



Resuscitation Academy (RA) 10-Step Implementations in the PAROS Group

Prof Marcus Ong

Resuscitation Academy Model to Improve Community Survival Rates



10 Programs & 10 Actions to operationalize scientific understanding

PROGRAMS

Cardiac arrest registry
Telephone CPR
High Performance EMS CPR
Rapid Dispatch
Measurement of professional rescuer resuscitation
AED program for first responders
Smart technologies for CPR & AED
Mandatory CPR-AED Training
Hospital care
Culture of Excellence

**Improve
Cardiac Arrest
Survival**

ACTIONS

Form a team
Select program(s)
Plan an implementation strategy
Set specific goals
Achieve buy-in
Establish standards
Pilot the program
Consult experts
Communicate progress
Support, advocate, and celebrate



Project Title:

Resuscitation Academy (RA) 10-Step
Implementations in the Pan-Asian Resuscitation
Outcomes Study (PAROS) group

Hypothesis:

We hypothesize that the implementation of RA's 10-
step recommendations for OHCA will increase
survival rate in PAROS participating countries.

Grant period:

Laerdal Grant start - Jun 2016

Laerdal Grant extended - Jan 2021



8 Countries awarded the grant to implement their choice of RA 10-steps over a period of 2yrs

-- Total of 4 disbursement half yearly upon satisfactory progress report

Recipient of funding	Disbursement status
China - Zhejiang Provincial People's Hospital	Pending 3 rd progress report for final grant disbursement
India - GVK Emergency Management and Research Institute	3 rd progress report cleared, pending invoice for final grant disbursement
Vietnam - Bach Mai Hospital	Pending 2 nd progress report for 3 rd grant disbursement
Malaysia - College of Emergency Physicians, Academy of Medicine of Malaysia	Pending 3 rd progress report for final grant disbursement
Pakistan - Aga Khan Hospital	Completed
Philippines - Southern Philippines Medical Center	Completed
Indonesia - Faculty of Medicine, Universitas Brawijaya	Pending 1 st progress report for 2 nd grant disbursement
Thailand - Narenthorn EMS Center, Rajavithi Hospital	Processing 1 st disbursement

China status

- May 2017 – Sep 2018 (up to 2nd progress report)



RA Steps	Progress
Step 1	Total of 1502 OHCA calls and 1249 cases witnessed contributed by 22 hospitals
Step 2	2 DA-CPR workshop conducted and 45 dispatchers trained Review and feedback done 1-2monthly by directors of the dispatch centre
Step 3	100 EMT trained in HP-CPR Review & evaluation system in setup phase
Step 4	Previous dispatch time: 13.6min Current dispatch time: data collection phase
Step 7	Smartphone application implemented in some cities of Zhejiang province. Take up rate is low 30-40 downloads Around 20 cases where bystander are being activated by the App
Step 8	8 CPR & AED training conducted in schools and communities
Step 10	established a protocol for all EMTs and paramedics in Zhejiang Province about on-going education and training

India status

- May 2017 – Mar 2019 (up to 3rd progress report)



RA Steps	Progress
Step 1	Total of 1024 OHCA calls contributed by Telangana
Step 2	18 trainers from the GVK EMRI faculties have been trained 90 dispatchers trained and regular refresher course conducted in small group of 5 CPR instructions translated to local language Video made to educate the public on DA-CPR Review and feedback of calls received twice a week
Step 4	Previous dispatch time 120 sec Current dispatch time 90 sec
Step 6	Total of 828 first responder, volunteers and staffs across 7 different organisation been trained in CPR & AED
Step 7	108 application launch in Gujarat, GVK EMRI (no data collected yet) Other smart technology in development <ol style="list-style-type: none">1. Call ambulance application2. Drone system to get an AED
Step 8	Proposal to the state government to implement CPR training as part of the curriculum at 8 th standard and above level
Step 10	Standard protocols and training for EMTs and Paramedics; Dedicated ERC Physician will monitor the OHCA; Dedicated T CPR Desk; Evidence-based practice; Refresher Training for T-CPR dispatcher, EMTs and Paramedics ; Celebrate the success – life savior awards

