

International Multi-Center
Controlled Trial of Dispatcher-
Assisted Cardio-Pulmonary
Resuscitation Intervention
Package

**Pan-Asian Resuscitation Outcomes
Study Phase 2**

Introduction

- Difficulties in improving Bystander CPR (BCPR) rates
- Dispatcher Assisted Cardio-Pulmonary Resuscitation (DA-CPR)- Effective ?
 - Can double BCPR rates
 - Bystander CPR-Increase survival x2
 - But implementation is currently rare in Asia

Barriers to Implementation

- Callers usually anxious with fears and misconceptions
- Dispatchers are usually not medical personnel and not trained to communicate in life or death situations
- Dispatchers have reluctance and inhibitions under such circumstances.
- Cultural and mindset issues may hinder a layperson to assist in a cardiac arrest.

Overall/Program Aim

- PAROS phase 1 (2010 to 2013): outcomes registry to understand OHCA in Asia and test hypotheses on relative cost-effectiveness of OHCA interventions.
- PAROS phase 2: To improve OHCA survival by increasing the bystander CPR rates in the Asia-Pacific

- **Specific aim 1**

- To assess the impact of a step-up, system-level dispatcher-assisted CPR (DA-CPR) package on bystander CPR rates and on survival for OHCA using a phased, mixed-methods, before-after, difference of differences type analysis in Singapore and the Asia-Pacific.

- **Specific aim 2**

- To assess the incremental cost-effectiveness of a DA-CPR package on survival to discharge compared to current models of alternative interventions (widespread community based CPR training, public access defibrillation, reducing ambulance response times, introducing advanced life support (ALS) ambulances and developing hospital-based post resuscitation care) in Singapore, developed in PAROS phase 1 study.
- To assess the impact of a comprehensive DA-CPR package on neurologically intact (Cerebral Performance Category 1 or 2) survival for OHCA using a mixed-methods, before-after, difference of differences type analysis in Singapore.

Importance

- Little evidence for DA-CPR from RCTs
- International, multi-centre implementation trial
 - Large sample size
 - Can generalise results internationally
- To assess the clinical impact of a low-cost, community-level EMS intervention
- Good potential for survival (public health concern)

Methods

- Study design
 - A prospective, international, population-based, community-level, controlled implementation trial in an emergency medical services (EMS) setting.
 - Mixed-methods, before-after, difference of differences type analysis comparing outcomes in 3 groups: comprehensive package, basic package and no intervention.

Methods

Setting

- Phase 2 of the Pan-Asian Resuscitation Outcomes Study (PAROS) which is an ongoing OHCA registry
- Singapore, Korea, Japan, Taiwan, UAE, Thailand, China, Pakistan, Indonesia and Malaysia
- Cost-effectiveness analysis for this study will be focused on Singapore's EMS system

ePAROS



Welcome To:

Pan-Asian Resuscitation Outcomes Study (PAROS)

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Username: paros
Password: paros14 } Demo account

Web-based Electronic Data Capture

Trial Flow Diagram

Out-of-Hospital Cardiac Arrest Presenting to the EMS Dispatch in the Asia Pacific

Sites Implementing Dispatcher-assisted Cardiopulmonary Resuscitation (Intervention)

Sites Not Implementing Dispatcher-assisted Cardiopulmonary Resuscitation

Sites
Phase 1 'historical' data (2009-2011)/minimum 6 months 'run-in' period before implementation

Sites
Phase 1 'historical' data (2009-2011)/minimum 6 months 'run-in' period before implementation

Phase 1 'historical' data

- Basic Package Implementation**
- Dispatcher-CPR protocol
 - Training program

- Comprehensive Package Implementation**
- Dispatcher-CPR protocol
 - Training program
 - Quality measurement tool
 - Quality Improvement Program
 - Community Education Program

Collection of Out-of-Hospital Cardiac Arrest data only

Collection of Out-of-Hospital Cardiac Arrest and Dispatcher CPR data

Methods

- ⊙ Patients' inclusion criteria
 - All OHCA presenting to EMS universal dispatch
- ⊙ Patients' exclusion criteria
 - No resuscitation attempt
- ⊙ Intervention -2 level Implementation
 - Basic- Implementation of dispatcher CPR training program and protocol
 - Comprehensive- Implementation of training program, protocol, quality improvement process and public education
- ⊙ Before-After controls
 - Minimum of 6 months historical data

Methods

◎ Intervention -Basic

1. Standardized dispatcher-assisted CPR protocol
 - Developed with the assistance of Prof Bentley Bobrow, Arizona State Medical Director and current Chairman of the American Heart Association Basic Life Support Subcommittee
2. A training package for dispatchers
 - 1 day intensive training course
 - Online version of the training package, supported by the Clinton Global Initiative.

