing the course be able to, a) describe ways of preventing cardiovascular disease; b) identify the early signs of heart attack and the need for emergency intervention; c) open an obstructed airway on both a conscious and an unconscious victim; and d) perform one-person and two-person CPR correctly.

Pediatricians should make known their support of this endeavor by their willingness to serve as organizers and instructors in their community. ■

### Committee on School Health (1985-1986)

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2. Cobb LA, Werner JA, Trabaugh GB: Sudden cardiac deaths: II. Outcome of resuscitation; management and future directions. *Modern Concepts of Cardiovascular Disease* 1980; 49:31-36.
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