



Implementation of Dispatch Assisted CPR

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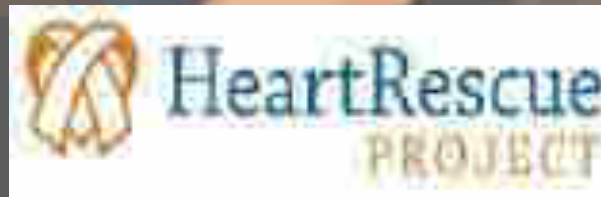
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Country: **United States**

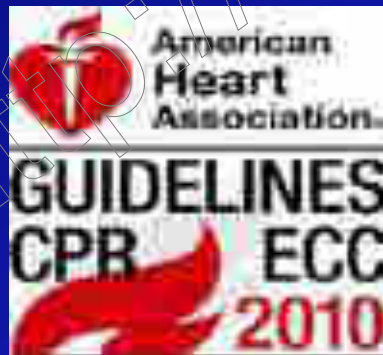
Implementation of Dispatch Assisted CPR

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Disclosures

- Chair - AHA BLS Subcommittee
- PI – Arizona HeartRescue Project
- PI - NIH R01 – Traumatic Brain Injury
- Site PI – NETT – RAMPART, ProTECT



HeartRescue Partners



Discussion Topics

- Dispatch CPR is key to saving lives from OHCA
- On-going, active measurement of DACPR is necessary to improve survival
- Without this, we cannot maximize survival
- We can work together to make this a reality in our communities?