SAMPLE PROTOCOLS FOR IDENTIFYING CARDIAC ARREST AND PROVIDING TELEPHONE-ASSISTED CPR INSTRUCTIONS

Arizona Department of Health Services

The first task when handling a possible cardiac arrest call is to identify whether a cardiac arrest has occurred. Two vital questions should be asked as early in the call as possible:

1. Is the victim conscious or responsive?
2. Is the victim breathing normally?

These questions should be asked regardless of whether the victim is an adult, a child, or an infant. If the answer to both questions is no, use the protocols below as called for:

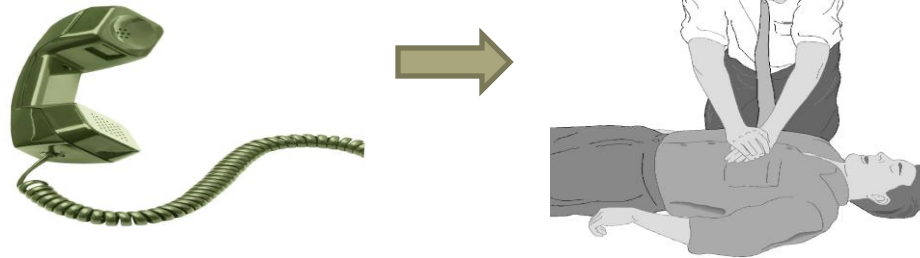
Protocol for Compression-Only CPR

For adult victims and children older than eight years, instructions should be for Compression-Only CPR, or CPR without rescue breathing. Be CALM and ASSERTIVE. If the caller reports that the victim is not conscious and not breathing normally, then proceed IMMEDIATELY to the following script. Tell the caller:

1. Bring the phone and get NEXT to the person if you can.
2. Listen carefully. I'll tell you what to do.
 - A. Place the victim FLAT on his back on the floor.
 - B. KNEEL by the victim's side.
 - C. Put the HEEL of your HAND on the CENTER of the victim's CHEST.
 - D. Put your OTHER HAND ON TOP of THAT hand.
 - E. WITH YOUR ARMS STRAIGHT, PUSH DOWN AS HARD AS YOU CAN WITH THE HEELS OF YOUR HANDS. DO IT TEN TIMES AND COUNT WITH ME: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (The rate should be corrected as needed. The ideal rate is 100 compressions per minute. If necessary, the caller should be told to come back to the phone.) KEEP GOING, PUSH HARD AND FAST AND COUNT OUT LOUD TO 10 OVER AND OVER AGAIN. I'LL STAY ON THE PHONE. KEEP DOING IT UNTIL HELP ARRIVES. (Encourage the caller. If the caller is tired, ask if they are keeping their arms straight. If necessary, suggest a short rest.)

Cardiac arrest identification and Dispatcher-assisted CPR

- Not Conscious/Responsive
- Not Breathing normally



Count 1,2,3,4,5,6,7,8,9,10
100 compressions/min



Methods

◎ Intervention -Comprehensive

3. A measurement tool to collect data on Individual dispatcher and organizational-level performance through review of the audio dispatch recordings.

- Implemented in the ePAROS jointly developed with A/Prof Bryan Mcnally

4. Integrated quality improvement (QI) program

- Training in design and implementation of this QI program will be provided as part of the training package

5. Public education package

Telephone Assisted CPR QA Evaluation

For Quality Assurance Purposes Only. Not for General Distribution. Exempt from Discovery.

