

Dispatch-Assisted CPR Instructions

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Background on Cardiac Arrest

- 1% of less of all call to CACCs
- Nonetheless, remains #1 cause of death
- 1st symptom of coronary disease in 50% of victims!
- Males in their late sixties
- 65% occur in the pre-hospital setting
- 85% occur at home
- 50% witnessed

Background on Cardiac Arrest

- 15% to 25% bystander CPR rate
- 5% to 10% overall survival rate
- Survivors have a quality of life similar to that of the general population (Health Utilities Index Mark 3)

Adjusted Odds Ratios for Survival to Hospital Discharge

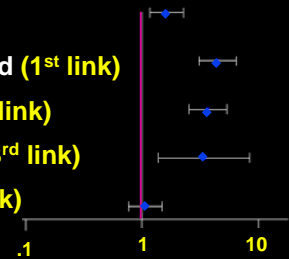
Age < 75 years

Bystander Witnessed (1st link)

Bystander CPR (2nd link)

Response ≤ 8 min (3rd link)

Phase III ALS (4th link)

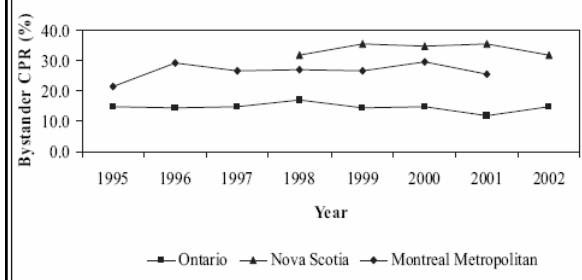


Improving Bystander CPR Rates or Knowledge Transfer!

- Mass CPR training events?
- Targeted training of family members?
- Poor retention of CPR knowledge and skills

What about dispatch-assisted CPR instructions!!!

Bystander CPR Rates



Dispatch-Assisted CPR Instructions

- Agonal breathing
- Ability of callers to follow instructions

Agonal Breathing

- In the first minutes following cardiac arrest, some victims will take short, laboured, noisy gasping breaths
- Could be as frequent as 30% of all victims
- This may hinder the ability to recognise cardiac arrest over the phone

Ability of Callers to Follow Instructions

- May only be possible in 30 to 40% of all calls:
 - Far from the phone
 - Emotional distress
 - Already knows CPR
- Mouth-to-mouth instructions take too long?

Evaluating the Effectiveness of Dispatch-assisted Cardiopulmonary Resuscitation Instructions

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Objectives

- Measure the impact of dispatch-assisted CPR instructions on bystander CPR and survival rates
- Quantify the frequency and impact of perceived agonal breathing
- Determine ability of 9-1-1 dispatchers to recognize cardiac arrest
- Measure the frequency of successfully delivered CPR instructions

Methods

- Secondary data analysis of OPALS database, Utstein Style
- Cardiac arrest cases of cardiac origin for which resuscitation was attempted in Ottawa (July 1st 2003 – Dec.31st 2004)
- Population 750,000
- Fire, BLS-D, ALS Tiered EMS System
- Older than 16 years old, Not witnessed by EMS

9-1-1 Communication Center

- Communication officers are laymen
- Dispatch-assisted CPR instructions were introduced on April 5th, 2004
- Identification of cardiac arrest followed by traditional CPR instructions
- Using a Ministry driven protocol, as opposed to Medical Priority Dispatch System (MPDS)
Dr. Jeff Clawson

Data Collection

- 9-1-1 interventions recorded on tape
- Standardized data collection sheet
- Content based on literature
- Pilot period
- Expedited ethics approval

Data Analysis

Bystander CPR and survival rates

- Two 9-month periods, Before-After design
- Absolute Risk Reduction, 95% CI, χ^2 , p value