Emergency Call



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System of Care

Active Measurement

Public

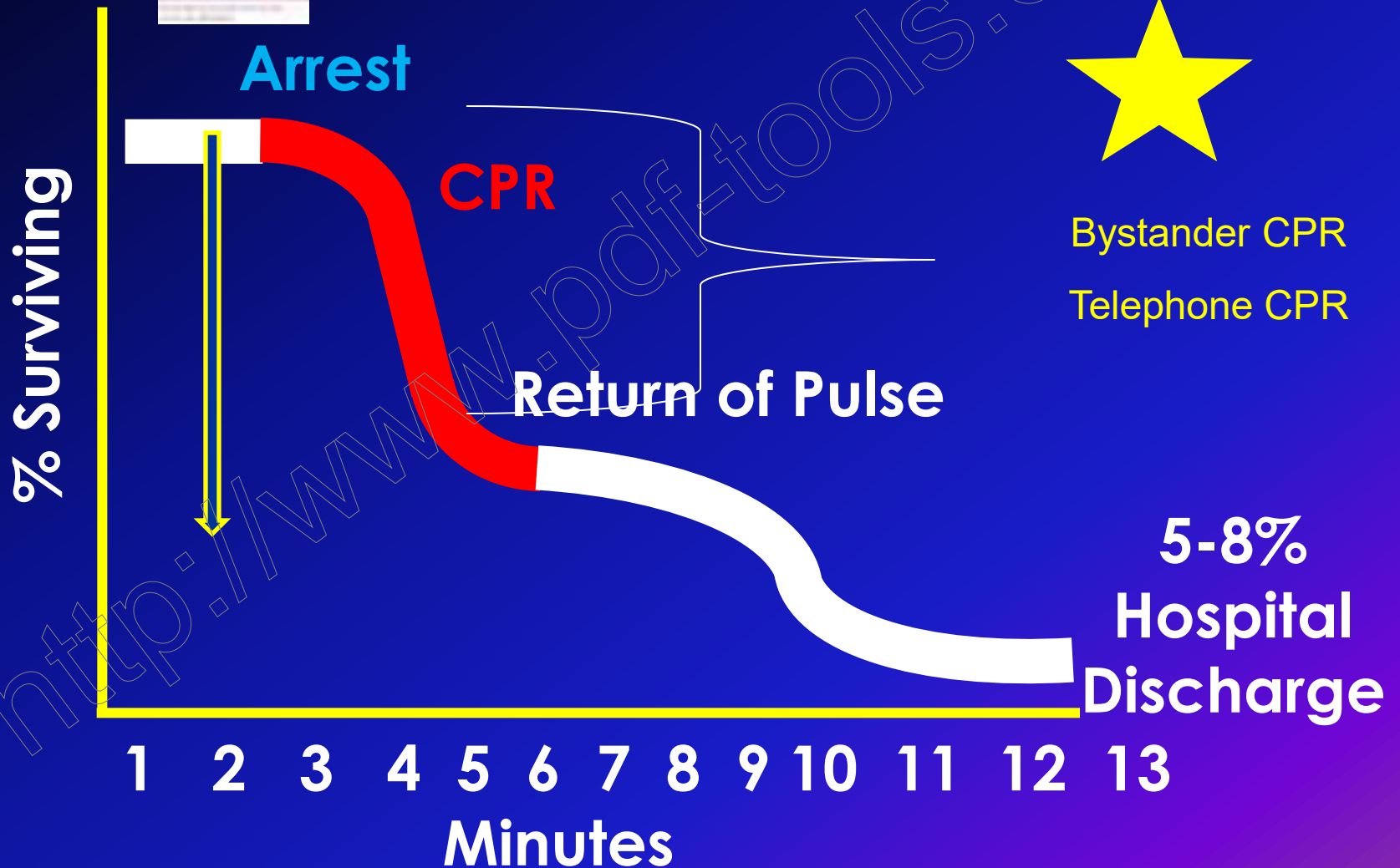
EMS

Hospital



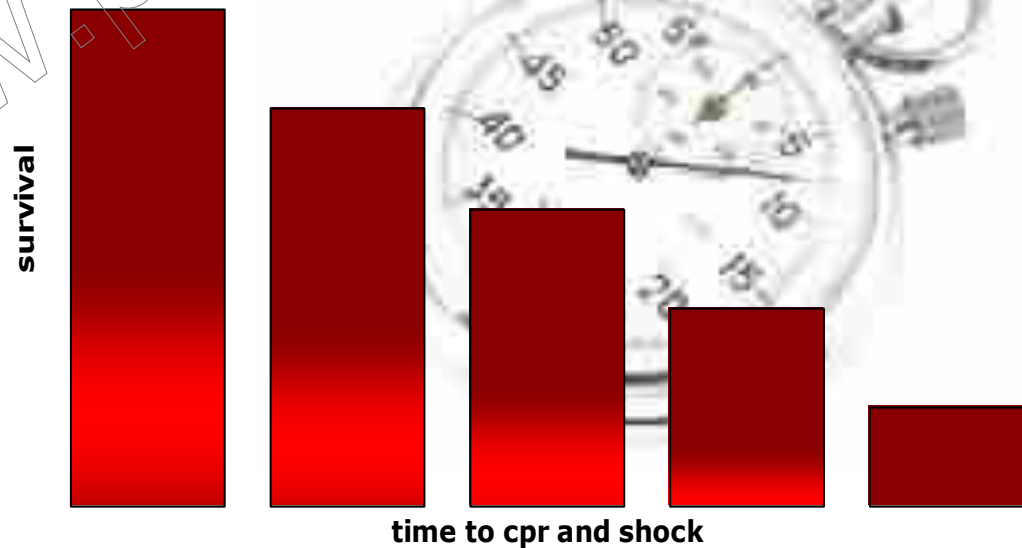


The cardiac arrest problem



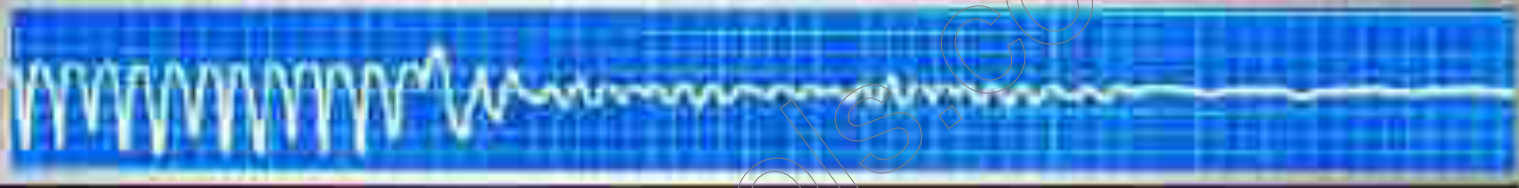
Time is Critical

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

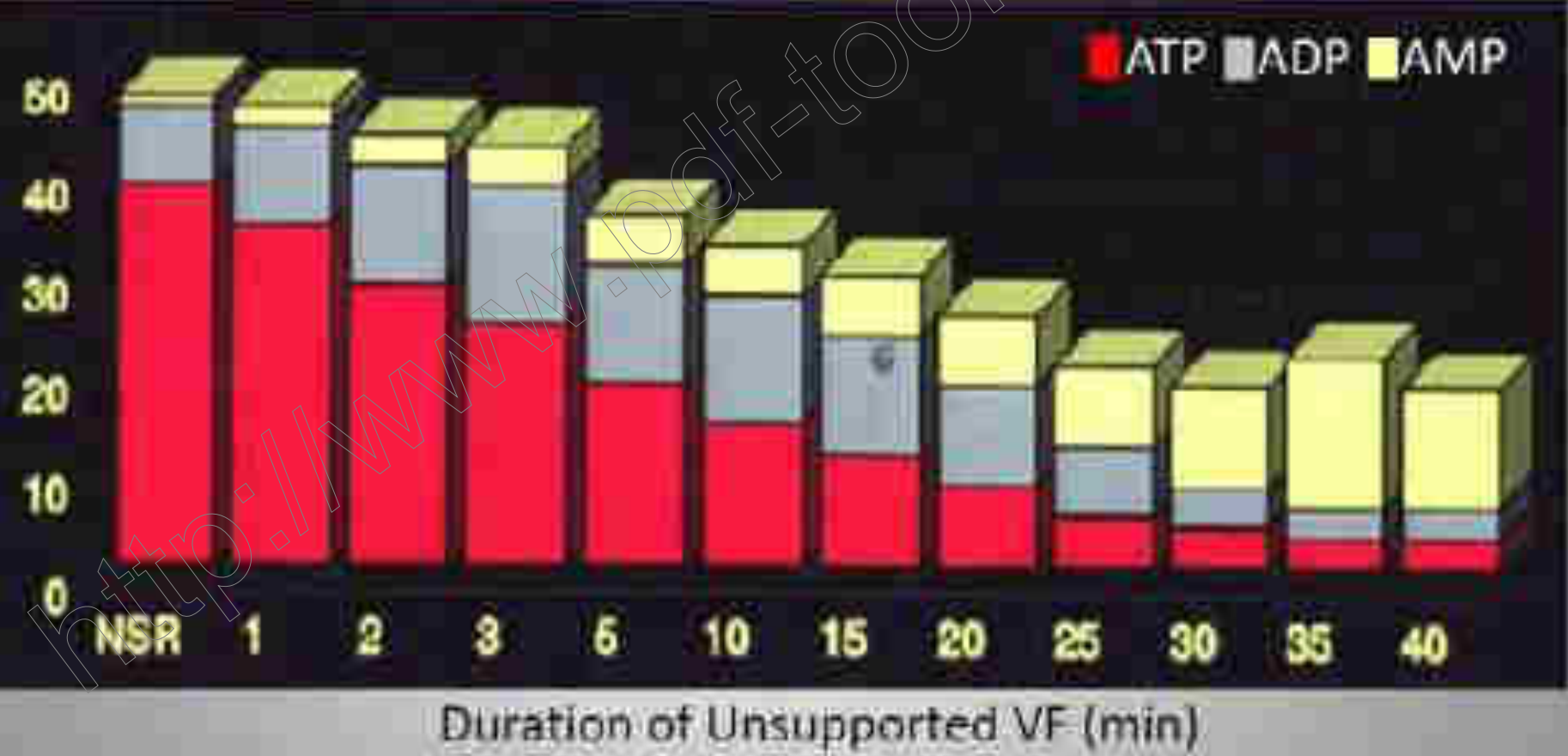


Adenosine Nucleotide Concentrations During VF

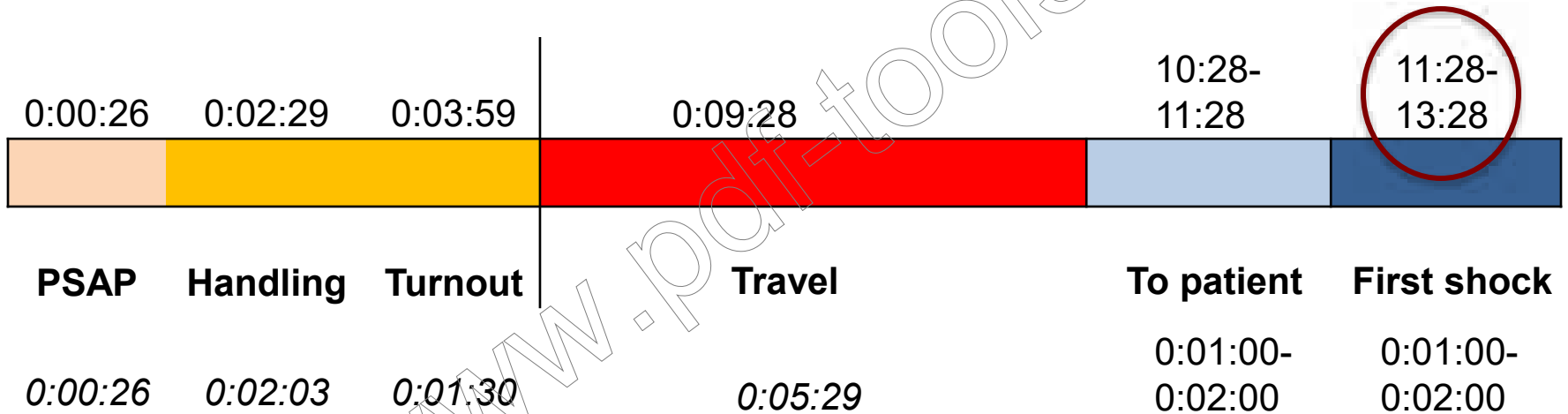
n = 10 swine (~10 samples/time period)



nmole/mg protein (transmural myocardial, bx)

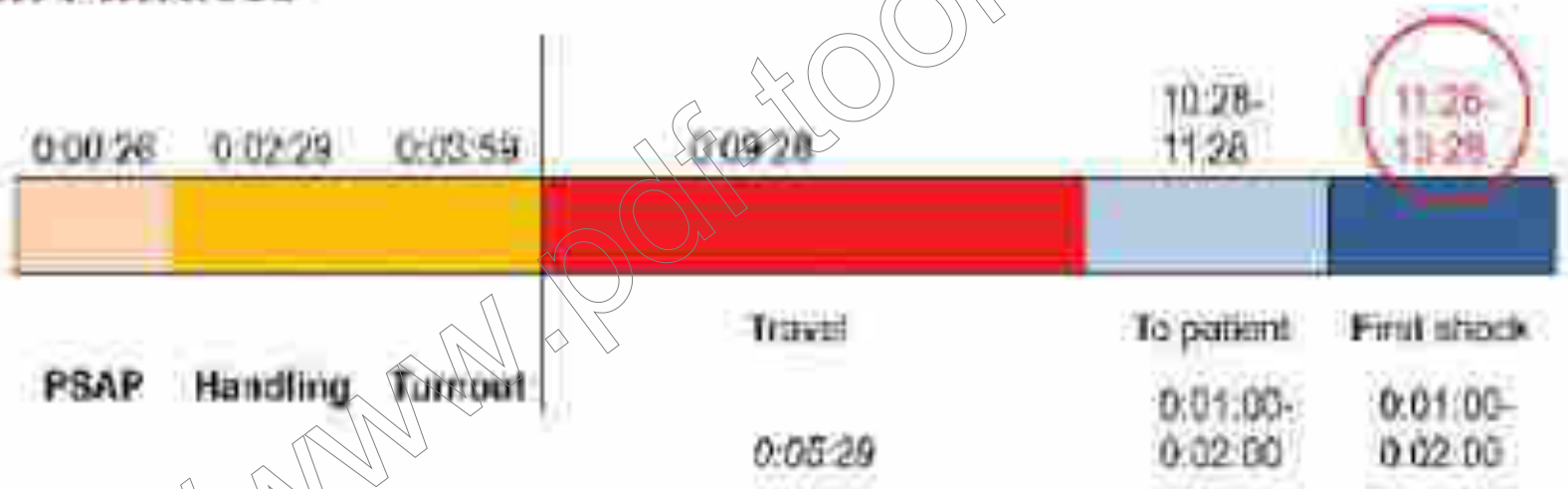


Cumulative Urban EMS Response Timeline



<http://www.pdf-tools.com>

Figure 1: Cumulative Urban EMS Response Timeline in Minutes



Courtesy of Mark Burdick



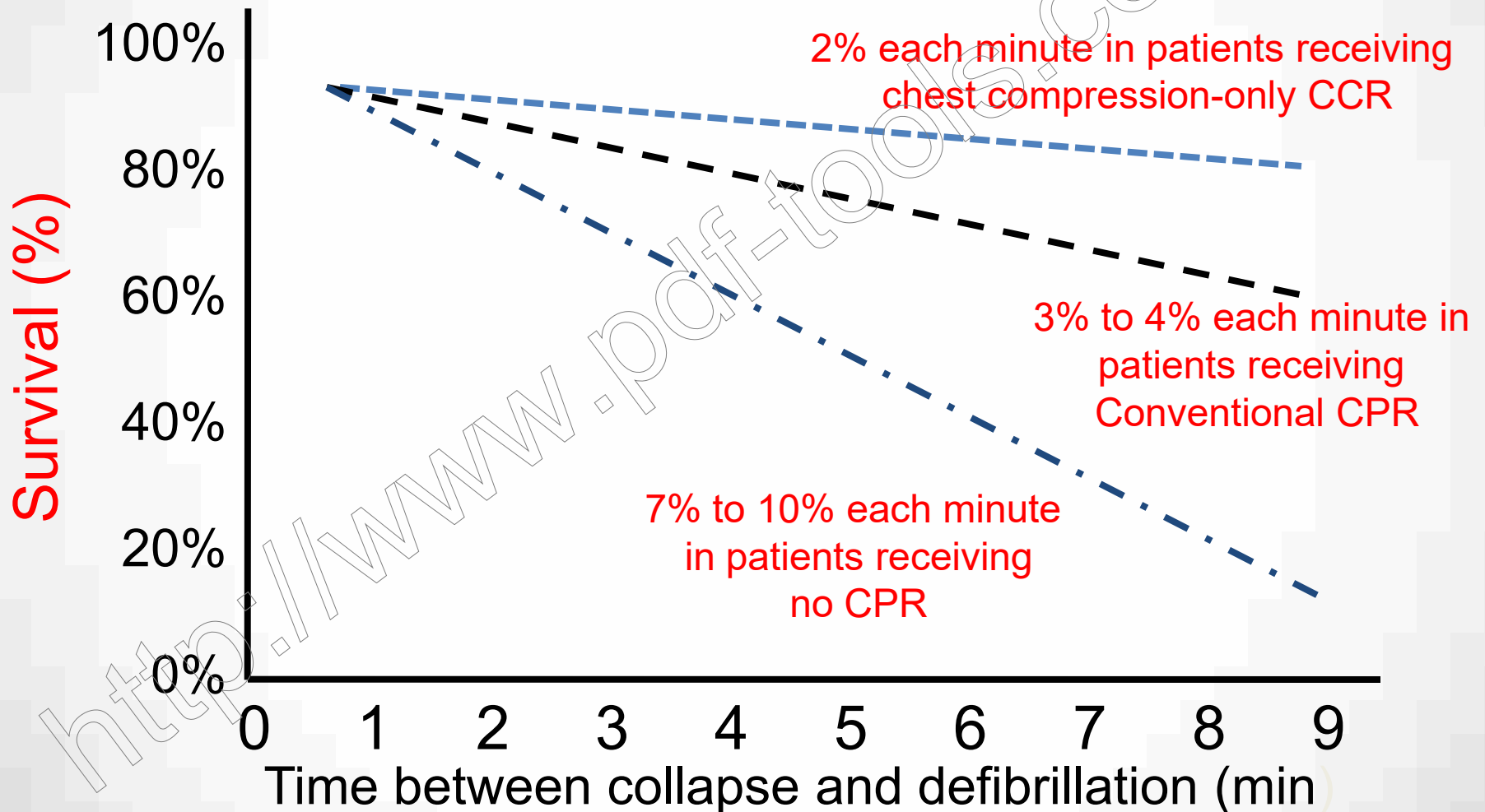
Great Importance of Bystander CPR



The OR for Bystander CPR was **2.44** (95% CI, 1.69-3.19)

(Sasson et. al. *Circulation: Cardiovascular Quality and Outcomes* Nov. 2009.)