Date: _____ Dispatch Agency: _____ Transfer Agency: _____
 Address: _____ Case #: _____
 Dispatcher ID: _____ Time of Call: _____

Transfer Call? Yes No

CPR instructions given? Yes No

| Victim | |
|--------------|--|
| 9 or older | |
| 8 or younger | |
| < 12 months | |

| Breathing Normally? | | | Patient Conscious? | | | Suspected Agonals reported or heard? | |
|---------------------|----|-----|--------------------|----|-----|--------------------------------------|----|
| Yes | No | Unk | Yes | No | Unk | Yes | No |
| | | | | | | | |

| Was caller the rescuer? | | |
|-------------------------|----|-----|
| Yes | No | Unk |
| | | |

| CPR already in progress/performed? | | |
|------------------------------------|----|-----|
| Yes | No | Unk |
| | | |

| Trained rescuer present? | | | | |
|--------------------------|-----|-----|-----|------|
| Yes | Pro | Lay | Unk | None |
| | | | | |

| (Time) Need for CPR recognized by QI | (Time) Need for CPR recognized by dispatcher | Time dispatcher began instructions | Time of first compression | Time of first rescue breaths | Did patient status change? | | |
|--------------------------------------|--|------------------------------------|---------------------------|------------------------------|----------------------------|------|----|
| | | | | | Yes | Time | No |
| | | | | | | | |

Dispatcher recognized need by conventional definition? Yes No

QA recognized need for CPR by conventional definition? Yes No

| Dispatcher Assertive? | | Rate Coaching | | | Depth Coaching | | If multiple rescuers, coached to switch? | |
|-----------------------|-------|---------------|----|----------|----------------|----|--|----|
| Told | Asked | Yes | No | Counted? | Yes | No | Yes | No |
| | | | | | | | | |

| Time breathing assessment began | Time breathing assessment ended |
|---------------------------------|---------------------------------|
| | |

If CPR was delayed or not given , what was the reason?

- | | | |
|---|---|---|
| <input type="checkbox"/> Caller left the phone | <input type="checkbox"/> Dangerous Environment | <input type="checkbox"/> Obvious 901H |
| <input type="checkbox"/> Caller not with patient | <input type="checkbox"/> Didn't recognize CPR was needed | <input type="checkbox"/> Unable to calm caller |
| <input type="checkbox"/> Caller refused CPR | <input type="checkbox"/> Difficult Access | <input type="checkbox"/> Unable to get patient to floor |
| <input type="checkbox"/> Caller unable to perform CPR | <input type="checkbox"/> DNR (Do Not Resuscitate) | |
| <input type="checkbox"/> CPR already in progress | <input type="checkbox"/> Language Barrier, if yes language was: | |
| <input type="checkbox"/> Patient's status changed | <input type="checkbox"/> Language Line Used | |
| <input type="checkbox"/> Other: | | |

| Coaching or compliments for dispatcher? | Research comments? |
|---|--------------------|
| | |
| | |
| | |
| | |
| | |

Methods

◎ Data collection

- EMS dispatch, ambulance notes, Emergency Department (ED) and in-hospital records
- Data management - Study Co-ordination Center (Singapore) - Electronic Data Capture (EDC)

◎ Variables

- Primary outcome - OHCA survival
- Secondary outcome - Bystander CPR rates

Methods

- ◎ Data analysis plan
 - Sample size -30,000 OHCA
 - Clinical effectiveness
 - Before-After Analysis
 - Difference of Differences
 - Adjusted for community, EMS and arrest characteristics

Methods

- Cost-effectiveness

- Compare the intervention with 5 evidence-based competing strategies

- Widespread community based CPR training

- Public access defibrillation

- Reducing ambulance response times

- Introducing advanced life support (ALS) ambulances

- Developing hospital-based post resuscitation care

- Cost data

- Direct

- Indirect –societal perspective

- Effectiveness data

- Quality Adjusted Life Years (QALYs) saved

Benefits

- ⦿ Robust scientific evidence
- ⦿ Model for feasibility, implementation, cost-effectiveness and replication of system level intervention for OHCA
- ⦿ Inform policy to improve pre-hospital emergency care
- ⦿ Strengthen emergency treatment capability and research infrastructure
- ⦿ Platform for low-cost community centered research
- ⦿ Become leading international research center

Timeline

- May 2013 – rollout of pilot dispatch data collection tool using ePAROS, start training (workshops and e-learning)
- May-Aug 2013 - beta testing and refining data collection. Finalising dispatch protocols etc
- Aug-Oct 2013 – certification of sites for inclusion
- Oct 2013 – launch of trial

THANKS