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Implementation of Dispatch Assisted CPR

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Arizona Department of Health Services

Disclosures

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











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Discussion Topics

Dispatch CPR is key to saving lives from OHCA

On-going, <u>active</u> measurement of DACPR is <u>necessary</u> to improve survival

Without this, we <u>cannot</u> maximize survival

We can work together to make this a reality in our communities?





System of Care

E⁄MS

Active Measurement

Public

<u>Hospital</u>





The cardiac arrest problem





time to cpr and shock

Adenosine Nucleotide Concentrations During VF

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

WWWWWWWWWW



Duration of Unsupported VF (min)





Great Importance of Bystander CPR



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





Active Measurement and Management







CLINICAL PAPER

The Save Hearts in Arizona Registry and Education (SHARE) program: Who is performing CPR and where are they doing it?¹

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}





THE UNIVERSITY

MAYD CLINIC

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

Your Continuous Chest Compression CPR Instructional Kit Has Arrived!





Brief PSAs with Governor and Celebs





SHARE - JAMA 2010; Oct

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



Bobrow, et al. JAMA 2010

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

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Design, Setting, and Patients: A 3-rms crospective elementational orderingly of samiled experience at least 18 years and with out-of-despetic cardia: areast tetrasen taxes any 1, 2005, and December 31, 2006, in Artional. The militorithic between loganeon between CHR and territorial to Respital Architecture that manimum during mathematical in galaxies represent.

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SHARE - JAMA 2010; Oct

Enormous Regional Variations in Survival After OHCA

Nichol JAMA 2008



500% difference in survival

7265 OHCAs 55.9% received BCPR 25.7% received DA-CPR 30.2% received BCPR without DA

Clinical Investigation and Reports

Dispatcher-Assisted Cardiopulmonary Resuscitation and Survival in Cardiac Arrest

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Bobrow et al. - JAMA 2010; Oct



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 airest	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

Dispatch of appropriate EMS resources

Adherence to the Identification algorithm

Recognition of arrest/provision of CPR prearrival instructions Performance of bystander CPR

Primary obstacle to CPR

Time Component

Interval from receipt of call to EMS dispatch

Interval from receipt of call to completion of algorithm

Interval from receipt of call to provision of CPR instructions Interval from receipt of call to performance of CPR

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CPR indicates cardiopulmonary resuscitation; EMS, emergency medical services.

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So What does this All Mean?

- Dispatcher-assisted CPR is a <u>KEY</u> link in the chain of survival.
- Dispatch has an <u>ENORMOUS OPPORTUNITY</u> to provide lifesaving CPR instructions to the public.
- Dispatch <u>REALLY MATTERS</u> and we are <u>UNLIKELY</u> 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 Physicenes, and National Association of State EMS Officials

E. Brooke Lenner, PhD, Chair, Thomas D, Rea, MD, MPH; Bentley J, Bohrow, MD; Jee E. Ackeri III, EMIT P. MPH; Robert A. Berg, MD, FAHA; Sleven C. Brooks, MD, MHSc, FRCPC: David C. Coue, MD; Man: Gay, BA, EMIT-P, Lana M, Geal, PhD; Greg Mouos, MD, FACEF; Vonay M, Nadkami, MD, FAHA; Robert E. O'Connor, MD, MPH, FAHA; Jerald Pous, PhD; Michael R, Sayer, MD, FAHA; Robert A, Swar, DO; Andress H, Traven, MD, MSc, FRCPC; on behalf of the American Heart Association Emergency Cardiovascular Care Committee and the Council on Cardiopalmonary, Critical Care, Perioperative and Resociation



THE MERSY REPORTATION DEPARTMENT OF MANDAGEN &

OFFICINAL ARTICLE

CPR with Chest Compression Alone or with Rescue Breathing

Thomas D. Kei, MSS. Savel Fahrenbruck, M.S.P.H., Linda Culley, B.A., Rachael T. Despitse, Ph.D., Cindy Hambly, E.M.T., Jennifer (mics, B.A., Megan Bloomungdale, E.M.F., Ciep Subido, Steven Rommes, M.S.P.H., and Michey S. Eisenberg, M.Fz., Ph.D.

N Engl J Med 2010;361:423-33. Comple in 2010 Measurement Median Science

Really Important Point

Dispatch CPR is <u>NOT</u> a Yes/No

The <u>Quality</u> of the intervention matters immensely

Breathing How to ask the question:

"Is the patient breathing?"

"Yes!"



Breathing How to ask the question:

 "Is the patient breathing <u>normally</u>?"
 "Yes!" No way, that ain't normal breathing....

snoring snorting gasping moaning every once in awhile weak or heavy barely breathing takes breath every now & then

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Active Measurement and Management



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Key Points to Dispatch CPR

- Identify cardiac arrest early in the call
- Start CPR early (little risk of harm with CPR)
- Be <u>assertive</u> "we're going to do CPR, I'll help you"
- Be <u>confident</u> with instructions
 - <u>Effective</u> CPR coaching to caller (rate, depth, continue)

CPR or No CPR?



Resuscitation Science

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

Lindsay White, MPH; Joseph Rogers, MS; Megan Bloomingdale: Carol Fahrenbruch, MSPH; Linda Culley, DA; Cleo Sobido, RPL, Mickey Eisenberg, MD, PhD; Thomas Ree, MD, MPH

Background—Dispatcher-assessed cardioptilinonary restantiation (CPR) instructions can increase bystander CPR and thereby increase the rate of survival from cardiac arrest. The lisk of hystander CPR for patients not in arrest is uncertain and has implications for how assertive dispatch is to instructing CPR. We determined the frequency of dispatcherasilisted CPR for patients not in arrest and the frequency and severity of injury related to chest compressions.

Methods and Readle—The investigation was a prospective colorit study of addit patients not in cardiac arent for whom dispatches provided CPR metrochons in King County. Washington, between June 1, 2004, and January 31, 2007. The study focused on these who received chest compressions. Information was collected through review of the audio and written disouch report, written emergency medical services ruport, bominal record, and telephone survey. Of the 1700 patients for whom dispatcher CPR instructions were unlined. 55% 1938 of 12005 were in arrest, 45% (762 of 1706) were not in arrest, and 11% (312 of 1706) were not in arrest and received by itander chest compressions. Of the 207 not in arrest who received chest compressions and had complete coloranc antentainment, 12% (29 of 247) especies end charged by transfer the topology of 247) especies end of possibility caused by bystanter CPR. Duly 2% (5 of 247) inflared a braction, and morphiles likely or possibility caused by bystanter CPR. Duly 2% (5 of 247) inflared a braction, and morphile culcourt injury.

Conclusions—In this prospective dudy, the frequency of senous injury related to disputcher-assisted trystander CFR unions nonarrest patients was low. When coupled with the established benefits of hystarster CPR among those with unreat these assults support an assertive program of disputcher-assisted CPR. (Classification, 2010;121:91-97.)

Key Words: canfingulationary restricitation a complications a dispatcher a epidemiology a 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 <u>on-going</u> 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.



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DISPATCHER-ASSISTED CPR: WHAT YOU NEED TO KNOW

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Summary

Standardized, assertive dispatch CPR is a Key Intervention to improve survival from OHCA

> On-going, <u>active</u> measurement of DACPR is necessary to improve survival

> Without this, we are unlikely to <u>maximize</u> <u>survival</u> rates in our communities



Thank You

bobrowb@azdhs.gov





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