Bystander CPR Improves Chance of Survival



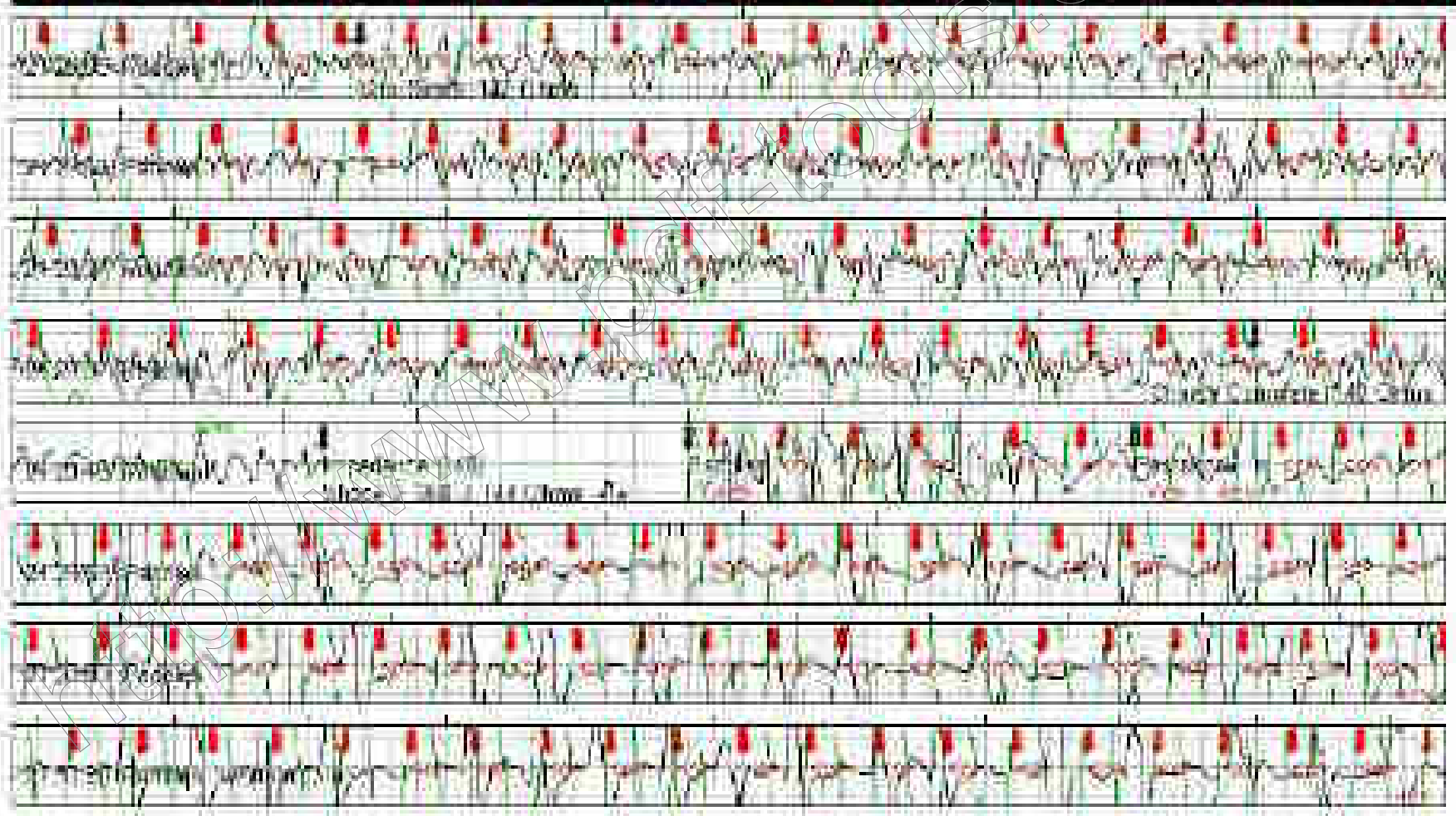
Bystander CPR Rates

- 32% New York (Gallagher, 1995)
- 21% Detroit (Swor, 1995)
- 15% Ontario, Canada (Stiell, 2004)
- 19% Europe (Wenzel, 2004)
- 28% SOS KANTO (Nagao, 2007)
- 27% Osaka, Japan (Iwami, 2007)
- 25% Singapore (Ong, 2008)
- 25% CARES Registry (McNally, 2009)
- 25% Arizona SHARE (Vadeboncoeur, 2007)

Obstacles to Bystander CPR

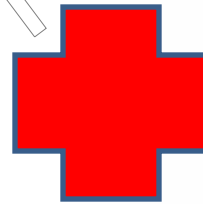
- Panic
- Fear of causing harm
- Can't get person to the floor
- Reluctant bystander
- Aversion to MTM breathing
- Fear of infection
- Other

Measuring CPR density

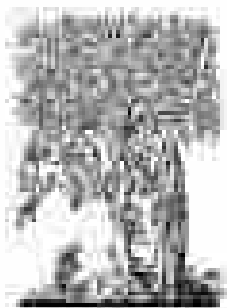




Implementation



Active Measurement and Management



ELSEVIER

RESUSCITATION



www.elsevier.com/locate/resuscitation

CLINICAL PAPER

The Save Hearts in Arizona Registry and Education (SHARE) program: Who is performing CPR and where are they doing it?

Tyler Vadeboncoeur^{a,*}, Bentley J. Bobrow^{b,c,l}, Lani Clark^{d,m}, Karl B. Kern^{e,f,g,n}, Arthur B. Sanders^{h,i,o}, Robert A. Berg^{i,j,p}, Gordon A. Ewy^{g,k,q}

Be a Lifesaver.

Learn Continuous
Chest Compression CPR.

ARIZONA

626-4083

UMC

002912



New GPS
developed
here.



UNIVERSITY OF ARIZONA

GPS
792-3322

<http://www.photos.com>

Arizona State University
The University of Arizona
Mayo Clinic



Inside This Package Is Everything You Need To Learn How To Save A Life!



Your Continuous Chest Compression CPR Instructional Kit Has Arrived!