Malaysia status

- Jun 2017 – Jun 2018 (up to 2nd progress report)



RA Steps	Progress
Step 1	Total number of 367 OHCA calls and 208 cases witnessed contributed by 5 active sites
Step 2	3 DA-CPR workshop conducted and 60 dispatchers trained Monthly feedback and review system on the calls in placed
Step 3	8 high performance CPR training conducted and 260 EMT trained Distribution of defibrillator with capture capability is ongoing
Step 4	Previous dispatch time: within 3mins for 90% Current dispatch time: within 2mins for 80% Improvement plan is in discussion at national level
Step 6	Total of 300 first responder trained in 5 CPR & AED training sessions
Step 7	Pilot project in the Penang Island 26 cases activated by the Smart technologies over the reporting period
Step 8	A state initiative in Penang, district approach in Perak and approaching into Selangor Total of 8000 students trained



Pakistan status

- Nov 2017 – Apr 2020 (completed)

RA Steps	Progress
Step 1	Total number of 570 OHCA calls contributed by 2 Hospital and 1 EMS centre
Step 2	Currently only one EMS organization that is operating in the city which have telephone CPR system in place. Have permission from them and started data collection. 480 cases enrolled till date.
Step 3	Training materials developed and translated to local language 13 master trainers trained 22 workshop conducted and 124 EMTs trained in HP-CPR 2 workshop conducted and 29 lay persons trained in HP-CPR
Step 7	Collaborating with the GoodSam app 544 GoodSam users have been trained in CPR

Philippines status

- July 2017 – Sep 2019 (completed)



RA Steps	Progress
Step 1	Total number of 100 OHCA calls contributed by 1 site
Step 2	4 DA-CPR workshop conducted and 245 dispatchers trained Monthly audit on the calls in placed Video made to educate the public on DA-CPR
Step 3	4 high performance CPR training conducted and 192 EMT trained
Step 4	Previous dispatch time: 5mins 44secs Current dispatch time at 4mins 30secs
Step 6	Total of 1000 first responder trained in 49 CPR & AED training sessions
Step 7	In discussion with private developer for smart technology application involving locating first responder and AED
Step 8	National law to conduct CPR & AED trainings in school Nationwide Mass Training on CPR was held last July 16, 2018; teachers and students from Grades 4,5 and 6 of the Davao City Special Education School were trained
Step 10	Implemented that ROSC rates and CPR review are reported in our monthly audits



Vietnam status

- Jun 2017 – Dec 2018 (up to 1st progress report)

RA Steps	Progress
Step 1	Total number of 140 OHCA calls and 93 cases witnessed contributed by 10 sites
Step 2	In planning phase

Note: Changes in the higher management and re-organization of staffs , thus progression has been delayed

Indonesia status



- 1st grant disbursement on Oct 2019, pending 1st progress report

RA Steps	Proposal
Others	<ul style="list-style-type: none">• To establish a Paramedicine Program for the nurses in Malang, East Java, Indonesia.• The program will train the nurses on prehospital care and the RA's 10-step recommendations to improve OHCA survival will be part of the course.• Brawijaya University will be working with the Singapore General Hospital and the Unit for Prehospital Emergency Care (UPEC) of Singapore to develop the program.

Thailand status

- Processing 1st grant disbursement

Country	Choice of RA 10-Steps Implementation									
	1	2	3	4	5	6	7	8	9	10
Thailand	√	√		√						



Malaysia Updates

Malaysia's progress of GRA :

 MyGRA

How far are we in achieving the 10
steps...

