

The Importance of Bystander CPR & Recognition of Cardiac Arrest over the Telephone


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Key Points

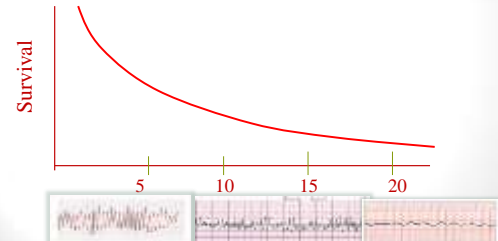
1. Bystander CPR has a significant impact on resuscitation outcomes yet is not performed in most cardiac arrests
2. Telephone CPR (T-CPR) can dramatically increase BCPR rates
3. Most dispatch systems do not consistently identify cardiac arrest or provide optimal pre-arrival CPR instructions (almost none measure)
4. Widespread programmatic implementation and measurement of T-CPR will significantly increase BCPR and survival
5. PAROS will test this hypothesis with an upcoming trial

The Challenge of OHCA

The Race is on ...




Chances of survival decrease 7-10% for every minute without CPR



Typical Urban Response Timeline 2012 in Glendale, Arizona

0:00:30	0:02:17	0:03:44	0:09:16	0:9:16- 0:11:16	0:11:16- 0:13:16
PSAP	Handling	Turnout	Travel	To patient	First shock
0:00:30	0:01:47	0:01:27	0:05:32	0:01:00- 0:02:00	0:01:00- 0:02:00

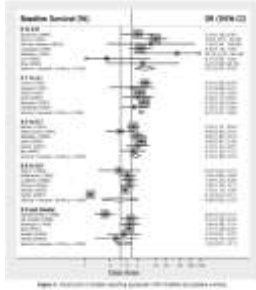


Bystander CPR



- Impact on Survival
- Regional Variation in Rates

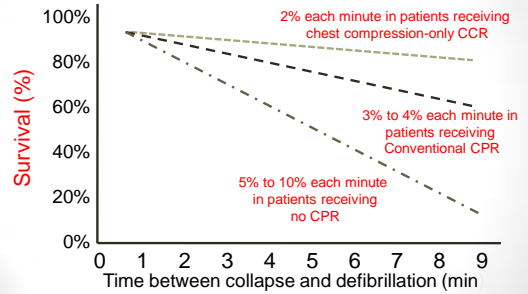
Importance of Bystander CPR



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



Nagao, K *Current Opinions in Critical Care* 2009

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)**

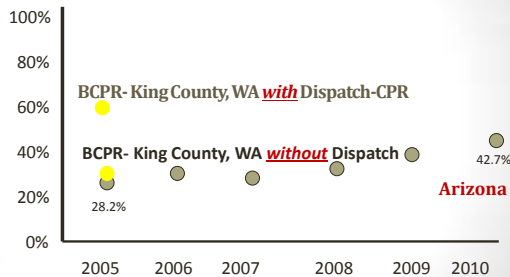
Bystander CPR rate in PAROS countries

Country	Bystander CPR rate* (%)
Japan – Aichi & Tokyo	45
Japan – Osaka	42
Korea	34
Malaysia	24
Singapore	23
Taiwan	22
Thailand	23
UAE - Dubai	9

* Cardiac etiology and arrest not witnessed by EMS

PAROS Personal Correspondence - Dr. McNally - 2011

% Bystander CPR



SHARE - JAMA 2010; Oct

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!**

Agonal Breathing

- Abnormal breathing in unresponsive patients
- A brainstem response to lack of oxygen
- Can [help](#) recognition of OHCA
- Occurs in up to half of cardiac arrests
- Can persist for several minutes
- Associated with improved survival

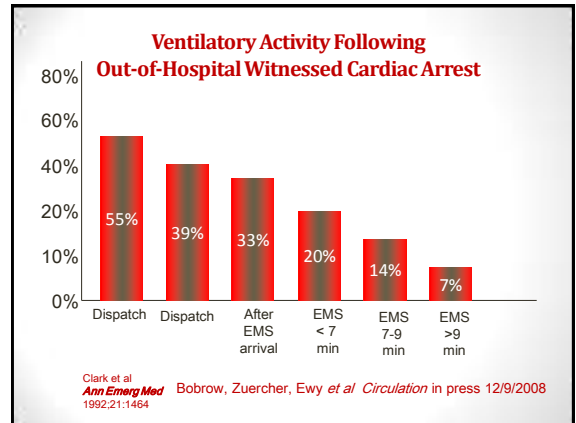
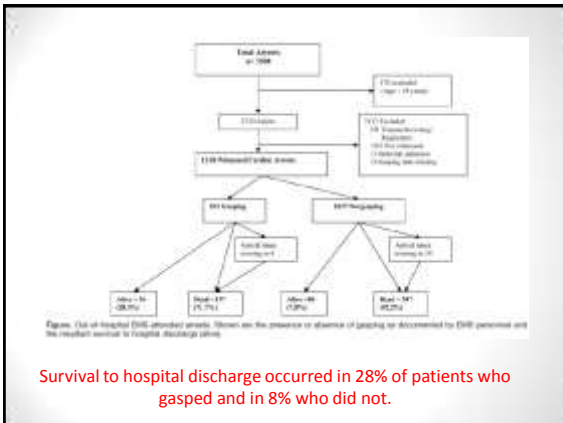
Resuscitation Science

