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

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**

![Graph showing survival rates vs. time between collapse and defibrillation.](image)

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)**

**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!**
Recognizing OHCA Over the Phone:

Impact on Survival
- The 2-Question Model
- Agonal Breathing

"Three-month survival was 5% when a cardiac arrest was not recognized versus 14% when it was recognized."

Obstacles to Recognition
- Agonal breathing (will listen to and demonstrate)
- Brief, seizure-like symptoms (will show)
- Unnecessary questions (need for scripting)
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

Survival to hospital discharge occurred in 28% of patients who gasped and in 8% who did not.

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%


Gasping in Humans with OHCA
Importance of Bystander CPR

- 481 patients reported by EMS to be gasping
- Gasping with bystander CPR 33% 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
  - Gasping
  - 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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