Dr Kwanhathai Darin Wong

MyGRA – 10 steps program

- 1. cardiac arrest registry ✕ (only OHCA ✓)
- 2. telephone CPR ✓
- 3. High performance EMS CPR ✓
- 4. rapid dispatch ✓
- 5. measurement of professional resuscitation using defibrillator ✓
- 6. first responder AED program ★
- 7. smart technologies for CPR /AED ★
- 8. mandatory training of CPR /AED ★
- 9. accountability ☑
- 10. Culture of excellence ☑

Step 2: Telephone CPR

- Call taker identifies case of OHCA and gives caller advice on doing CPR
- One number system **999** in Malaysia since year **2007**
- Malaysia uses GIRN system
- incorporates various protocols in MECC (Medical Emergency Call Centre) national training
- Telephone CPR protocol included for MECC nationwide implementation since **2015**
“main aim to increase bystander CPR”



Step 3 – HP CPR of EMS

- Many PHC units have already got written protocols on HP-CPR ; 2 man vs 3 man
- However, need to have HP-CPR protocols expanded to all PHC units, with regular drills and monitoring
- National training started since 2015
- National PHC Credentialling & Priviledging program

Step 4 : Rapid dispatch

- PHC services – National Key Performance Indicator
- >85% of calls dispatch time less than 5 mins
- As we start to see most MECCs able to achieve this, now moving towards implementation of rapid dispatch times for **priority 1 calls**



Step 5 : Measure professional resuscitation with defibrillators

- Since 2017, Malaysia started to roll out plan to equip all PHC sites with ALS ambulances
- Step 5 Can be done in ALS (Advanced Life Support) Ambulances
- Has Defibrillator with feedback



Malaysian ALS equipped ambulance



MyGRA – 10 steps program

- 1. cardiac arrest registry ✕ (only OHCA ✓)
- 2. telephone CPR ✓
- 3. High performance EMS CPR ✓
- 4. rapid dispatch ✓
- 5. measurement of professional resuscitation using defibrillator ✓
- 6. first responder AED program ★
- 7. smart technologies for CPR /AED ★
- 8. mandatory training of CPR /AED ★
- 9. accountability ☑
- 10. Culture of excellence ☑

Example: Penang state Working with Police

- Done CPR and AED training with a small work force
 - 2015 mass CPR ~1000 police officers trained
 - 2017 - ~100 police officers trained in CPR & AED
 - 2018 - ~200 police officers trained in CPR & AED
- 2018 - place AED at main Police station



Fire Department

- MOU between state MOH and State Fire departments
- Penang since 2016
- Ongoing PHC training for fire rescue personnel
- Yearly Training on HP CPR
- 23/7/2019 -10 AEDs handed over to each EMRS ambulance (10 major stations)
- 17/9/2019 training for EMRS stations
- 30/10/2019 – successful “save”