<http://www.pdf-tools.com>

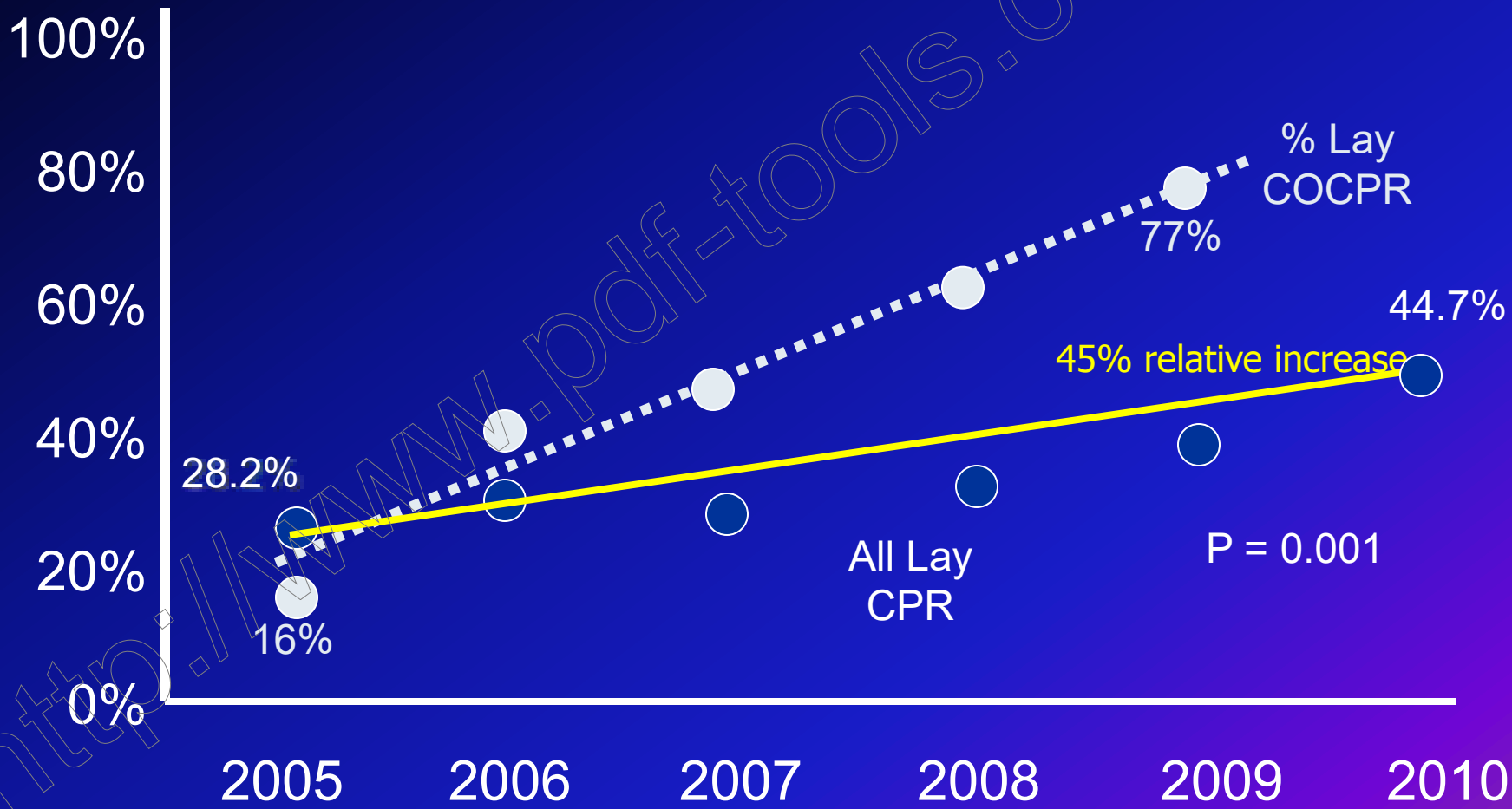




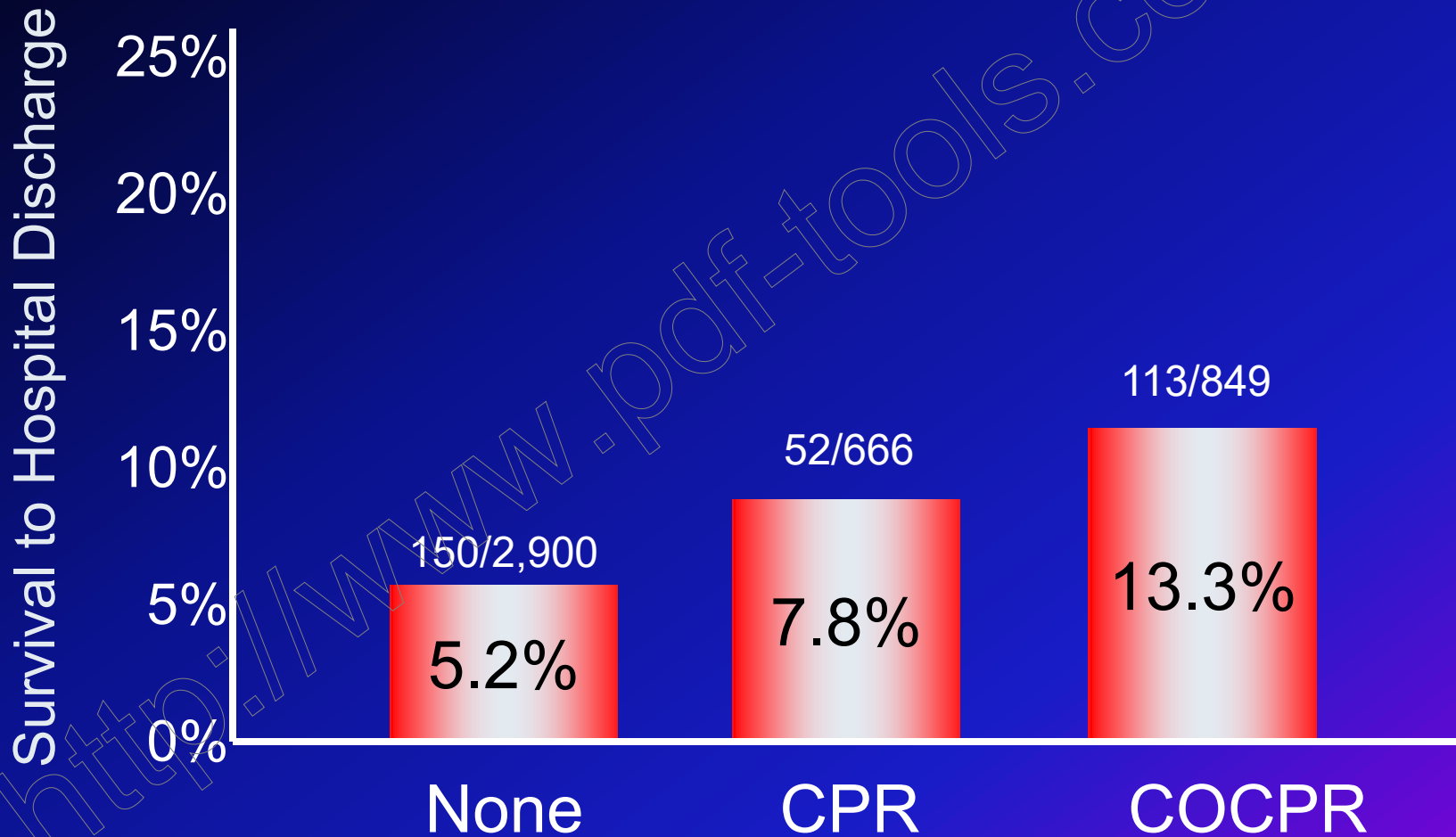
Brief PSAs with Governor and Celebs



Bystander CPR: Incidence and Type



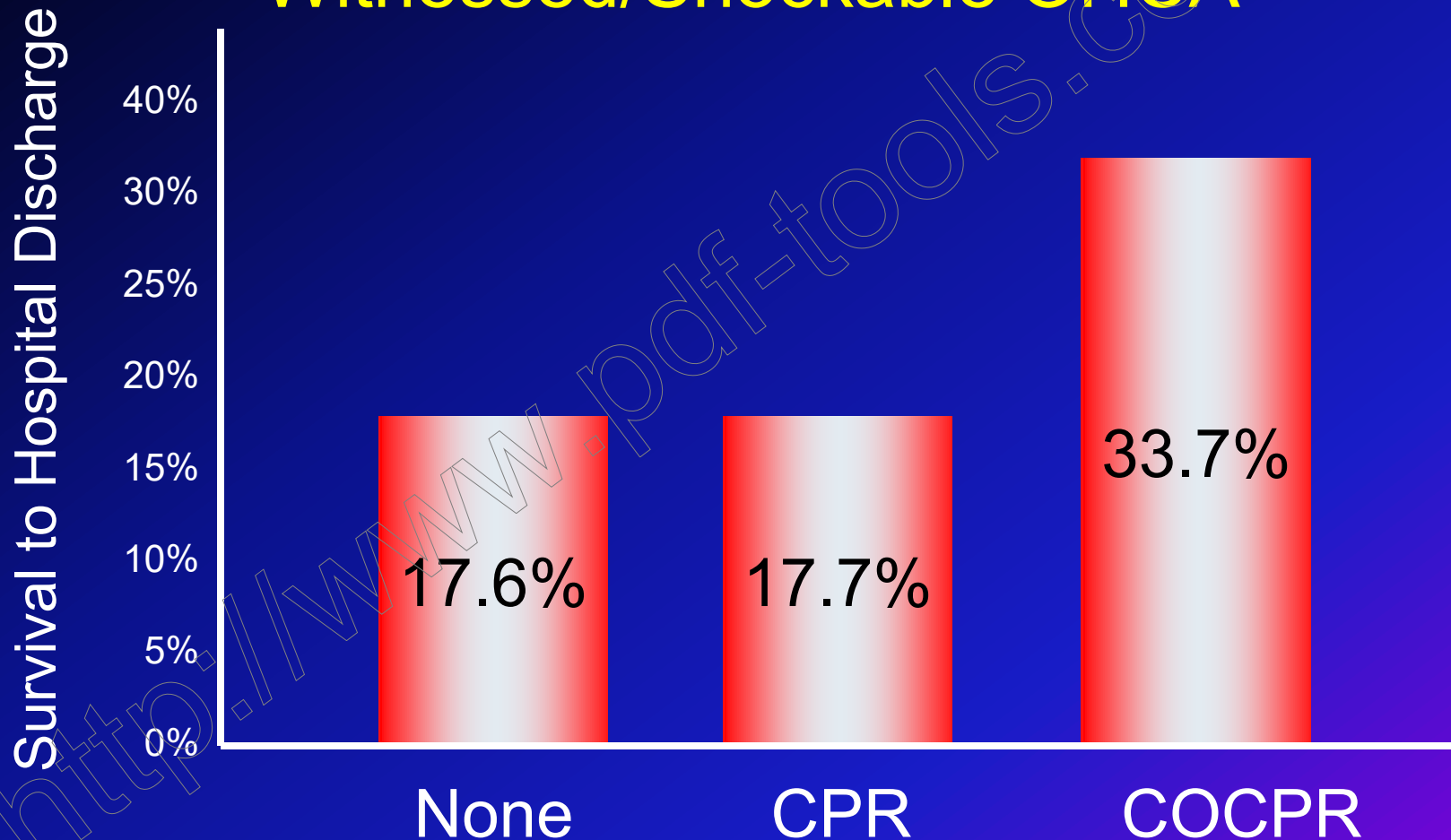
Bystander CPR for OHCA in Arizona (2005 to 2010)



Bobrow, et al. JAMA 2010

Bystander CPR for OHCA in Arizona (2005 to 2010)

Witnessed/Shockable OHCA



Chest Compression–Only CPR by Lay Rescuers and Survival From Out-of-Hospital Cardiac Arrest

Brendley J. Helwig, MD

David W. Spotts, MD

Robert A. Berg, MD

Lawrence P. Full, MD

Arthur H. Sanders, MD

Earl D. Kern, MD

Tyler T. Vandevoort, MD

Paul S. Clark, MD

John S. Gombert, MD

J. Christopher Newburger, MD

Frank A. O'Neil, MD

Scott J. Mottola, MD

Michael Hasselblad, MD

Deborah A. Cox, MD

Context Chest compression–only resuscitation (CPR) may be an effective alternative to conventional CPR with rescue breathing for out-of-hospital cardiac arrest.