Cardiac arrest recognition

- Sensitivity analysis

Agonal breathing and ability to complete instructions

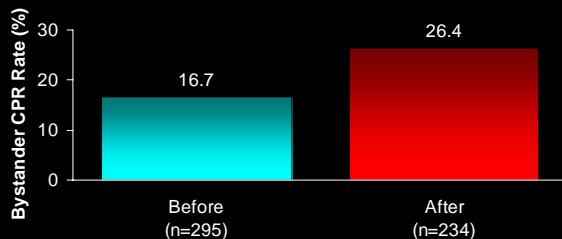
- Descriptive statistics

Characteristics of the 529 cardiac arrest victims

	Before (N=295)	After (N=234)
Mean Age	68	68
Range	20-94	18-94
Male*	63%	72%
Witnessed	48%	53%
Call to veh. stop (min:sec)	6:34	6:43
Initial Rhythm VF/VT	32%	37%
Agonal Breathing (n=192)	-	37%

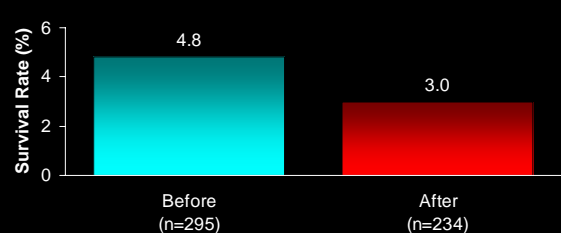
Bystander CPR Rates in the Before and After Phase

ARR 9.7%
(95%CI 8.5-11.3%) p=0.006



Survival Rates in the Before and After Phase

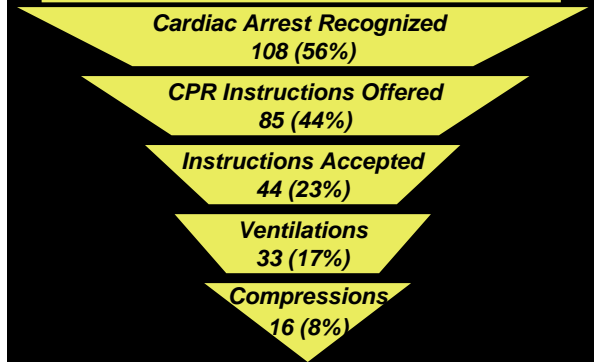
ARR -1.8%
p=0.32



Characteristics of the 192 (81% total) 9-1-1 Callers

Female	64%
Relationship to victim	
Spouse	29%
Child	20%
Nursing home staff	10%
Stranger	8%
Friend	8%
Grand-child	3%
Self	one
Previously trained in CPR	24%

Delivery of Dispatch-Assisted CPR Instructions among 192 callers



Cardiac Arrest Not Recognized? (N=84)

Agonal breathing	50%
Caller provided insufficient info	49%
Protocol deviation	1%
Caller felt a pulse	1%

CPR Instructions Not Initiated? (N=23)

CPR in progress	52%
EMS arrived	9%
Thought victim was dead	9%
Unable to move the victim	4%
Caller left the phone	4%
Defibrillation in progress	4%
Confusion about DNR status	4%

CPR Instructions Declined? (N=41)

Already knows CPR	27%
Thinks victim is dead	20%
Caller physical limitation	15%
Emotional distress	7%
Physically too far from victim	5%
Terminal illness	5%
CPR in progress	5%
EMS arrived	2%

Time Intervals (min:sec)

Call to arrest recognition (n=108)	2:38
Recog. to instructions offered (n=85)	0:30
Instruct. offered to initiated (n=44)	0:49
Total	3:57
Vent. instruct. to completion (n=16)	2:05
Total	6:02
9-1-1 call to arrival at scene	6:43

Effectiveness of Dispatch-Assisted CPR Instructions: An Evaluation of 9-1-1 Calls

1st ever dispatch study funded by CIHR

- Prospective collection of calls
- In 9 of OPALS sites
- Received Ethics approval
- Operations in collaboration with the MOH
- Inter-rater agreement for agonal breathing
- Chest compression-only CPR

Effectiveness of Dispatch-Assisted CPR Instructions: An Evaluation of 9-1-1 Calls

Will include 3,000 victims pre and post the introduction of dispatch-assisted CPR instructions in Ontario

Before Group		Run-in phase and study set-up	Prospective Cohort		After Group	
Study Population for Time Series Analyses						
2001	2002	2003	2004	2005	2006	2007

We estimate 360 lives could be saved each year in Canada

Survey of Communication Officers using the Theory of Planned Behavior

CPR instructions during agonal breathing