Fire Rescue Department



Successful save on 30 Oct 2019

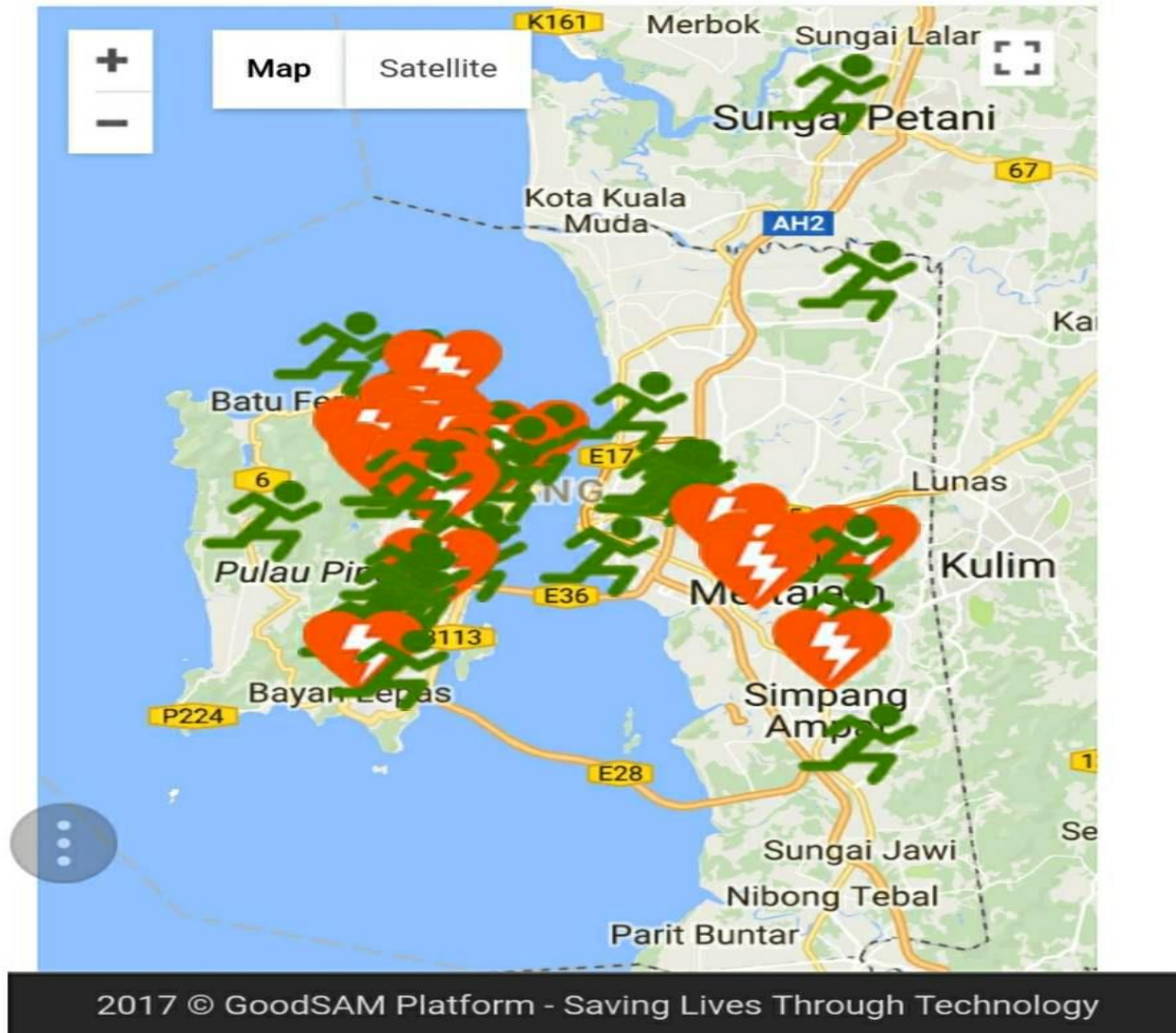


Example Penang : CERT

- Community first responder team (CERT)
 - able to do BLS and first aid, 6pm to 6am
 - community volunteers on motorbikes



GoodSAM App on hp of Penang map



Example: First responder

AED program

- **AEDs placed in high traffic public areas**
- **PENANG HEART SAFE PROGRAM**
 - Started in 2015
 - Local state government with many NGOs
 - Placed 10 public AEDs in public areas

Penang Heart Safe Program

ZOLL



Botanical Gardens



Jln Betik Sports Complex



Cheruk Tok Kun



Sg Nibong Bus Terminal



City Park



84 Trail Penang Hill



KOMTAR



KOMTAR

AEDs

- Penang state has ~65 public AEDs
- Putrajaya started to place AEDs in government buildings and parks
- AEDs in places of religious worship: mosque, temple, church
- AEDs in schools



1 Sept 2018, 49 yr old man saved Chung Ling High School

'I owe the boys my life'

Back-from-the-dead man to meet his teen saviours soon

By **ARNOLD LOH**
arnold.loh@thestar.com.my

GEORGE TOWN: A man who was clinically dead for 12 minutes will soon meet his heroes – five teenage boys.