Objective To investigate the survival of patients with out-of-hospital cardiac arrest using compression–only CPR (CO-CPR) compared with conventional CPR.

Design, Setting, and Patients A 3-year prospective observational cohort study of cardiac arrest patients at least 15 years old with out-of-hospital cardiac arrest between January 1, 2005, and December 31, 2009, in Arizona. The relationship between resuscitation (compression–only or conventional CPR) and survival to hospital discharge was estimated using multivariate logistic regression.

Main Outcome Measure Survival to hospital discharge.

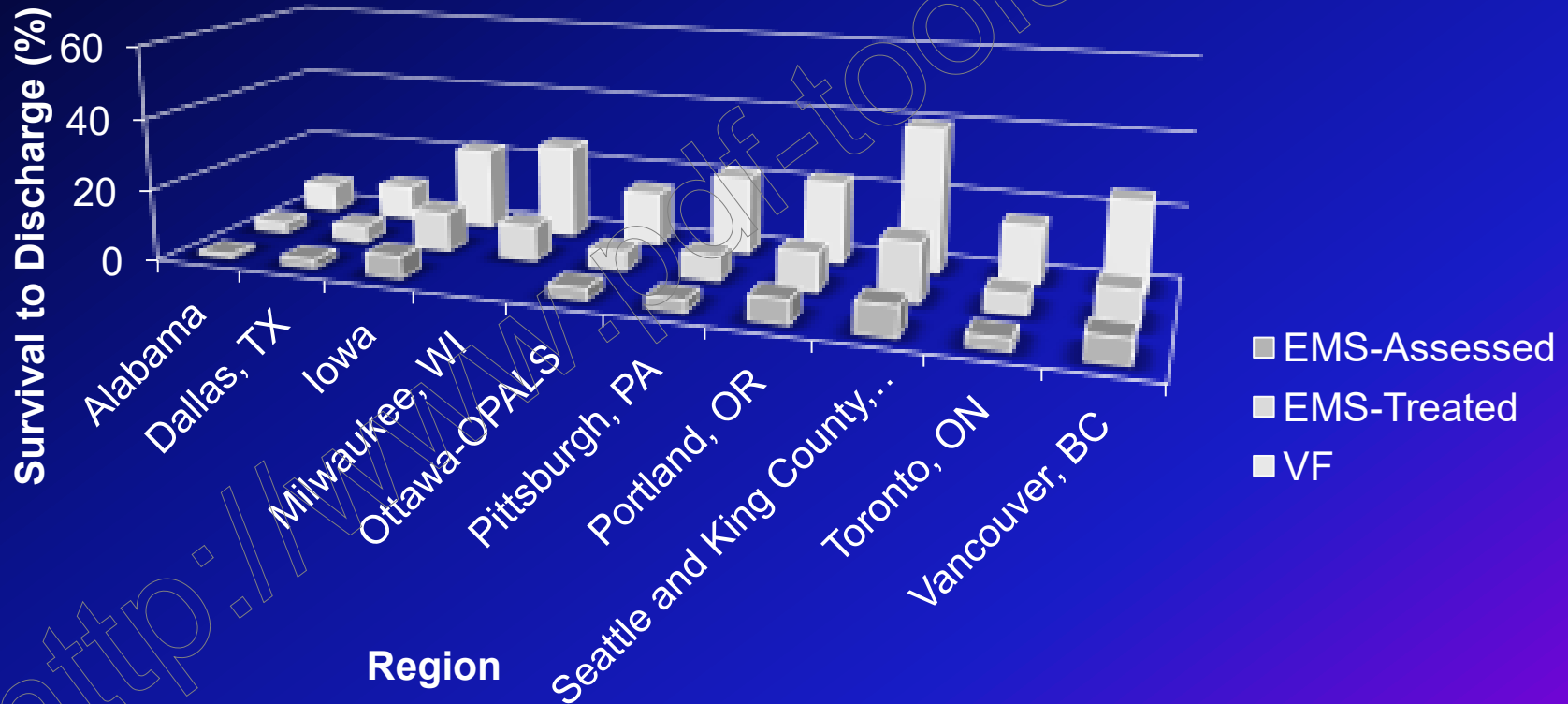
Results Among 5,772 adults with out-of-hospital cardiac arrest of cardiac etiology not witnessed by or witnessed by emergency medical personnel, 273 were resuscitated because bystander CPR was provided by a healthcare professional at the arrest occurred in a medical facility. A total of 5,499 met all inclusion criteria for analysis, including 2960 who received no bystander CPR, 660 who received conventional CPR, and 879 who received CO-CPR. Rates of survival to hospital discharge were 6.2% (95% confidence interval [CI], 4.4%–8.0%) for the no bystander CPR group, 7.8% (95% CI, 6.0%–9.6%) for conventional CPR, and 13.8% (95% CI, 11.0%–16.5%) for CO-CPR. The adjusted odds ratio

<http://www.golf-tools.com>

~ 60% GET
NOTHING!

Enormous Regional Variations in Survival After OHCA

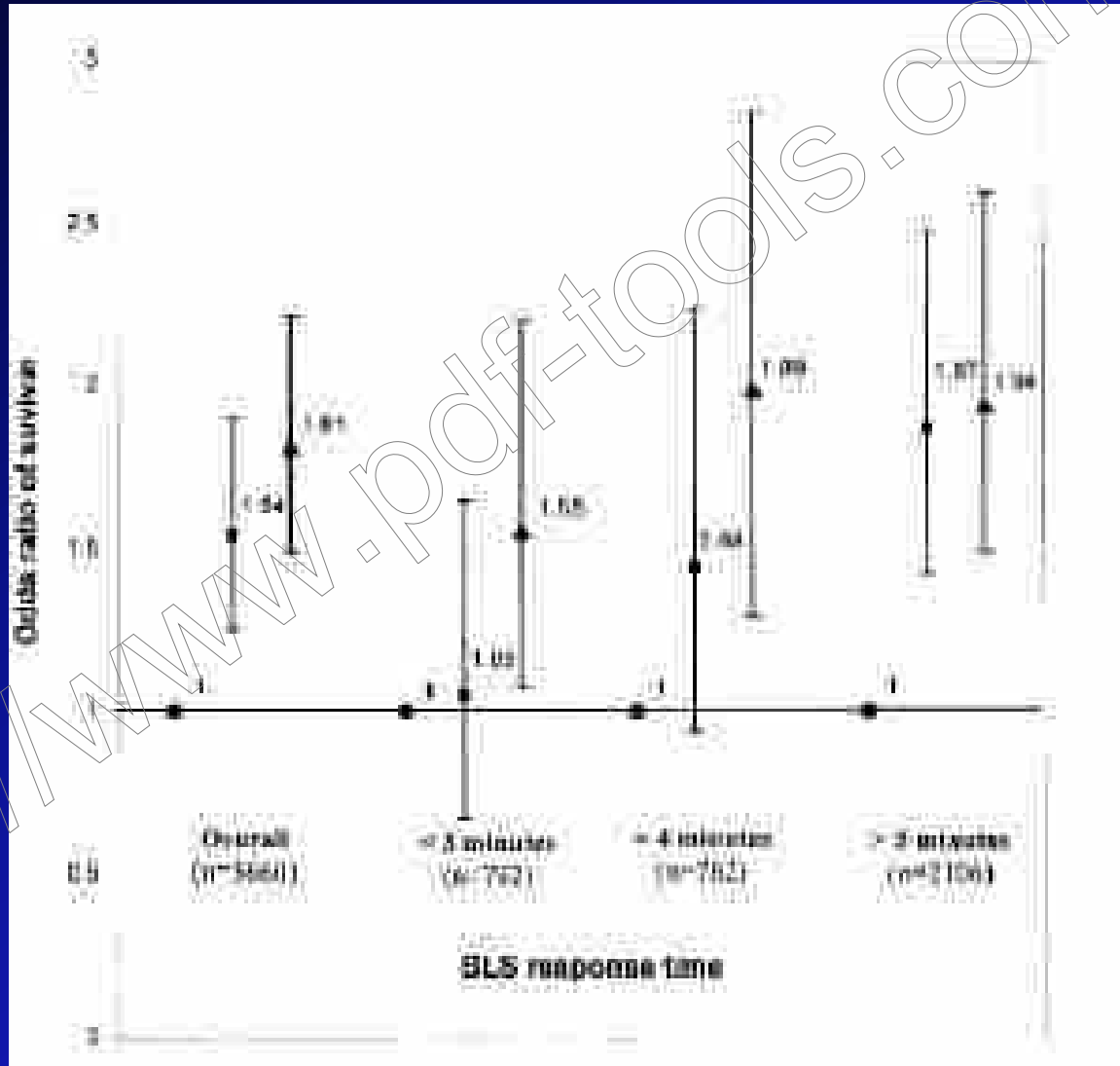
Nichol JAMA 2008



500% difference in survival

% Bystander CPR





COMBINATION CPR EXPOSURE AND JUST-IN-TIME TRAINING

- Cardiac arrest is hard to identify
- Rescuers lack confidence to act
- CPR can be technically difficult
- Dispatchers reluctant





Is Dispatcher CPR Important?

Obstacles to Bystander CPR

- Panic
- Fear of causing harm
- False Teeth
- Can't get person to the floor
- Reluctant bystander
- Aversion to MTM breathing
- Fear of infection
- Other

Table 1: Obstacles to Bystanders Starting CPR and Dispatcher Solutions

BARRIER	SUGGESTED DISPATCHER RESPONSE
Bystander has trouble identifying cardiac arrest	Utilize simple, two-question algorithm
Bystander fears CPR will injure victim	Assure bystander CPR will not cause injury
Bystander fears mouth-to-mouth contact can transmit disease	Provide instructions for compression-only CPR
Bystander lacks confidence bystander can perform CPR	Assure bystander he/she can do CPR and that dispatcher will help
Bystander panic/fear prevents action	Assure bystander he/she can do CPR and that dispatcher will assist
Bystander fears legal ramifications	Assure bystander of Good Samaritan Laws that safeguard citizen action

Table. Metrics for Evaluation of Dispatch and CPR Prearrival Instructions

Categorical Measure	Time Component
Dispatch of appropriate EMS resources	Interval from receipt of call to EMS dispatch
Adherence to the identification algorithm	Interval from receipt of call to completion of algorithm
Recognition of arrest/provision of CPR prearrival instructions	Interval from receipt of call to provision of CPR instructions
Performance of bystander CPR	Interval from receipt of call to performance of CPR
Primary obstacle to CPR	...