Gasping During Cardiac Arrest in Humans Is Frequent and Associated With Improved Survival

Hinkle, J. Richard, MD; Mathew, Frederick, MD; Clarke, A. Ewy, MD; Lutz, Clark, BS; Tward, Chikara, MPH; Das, Dhanraj, BS, MS; Ewy, Arthur H., M.D.; Bobrow, Michael W., MD; Ebert, Robert A., MD; Ewy, MD; Kurl, H. Ross, MD

Background: The incidence and usefulness of gasping after cardiac arrest in humans are controversial. **Methods and Results:** This prospective, inter-trial. This was a retrospective analysis of emergency (cardiac) arrest hospital cardiac arrests from the Boston Fire Department Regional Dispatch Center (a fire to witness the presence of gasping soon after collapse). The second was a retrospective analysis of 128 patients with out-of-hospital cardiac arrest who were determined to be gasping by EMS before transport to the hospital. The presence of gasping soon after arrest in patients in the various EMS arrival times. The present, prospective research was limited to hospital discharge. An analysis of the Boston Fire Department Regional Dispatch Center records of witnessed and non-witnessed out-of-hospital cardiac arrests with out-of-hospital resuscitation found that 64 of 113 (56%) of all observed patients had gasping. An analysis of 128 EMS-arrived, observed, out-of-hospital cardiac arrest documented the presence or absence of gasping combined with EMS arrival time. Gasping was present in 94 of 128 patients (73%) who arrived after EMS arrival, in 12 of 101 (12%) who arrived with EMS, and in 22 of 107 (21%) who arrived with EMS. Survival to hospital discharge occurred in 34 of 101 patients (34%) who gasped and in 68 of 107 (64%) who did not gasped (odds ratio, 3.2; 95% confidence interval, 1.2 to 9.0). Among the 81 patients who received bystander cardiopulmonary resuscitation, survival to hospital discharge occurred among 39 of 73 patients who gasped (52%) versus only 18 of 104 among those who did not gasp (17%) (adjusted odds ratio, 3.1; 95% confidence interval, 2.3 to 4.0).

Conclusions: Gasping or abnormal breathing in victims after cardiac arrest has a direct impact on survival. Gasping is associated with improved survival. These results suggest that the recognition and importance of gasping should be taught to bystanders and emergency medical dispatchers so as not to discount those from initiating prompt resuscitation efforts when appropriate. (Circulation. 2008;118:2504-2514.)



Prognosis of Gasping Following Cardiac Arrest

Survival to hospital discharge
 Gasping 28%
 Not Gasping 8%

Bobrow, Zuercher, Ewy et al. *Circulation* 2008

Survival to hospital discharge
 Gasping 27%
 Not Gasping 9%

Clark, Larsen Culley et al. *ann Emerg Med* 1992

Gasping in Humans with OHCA Importance of Bystander CPR

- 481 patients reported by EMS to be gasping
- Gasping with bystander CPR 39% survived
- Not gasping with bystander CPR only 9% survived

Bobrow, Zuercher, Ewy, et al. *Circulation* in press

Audio Examples

- Agonal breathing: what it sounds like
- Descriptions often used:
 - Breathing hard
 - Snoring
 - Gaspng
 - Groaning
 - Humming
 - Moaning
 - **Other descriptions are:**
 - Gurgling
 - Snorting
 - Breathing every once in a while
 - Labored or heavy or noisy breathing

Dispatch Assisted CPR



More Bystander CPR



More Survivors

Summary

- Bystander CPR can more than double the chance a patient survives OHCA
- Dispatch recognition of cardiac arrest can nearly triple survival
- The 2-Question Model quickens recognition
- Agonal breathing can help recognition of OHCA



Thank you
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