Long Soo Keat will meet them when more than 1,000 people gather to learn the skills that the boys used to save him – cardio pulmonary resuscitation (CPR) – and how to use an automated external defibrillator (AED).

"I can't wait to meet the boys. I haven't even spoken to them. I owe them my life," said the 49-year-old real estate agent.

On Sept 1, Long had a sudden cardiac arrest during a football match with his fellow Chung Ling High School alumni at the school field.

The five boys – St John Ambulance Malaysia (SJAM) L/Cpl Gabriel Soon Chai Long, 16, Pvt Liong Jun Yong, 16, 14-year-old cadets Anasley Tan Zhong, S. Shaman and Tang Yi Ze – were on duty and used CPR and the school's AED to get Long's heart to beat again after 12 minutes.

Long was warded for nearly two weeks and discharged only last Friday.

SJAM state staff officer Dr Lawrence Tan explained that Long's sudden cardiac arrest was not the same as a heart attack.

"A heart attack is when blood supply to your heart is blocked. Many have heart attacks and survive.

"Sudden cardiac arrest is a malfunction in your heart and it stops beating. You lose consciousness



Lifesavers:
(From left)
Anasley, Shaman,
Gabriel, Jun Yong
and Yi Ze
showing the AED
device they used
to save Long
(inset).

without warning and the survival rate in Malaysia from that hovers at only 1%," he said.

Long will meet his rescuers on Oct 9 at the MASS CPR-AED 2018 in Pesta Site, Sungai Nibong, which will see over 1,000 people learning the skill.

Penang Heart Safe Programme chairman Datuk Dr Luah Lean Wah said although most of the participants are policemen, firemen, servicemen and personnel from the Malaysian Civil Defence, there are still slots available for the public.

"If you know CPR, you can save

someone from sudden cardiac arrest because there are 40 public AEDs you can use," she said.

The state's public AEDs, made by Zoll Medical Corporation (ZOLL), gives real-time feedback with voice commands to tell rescuers what to do.

State Health Committee chairman Dr Afif Bahardin confirmed that Long's rescue was the first time a public AED was used to save a life here.

"Each AED costs more than RM8,000. ZOLL, the state and other donors invested over RM320,000

on the 40 AEDs.

"To be able to save just this one life makes it worth it for all of us," Dr Afif said.

Initiated in 2015, ZOLL first donated five AEDs to Penang and today, the state government and other organisations have installed 40 public AEDs in schools, parks, business and government premises.

Their locations are shown on the SJAM HeartSafe Penang's Facebook page.

Those who wish to join MASS CPR-AED 2018 can email masscprpenang@gmail.com.

Kwong Wah donated 21 AEDs to primary schools on 5/7/2019

- Team up with NGO (PCS)
- On going training to each school



Other major CPR training

- UNIMAS, SARAWAK Mass CPR - 5 Oct 2017
8188 participants
- USM (University Science Malaysia) 2018 – WHO World Health Day –
600 + University students trained in CPR & AED
- Mass CPR 21 Oct 2018 Chung Ling High School, Butterworth – 1034
trained in CPR & AED
- CPR-AED Refresher Training 24 Aug 2019, Jit Sin High School –
~1000 trained (school has 4 AEDs)
- Penang Science Cluster – “CPR on Wheels” to High Performance
Schoolsup to April 2019 - 7 schools – 2000+ students
- Penang International Science Fair – CPR booth
 - 2017 : **1500** participants trained
 - 2018 : 10-11 Nov, **2158** persons trained
 - 2019 : 2-3 Nov, **1628** persons trained, **CPR competition**

MyGRA & AAEMS members 11 Nov 2018



MyGRA “Save My Heart Malaysia”



2020 – COVID-19 outbreak

- training all changed due to new norms : 11 June 2020, government guidelines on training
- CPR is an aerosol generating procedure, hence MOH recommendation to wear full PPE prior to starting CPR