CPR indicates cardiopulmonary resuscitation; EMS, emergency medical services.

So What does this All Mean?

- Dispatcher-assisted CPR is a **KEY** link in the chain of survival.
- Dispatch has an **ENORMOUS OPPORTUNITY** to provide lifesaving CPR instructions to the public.
- Dispatch **REALLY MATTERS** and we are **UNLIKELY** to significantly improve survival *without it!*

AHA Scientific Statement

Emergency Medical Service Dispatch Cardiopulmonary Resuscitation Prearrival Instructions to Improve Survival From Out-of-Hospital Cardiac Arrest

A Scientific Statement From the American Heart Association

Endorsed by the Association of Public-Safety Communications Officials International, International Academies of Emergency Dispatch, National Academies of Emergency Dispatch, National Association of Emergency Medical Technicians, National Association of EMS Physicians, and National Association of State EMS Officials

E. Brooke Lerner, PhD, Chair; Thomas D. Rea, MD, MPH; Bentley J. Bohrow, MD; Joe E. Acker, III, EMT-P, MPH; Robert A. Berg, MD, FAHA; Steven C. Brooks, MD, MHS, FRCP; David C. Cooke, MD; Marc Gay, BA, EMT-P; Lina M. Geu, PhD; Greg Morris, MD, FACEP; Yancy M. Nadkarni, MD, FAHA; Robert E. O'Connor, MD, MPH, FAHA; Jerald Paris, PhD; Michael R. Sayer, MD, FAHA; Robert A. Swor, DC; Andrew H. Travençolo, MD, MSc, FRCP; on behalf of the American Heart Association Emergency Cardiovascular Care Committee and the Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation

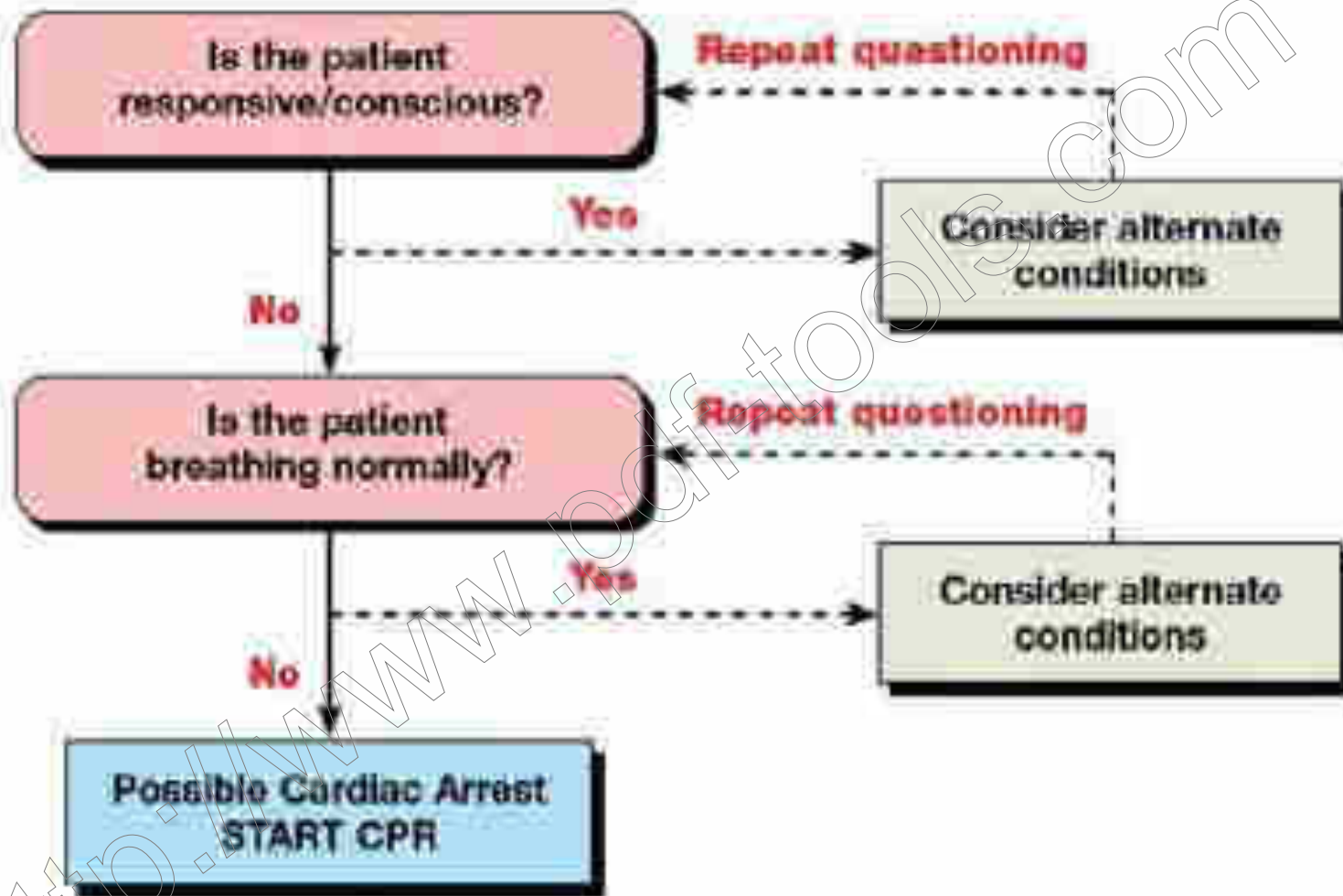


Figure 1. Sample algorithm for identification of a patient with possible cardiac arrest. CPR indicates cardiopulmonary resuscitation.

ORIGINAL ARTICLES

CPR with Chest Compression Alone or with Rescue Breathing

Thomas D. Lee, M.D., Carol Fahrenbruch, M.S.P.H., Linda Cully, B.A.,
Rachael T. Donohue, Ph.D., Cindy Hamby, E.M.T., Jennifer Innes, B.A.,
Megan Birmingham, E.M.T., Cleo Surdo, Steven Romnes, M.S.P.H.,
and Mickey S. Eisenberg, M.D., Ph.D.

Really Important Point

- Dispatch CPR is NOT a Yes/No
- The Quality of the intervention matters immensely

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Breathing

How to ask the question:

- “Is the patient breathing?”

“Yes!”



<http://www.pdf-tools.com>

Breathing

How to ask the question:

- “Is the patient breathing normally?”
 - No way, that ain't normal breathing....
- “Yes!”



snoring
snorting
gaspings
moaning

every once in awhile
weak or heavy
barely breathing
takes breath every now & then

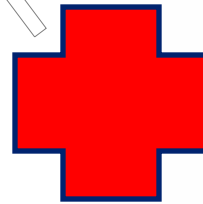
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Primary obstacle to CPR	...

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Implementation



Active Measurement and Management

Telephone Assisted (TPO) QA Evaluation
 The following questions pertain to the Telephone Assisted Services (TAS) Program

Date: _____ Month: _____ Year: _____
 Assessor: _____
 Supervisor: _____

Number of: No Yes N/A
 Other actions per: No Yes N/A

Notes	

Number of calls	Number of calls	Number of calls	Number of calls	Number of calls

Number of calls	Number of calls	Number of calls	Number of calls	Number of calls

Number of calls per hour: No Yes N/A
 Number of calls per day: No Yes N/A

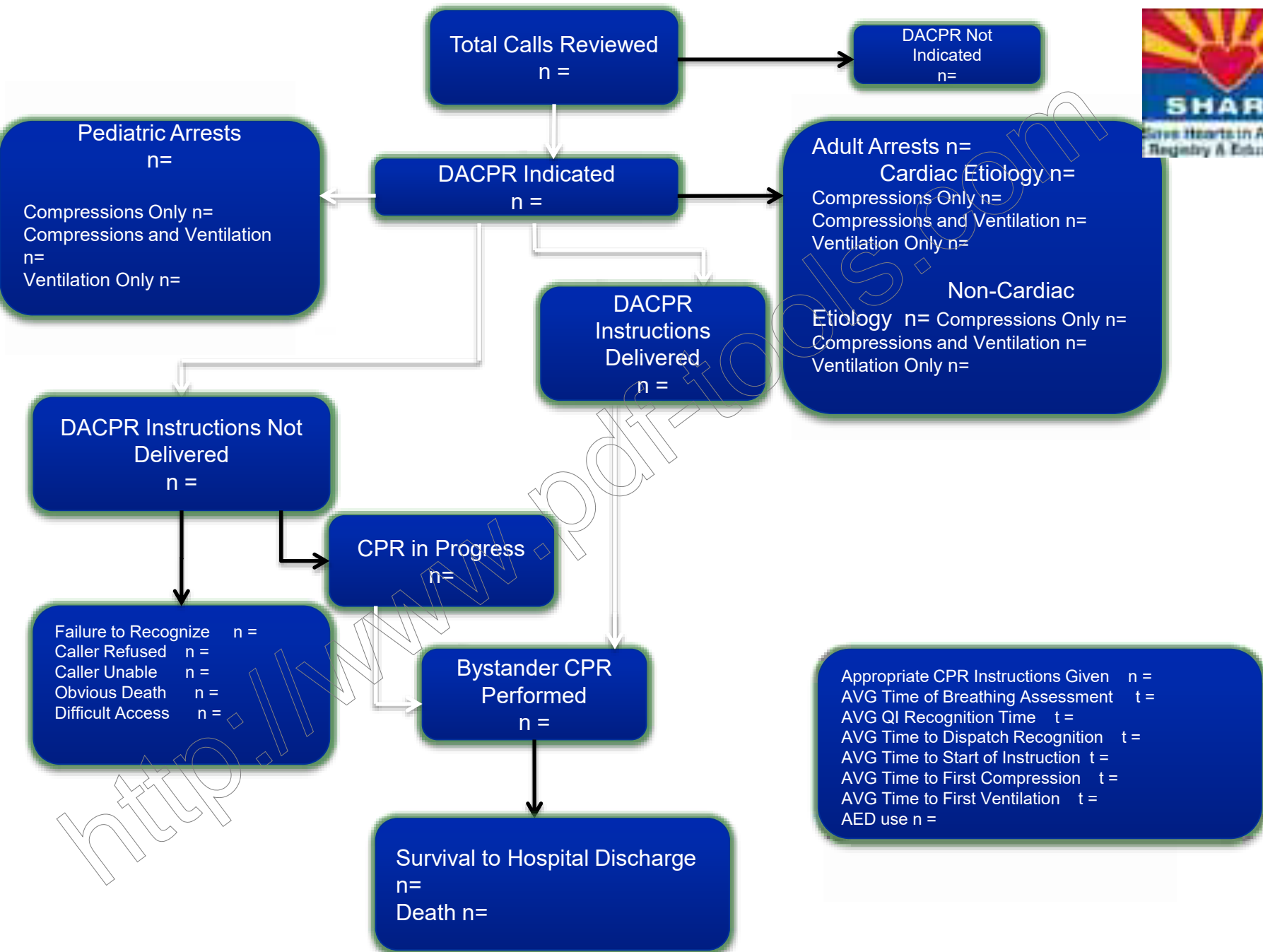
Number of calls	Number of calls	Number of calls	Number of calls	Number of calls

