HKU Advocates Extensive CPR and AED Training to Enhance Out-of-hospital Cardiac Arrest Survival Rate

Press Conference
December 20, 2016
Dr Leung Ling-pong
Clinical Associate Professor
Emergency Medicine Unit
Li Ka Shing Faculty of Medicine
The University of Hong Kong
What is OHCA?

- Out-of-hospital cardiac arrest (OHCA) is the sudden, unexpected loss of heart function, breathing and consciousness.
- Hong Kong has 5,000 to 6,000 OHCA cases per year
- The survival rate is about 2.3% in the year 2012-2013
- Among the lowest in Asia

<table>
<thead>
<tr>
<th>Countries</th>
<th>Japan</th>
<th>Korea</th>
<th>Singapore</th>
<th>Thailand</th>
<th>Taiwan</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival to discharge</td>
<td>5.2%</td>
<td>8.5%</td>
<td>2.5%</td>
<td>4.2%</td>
<td>4.6%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

• Only 1 out of 44 OHCA victims can survive to hospital discharge
Treatment

- Treatment for OHCA is TIME CRITICAL
- Performance Pledge of the ambulance service: Arrival at patient’s side within 12 minutes
- Patient’s survival rate decreases 7-10% per minute of delay to treatment
- Chance of survival is very low if nothing is done before ambulance arrival
What can be done by the public?

- Recognition and activation of the emergency response system
- Immediate high-quality CPR
- Rapid defibrillation
- Basic and advanced emergency medical services
- Advanced life support and postarrest care
PUBLIC KNOWLEDGE OF HOW TO USE AN AUTOMATIC EXTERNAL DEFIBRILLATOR IN OUT-OF-HOSPITAL CARDIAC ARREST IN HONG KONG

KL Fan, LP Leung *, HT Poon, HY Chiu, HL Liu, WY Tang

ABSTRACT

Introduction: The survival rate of out-of-hospital cardiac arrest in Hong Kong is low. A long delay between collapse and defibrillation is a contributing factor. Public access to defibrillation may shorten this delay. It is unknown, however, whether Hong Kong’s public is willing or able to use an automatic external defibrillator. This study aimed to evaluate public knowledge of how to use an automatic external defibrillator in out-of-hospital cardiac arrest.

Methods: A face-to-face semi-structured questionnaire survey of the public was conducted in six locations in Hong Kong with a high pedestrian flow.

Results: In this study, 401 members of the public were interviewed. Most had no training in first aid (65.8%) or in use of an automatic external defibrillator (85.3%). Nearly all (96.5%) would call for help for a victim of out-of-hospital cardiac arrest but only 18.0% would use an automatic external defibrillator. Public knowledge of automatic external defibrillator use was low: 77.6% did not know the location of an automatic external defibrillator in the vicinity of their home or workplace. People who had ever been trained in both first aid and use of an automatic external defibrillator were more likely to respond to and help a victim of cardiac arrest, and to use an automatic external defibrillator.

Conclusion: Public knowledge of automatic external defibrillator use is low in Hong Kong. A combination of training in first aid and in the use of an automatic external defibrillator is better than either one alone.

New knowledge added by this study
- The prevalence of life-saving skills among Hong Kong citizens is low.
- Public knowledge of how to use an automatic external defibrillator is suboptimal.

Implications for clinical practice or policy
- A programme that increases public access to an increased number of available automatic external defibrillators is unlikely to be successful without also improving public knowledge.
- Combining first aid training with automatic external defibrillator training is better than either one alone with regard to bystander basic life support and defibrillation skills.
Method

- Aim: Evaluate the public knowledge on using an automatic external defibrillator in out-of-hospital cardiac arrest
- Face-to-face semi-structured questionnaire survey
- Between November and December 2015
- 6 spots in Hong Kong with high pedestrian flow
Life saving skills in Hong Kong

- 401 Participants

**FIRST-AID TRAINING**

- First-aid only: 264 (66%)
- First-aid+AED: 49 (12%)
- Never: 88 (22%)
1. Would you call for help?

97% of respondents would call for help
2. Would you commence CPR?

21% of respondents would commence CPR
3. Would you try to locate an AED?

Locate AED

Yes  No

119  282

30% of respondents would try to locate an AED
4. Would you apply an AED if it is available?

18% of respondents would apply AED if it is available
The Facts

• ONLY 1 out of 3 respondents have received first-aid training

• ONLY 1 out of 7 respondents have received AED training

• Despite that 97% would call 999 for help:
  ➢ Less than 1 out of 3 respondents would commence CPR
  ➢ Less than 1 out of 5 respondents would apply AED
Comparing between First Aid & AED-trained and First Aid only respondents

Attitude questions

Would you commence CPR?
- Both First Aid & AED-trained: 27% Yes, 73% No
- First Aid trained only: 67% Yes, 33% No

Would you apply AED if available?
- Both First Aid & AED-trained: 22% Yes, 78% No
- First Aid trained only: 22% Yes, 78% No
Comparing between First Aid & AED-trained and First Aid only respondents

AED Knowledge

Do you know that AED can increase survival?

- Both First Aid & AED-trained: 29% Yes, 71% No
- First Aid trained only: 58% Yes, 42% No

Do you know AED has voice prompt?

- Both First Aid & AED-trained: 6% Yes, 94% No
- First Aid trained only: 59% Yes, 41% No
Other findings

• Attitude and willingness of performing CPR and AED is higher in the AED trained First Aider group

• 67% of First Aid only respondents will NOT commence CPR and 78% will not apply AED

• Only 27% and 22% of AED trained First Aiders will NOT commence CPR and apply AED

• First Aid plus AED training can significantly increase individual’s response and life-saving knowledge
Vision
EMU is dedicated to advancing the specialty of Emergency Medicine and benefitting the society through teaching, research, knowledge exchange and clinical service.