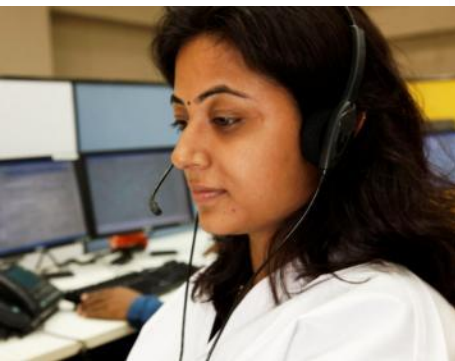




India Updates



Pan-Asian Resuscitation Outcomes Study (PAROS) & GVK Emergency Management and Research Institute (GVK EMRI) India



Global Resuscitation Alliance -10 Steps

Step	Implementation	GVK EMRI, INDIA
1	Establish a cardiac arrest registry	3425
2	Begin Telephone-CPR with ongoing training and QI	599
3	Begin high-performance EMS CPR with ongoing training and QI	1020
4	Begin rapid dispatch	Current dispatch time: 90 sec
5	Measure professional resuscitation using the defibrillator recording (and voice if possible)	-
6	Begin an AED program for first responders, including police officers, guards, and other security personnel	1000
7	Use smart technologies to extend CPR and public access defibrillation programs to notify volunteer bystanders who can respond to nearby arrest to provide early CPR and defibrillation	-
8	Make CPR and AED training mandatory in schools and the community	-
9	Work toward accountability – submit annual reports to the community	-
10	Work toward a culture of excellence	WIP



Telangana State, India

source :<https://www.mapsofindia.com/telangana>

Step 1- Cardiac Registry - Summary

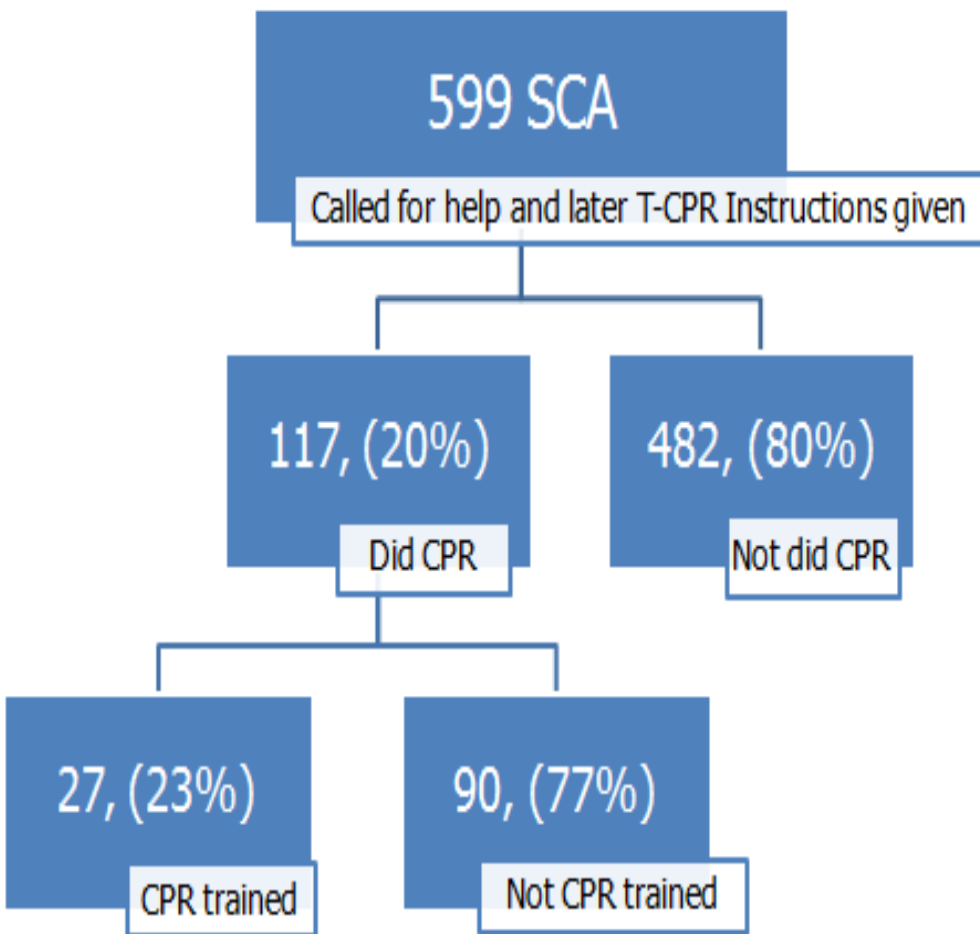
- **Study Period:** December 2015 to August 2019
- **Total Sample:** 3425
- **Gender:** 69.5% (Male)
- **Mean Age:** 51.6 Years
- **Location type:** Home-33.8%; Street-31.3%; Public places-24.3%
- **Arrest:** Not witnessed-91%
- **First CPR initiated by:** Bystander – Nil; Ambulance crew 100% (3425)
- **ROSC – Prehospital:** 0.3% (12), No= 99.6% (3413)