If any of the above are "No", what are the reasons?

Number of calls	Number of calls	Number of calls	Number of calls

Number of calls	Number of calls

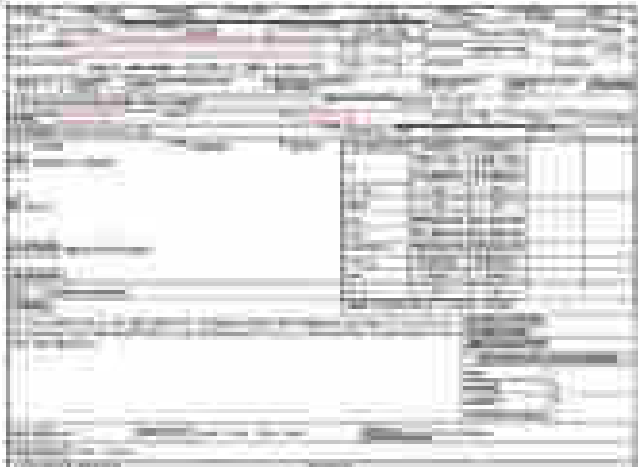
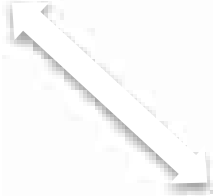
http://www.pdf-tools.com

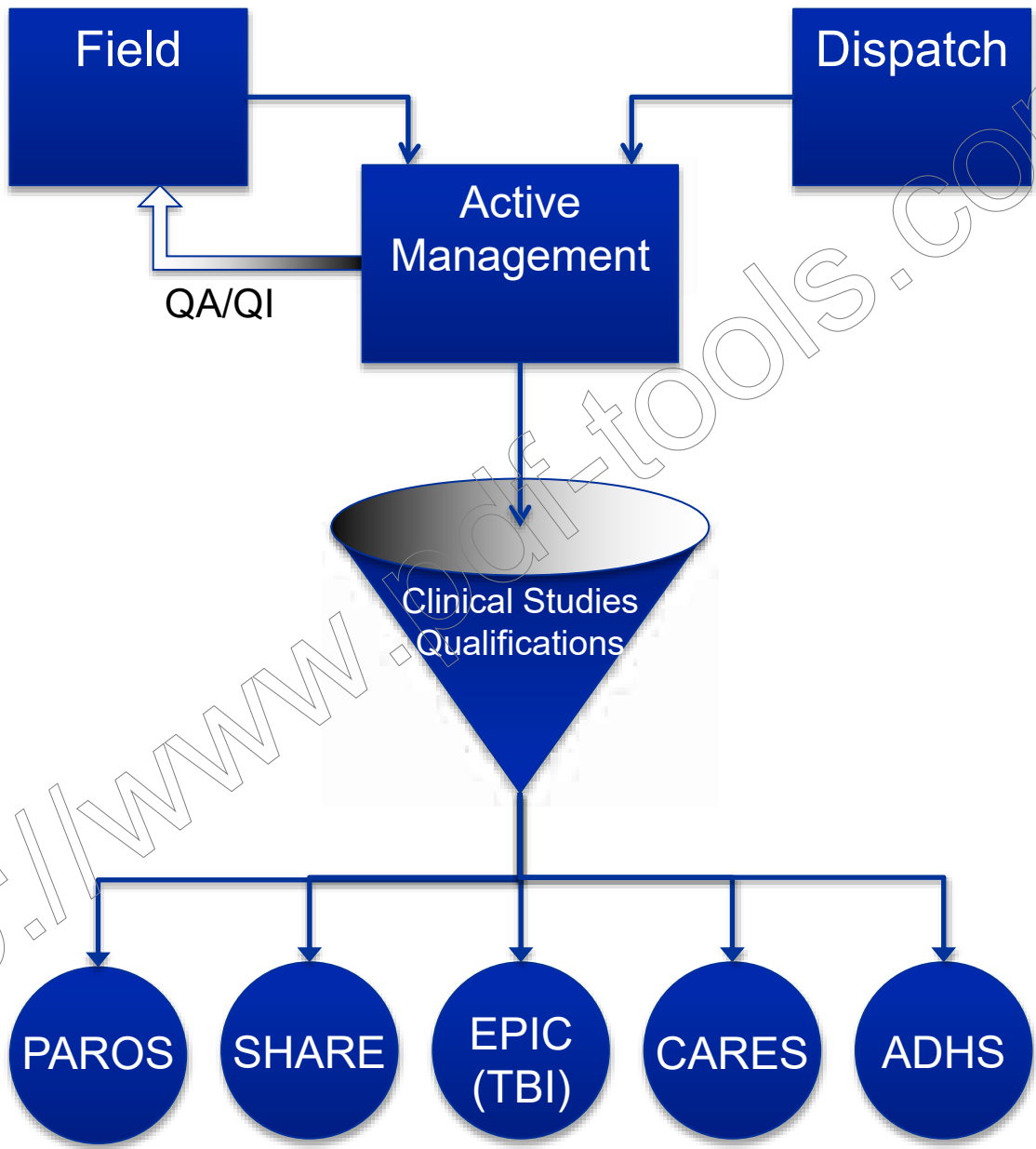


<http://www.pediatric.org>

ON-SCENE

http://



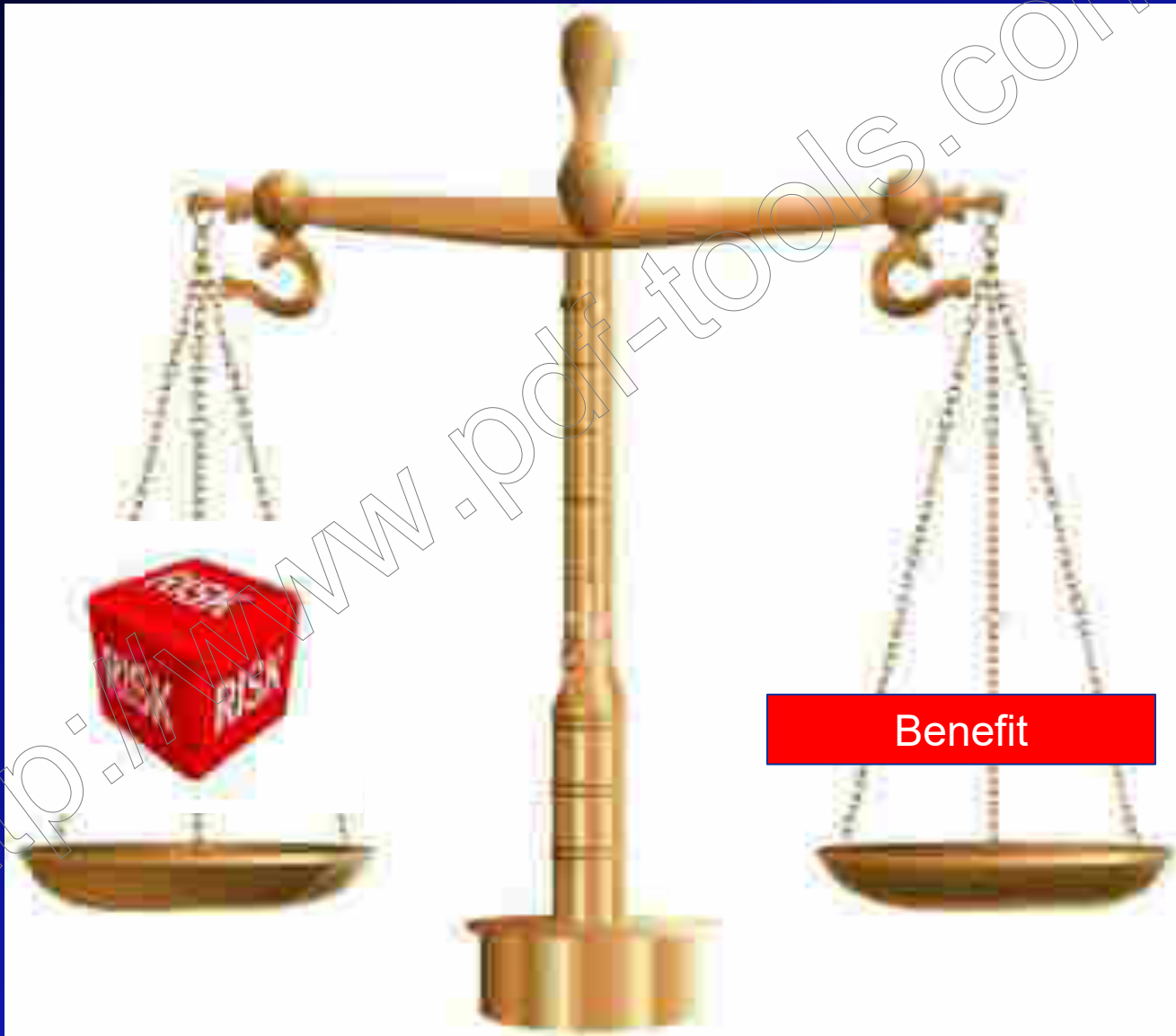


<http://www.epi-tools.com>

Key Points to Dispatch CPR

- Identify cardiac arrest early in the call
- Start CPR early (little risk of harm with CPR)
- Be assertive – “we’re going to do CPR, I’ll help you”
- Be confident with instructions
- Effective CPR coaching to caller – (rate, depth, continue)

CPR or No CPR?