Mission
1) To provide excellent clinical teaching and training at both the undergraduate and postgraduate level;
2) To deliver outstanding research in the field of Emergency Medicine;
3) To assume academic leadership for clinical service provided through our affiliate hospitals;
4) To impact the wider community through innovative research, evidence based clinical practice and knowledge transfer.
Our goals

- Recognition and activation of the emergency response system
- Immediate high-quality CPR
- Rapid defibrillation
- Basic and advanced emergency medical services
- Advanced life support and postarrest care
1. Increasing Bystander CPR Rate
Teaching secondary school teachers and students CPR

• First bystander CPR project of its kind in HK
• Funded by Quality Education Fund (QEF)
• Promote compression-only CPR in 30 secondary schools benefitting over 15,000 students
• Innovative teaching method integrating a CPR learning app, online e-learning platform and face to face coaching
Compression-only CPR

- No mouth to mouth ventilations
- Two simple steps
  1. Summon help
  2. Push hard and fast in the center of the chest
- Easier to learn and perform
- Shorter time to skill acquisition
Teaching senior citizens CPR
Teaching domestic helpers CPR
2. Rapid defibrillation
What is AED?

- Designed for the layperson
- Simple audio commands
- Automatically diagnoses the heart rhythm and determines if a shock is needed
AED app

• The project was initiated in mid-2015
• Connect the AED suppliers, owners and users
• Obtained most AED data from government and schools, etc.
• Contact three biggest AED suppliers in Hong Kong and will update the database every three months
• Self-report system through our AED app
• Continue expanding
Quick 999 shortcut
Provide accurate location of AEDs around Hong Kong from our database
EMU-made CPR and AED training videos
AED app

Procedure

1. Ensure scene safety
2. Check responsiveness and breathing

Check responsiveness

- Tap victim’s shoulders
- Shout “Are you okay?”

Check breathing

- Observe the rise and fall of chest wall
- Open airway using “head-tilt/ chin lift”

How to use:

1. Get Prepared
   A. Remove the victim’s clothing; expose the chest
   B. Take off all removable (metal) accessories
   C. Dry the chest before applying adhesive pads
   D. Apply the pads on victim’s bare chest as illustrated

2. Follow voice prompts
   - Ensure no one touches the victim (including yourself) during analysis and shock delivery
   - After shock delivery, immediately resume chest compressions
   - If no shock is needed, continue CPR
   - *Do not turn off the AED at any time during rescue

Learning Compression-only CPR and AED

CPR demonstration by RubberBand X HKU EMU
3. Public education
Public education & awareness

RubberBand - Alive by CPR

Alive by CPR MV https://youtu.be/DbP-2er5z4o
CPR Procedures (Eng Subtitle) https://youtu.be/DjF3BeGdPbA
CPR Procedures (Chi Subtitle) https://youtu.be/AF7KAbixqnA
1. 高永文局長
   I. 高永文局長: 香港心臟停頓情況

2. 黎文軒先生
   I. 前香港消防處處長 黎文軒先生 訪問
   II. 接受CPR訓練, 成為救人活命的英雄!

3. 蕭粵中醫生
   I. 院外急救的親身經歷
   II. 為甚麼要做心肺復甦法和去顫?
   III. AED和團隊的重要性
   IV. 一起學CPR! 拯救更多生命
1. CPR and AED demonstration by EMIG

2. Dr Axel Siu
   I. Dr Siu’s sharing of saving a OHCA victim
   II. What should we do? CPR and AED?
   III. The importance of AED and teamwork in resuscitation
   IV. Let’s learn CPR and save more lives
   V. Encouragement
Promotion

- Mass media
- Social media
- Encourage more people to receive CPR and AED training and help in emergency situations
## Acknowledgement

<table>
<thead>
<tr>
<th>Project members</th>
<th>Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dr Fan Kit-ling, Karen</td>
<td>• Dr Ko Wing-man, Secretary for Food and Health</td>
</tr>
<tr>
<td>• Dr Leung Ling-pong</td>
<td>• Mr Lai Man-hin, former Director of Fire Services Department</td>
</tr>
<tr>
<td>• Mr Poon Ho-ting</td>
<td>• Dr SIU Yuet-chung, Axel, Consultant of A&amp;E Department, North District Hospital</td>
</tr>
<tr>
<td>• Ms Chiu Hon-yiu</td>
<td>• Emergency Medicine Interest Group (EMIG)</td>
</tr>
<tr>
<td>• Mr Liu Ho-lim</td>
<td>• Pacific Medical Systems Ltd</td>
</tr>
<tr>
<td>• Ms Tang Wai-yan</td>
<td>• Philips Ltd</td>
</tr>
<tr>
<td>• Ms Yip Yu-ching, Janice</td>
<td>• Zoll Ltd</td>
</tr>
<tr>
<td>• Mr Yip Yuk-chiu, Jeffrey</td>
<td>• RubberBand</td>
</tr>
<tr>
<td>• Mr Leung Cheuk-man, Reynold</td>
<td>• Mr Yito Kwok</td>
</tr>
<tr>
<td>• Ms Chan Yan-yi, Victoria</td>
<td>• Mr Lee Chun Ho, Iceki</td>
</tr>
<tr>
<td>• Dr Kwok Tai-on, Tyrone (TELI)</td>
<td>• Prof. Kwok Yu-kwong, Ricky (TELI)</td>
</tr>
</tbody>
</table>
Q & A