Patient's Status at ED Arrival

Ongoing Resuscitation	1529	44.5%
ROSC	10	0.4%
Not Applicable (dead at scene)	1886	55.1%

Step 2. Telephone CPR

T-CPR Pilot Phase-Findings



Indian Journal of Community Medicine

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Original Article

Importance of “Telephone Cardiopulmonary Resuscitation” in out-of-Hospital Cardiac Arrest in India

Jyothi Venkatesan, Rani Janumpally¹, Aruna Ginkala², Vimal Megavaran, Helge Myklebust³, G. V. Ramana Rao¹

Departments of Emergency Medicine Learning Centre, ¹Emergency Medicine Learning Centre and Research and ²Research, GVK Emergency Management and Research Institute, Hyderabad, Telangana, India, ³Department of Research, Laerdal Medical, Stavanger, Norway

Abstract

Background: Out-of-hospital cardiac arrest (OHCA) is a major cause of mortality in developing countries such as India. Most cardiac arrests happen outside the hospital and are associated with poor survival rates due to delay in recognition and in performing early cardiopulmonary resuscitation (CPR). Community CPR training and telephone CPR (T-CPR) in the dispatch centers have been shown to increase bystander CPR rates and survival. **Objectives:** The aim of this study is to identify the significance of T-CPR in OHCA and to discuss its implementation in the health system to improve OHCA outcomes in India. **Materials and Methods:** A descriptive research study methodology was adopted following a literature search. **Results:** The search criterion “Cardiovascular diseases” resulted in 162, “Out-side hospital cardiac arrest” in 50; For a comprehensive overview, these publications were evaluated looking for data on T-CPR incidence, criteria for detecting OHCA by emergency medical dispatchers, sensitivity and specificity, and BCPR. **Conclusion:** This current research stresses the scale and seriousness of the implementation of T-CPR in OHCA in India.

Keywords: Bystander cardiopulmonary resuscitation, cardiopulmonary resuscitation, dispatcher-assisted instructions, out-of-hospital cardiac arrest, prehospital care, telephone cardiopulmonary resuscitation

Step 10. Work towards a culture of excellence

- 1. Standard protocols and training for EMTs and Paramedics**
- 2. Dedicated ERC Physician will monitor the OHCA calls**
- 3. Dedicated Telephone-CPR Desk**
- 4. Evidence-based Practice**
- 5. Refresher trainings for EMTs and Paramedics**
- 6. Refresher training for T-CPR Dispatchers**
- 7. Celebrate the success-Life savior awards**

Thank You

Dr HV RajaNarsing Rao MD
Anesthesiology & Critical Care