Dispatcher-Assisted Cardiopulmonary Resuscitation Risks for Patients Not in Cardiac Arrest

Lindsay White, MPH, Joseph Rogers, MS, Megan Bloomingdale, Carol Fabianbruch, MSPH,
Linda Colley, DA, Cleo Sobido, RPL, Mickey Eisenberg, MD, PhD, Thomas Rou, 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 11% (113 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% (3 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.)

Key Words: cardiopulmonary resuscitation ■ complications ■ dispatcher ■ epidemiology ■ morbidity

SHARE DACPR Program

1) Update Dispatchers with new Guidelines:

- Online pre-training
 - This video, protocols, reference material
- Live training with simulated calls
- Online post-training resources
- Ongoing refresher training

2) Establish on-going QI process:

- review CPR calls
- provide regular feedback for dispatchers
- measure frequency, quality, and time intervals
- measure impact on bystander CPR rates and survival



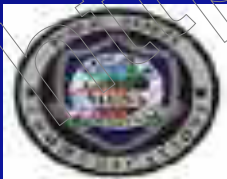
CPR DISPATCH ACADEMY

- THE SCIENCE OF CPR

- ROLE OF 9-1-1 PERSONNEL IN THE CHAIN OF SURVIVAL

- KEY ELEMENTS FOR SAVING LIVES

- SMALL GROUP TRAINING



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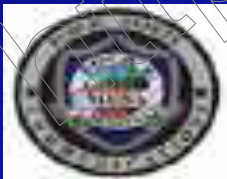
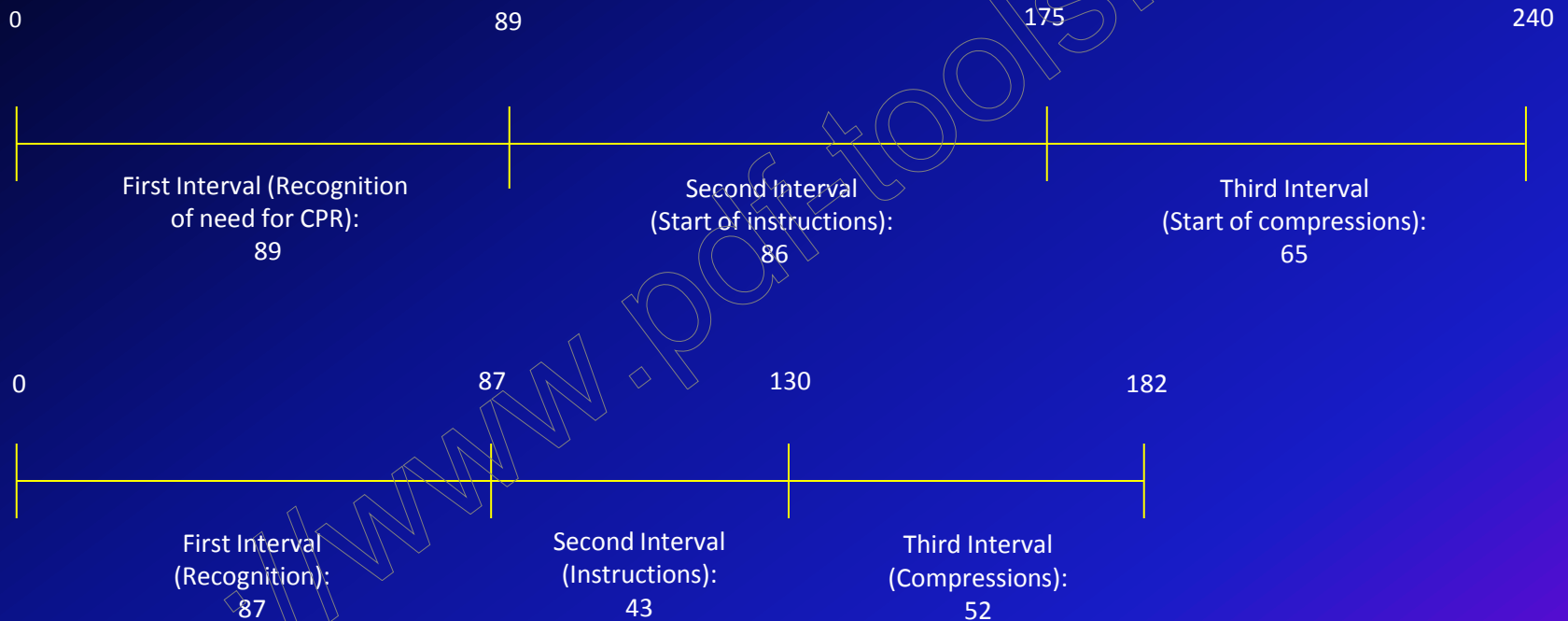


Table 1: Measurements Before and After Staff Training and Protocol Revisions

MEASUREMENT	BEFORE REVISIONS	POST-REVISIONS	CHANGE
1. % Mesa recognition of need for CPR	82.2	97.2	+15
2. % refusal or inability to do CPR	31.5	7.2	-24.3
3. Ave. time to recognition	89.3 sec	86.8 sec	-2.5 sec (-3%)
4. Mesa/SHARE recognition time	1.61	1.43	-.18 (-11%)
5. % instructions started	31.4	57.7	+26.3
6. Ave. time to start instructions	175.1 sec	130.0 sec	-45.1 sec (26%)
7. Ave. time to first compression	240.4	182.0	-58.4 sec (24%)
8. % of telephone-assisted CPR	17.9*	46.4	+ 28.5

Timelines

The graphics below represent three intervals inherent in providing telephone-assisted bystander CPR. The top shows baseline numbers (in seconds). The bottom reveals numbers generated from calls evaluated after training and protocol revisions. They suggest that the First Interval is a key in efforts to further reduce time to first compression.



DISPATCHER-ASSISTED CPR: WHAT YOU NEED TO KNOW

Call your local emergency medical services (EMS) agency to learn more about the requirements for dispatcher-assisted CPR in your area.

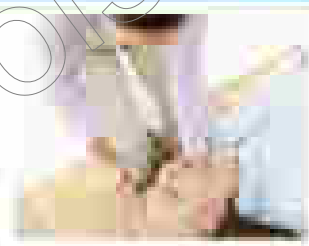
Dispatcher-assisted CPR is a life-saving technique that allows a dispatcher to guide a bystander through the steps of CPR over the phone. This technique is used when a person is found unresponsive and not breathing normally.

Critical Steps for Bystander CPR:
1. Check for responsiveness: Tap the person's shoulder and shout for help.
2. Call 911: If the person is unresponsive, call 911 immediately.
3. Check for breathing: Look for chest rise and listen for breath sounds.
4. Provide rescue breaths: If the person is not breathing, provide two rescue breaths.

STEP 1: Recognize/Alert

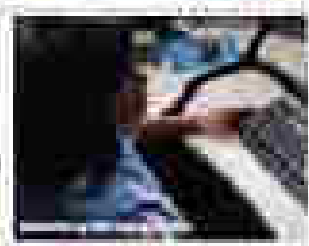
The first step in dispatcher-assisted CPR is to recognize the emergency. If you find someone who is unresponsive and not breathing normally, call 911 immediately. The dispatcher will provide you with instructions on how to provide CPR.

Be prepared to provide CPR:
If you are not trained in CPR, the dispatcher will guide you through the steps of CPR. If you are trained, you can provide CPR immediately.



STEP 2: Engage/Assess

Once you have called 911, the dispatcher will provide you with instructions on how to provide CPR. The dispatcher will ask you to check for responsiveness and breathing. If the person is not breathing, the dispatcher will guide you through the steps of rescue breathing.



STEP 3: Provide/Assess

Once you have received instructions from the dispatcher, you should provide CPR immediately. The dispatcher will continue to provide you with instructions and monitor your progress. If the person starts breathing, you should stop CPR and wait for the ambulance to arrive.



Dispatcher-assisted CPR is a life-saving technique that allows a dispatcher to guide a bystander through the steps of CPR over the phone. This technique is used when a person is found unresponsive and not breathing normally.

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Summary



- Standardized, assertive dispatch CPR is a Key Intervention to improve survival from OHCA
- On-going, active measurement of DACPR is necessary to improve survival
- Without this, we are unlikely to maximize survival rates in our communities



Thank You

bobrowb@azdhs.gov

<http://www.pdf-tools.com>



On Behalf of the SHARE Team
www.azshare.gov

Acknowledgement

We are sincerely grateful for the dedication and the sacrifices that the paramedics & firefighters make daily in the line of duty