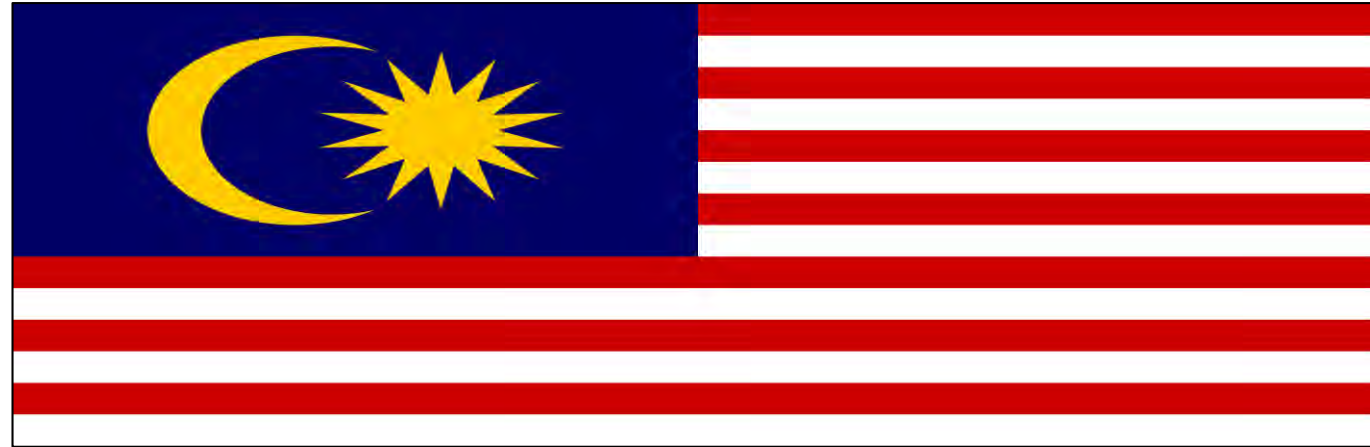


# EMS SYSTEM IN MALAYSIA

INTERNATIONAL EMS

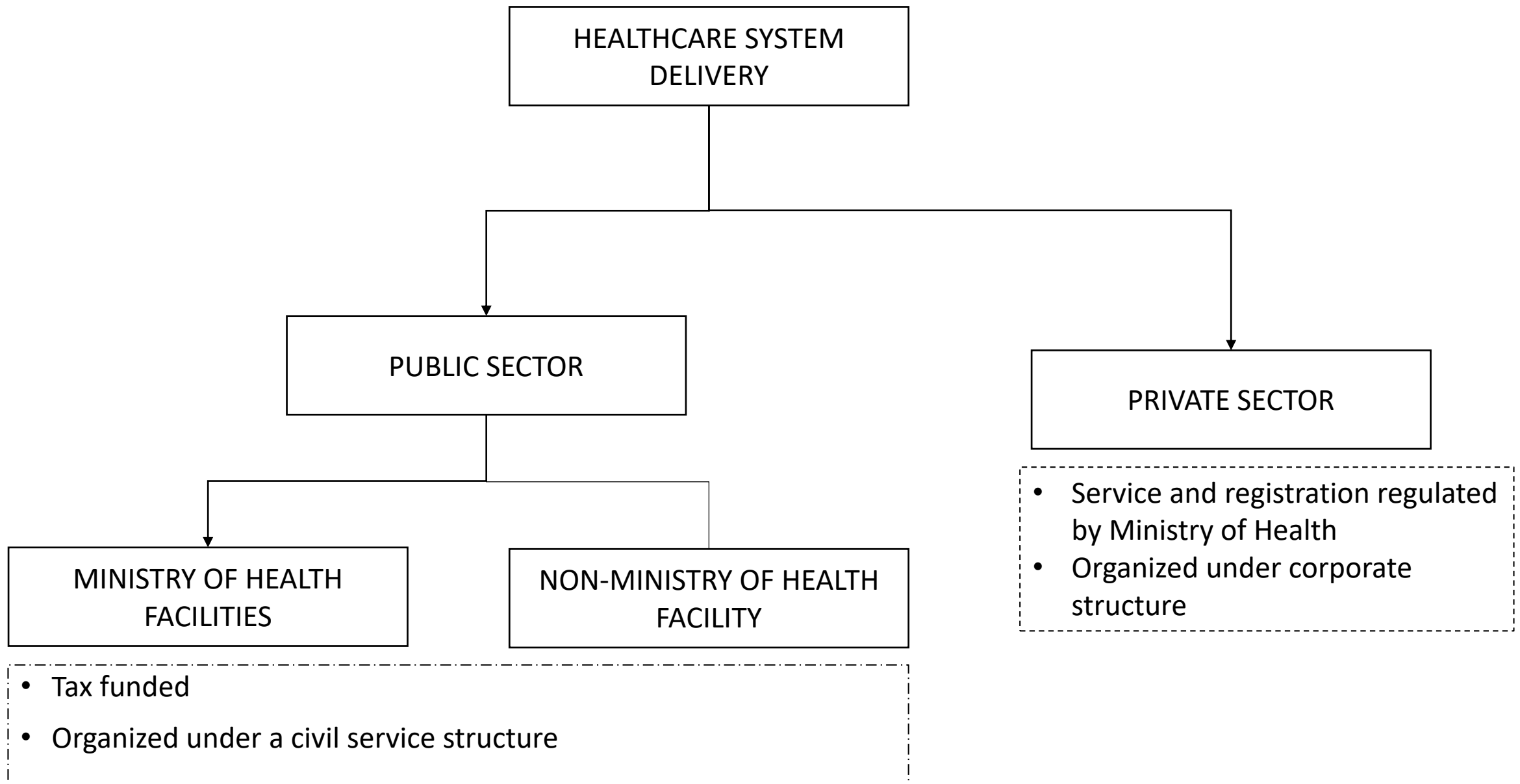
# OUTLINE

- Describe hospital-based EMS
- Malaysia – hospital-based EMS management
  - National healthcare organization
  - Hospital and pre hospital services in national healthcare organization
  - Pre hospital care services
  - Legislations
- Responders
- What is our future?



- Malaysia Federation
  - 13 states
  - Federal Territories
- Area:
  - 329, 847km<sup>2</sup>
- Population
  - 28 million (2010)
- Density:
  - 92/km<sup>2</sup>
- 70% population in urban areas





# NATIONAL HEALTH CARE

National Health Accounts		
Indicator	2010	2011
Total Expenditure on Health (Public & Private) (in million)	RM35,355 <sup>1</sup> (RM35,075) <sup>2</sup>	RM37,871 <sup>1</sup> (RM37,542) <sup>2</sup>
Total Expenditure on Health as a Percentage of GDP	4.45% <sup>1</sup> (4.58%) <sup>2</sup>	4.30% <sup>1</sup> (4.40%) <sup>2</sup>
Public Expenditure as a Percentage of Total Expenditure on Health	54.68% <sup>1</sup> (55.11%) <sup>2</sup>	52.27% <sup>1</sup> (52.73%) <sup>2</sup>

<sup>1</sup> Final figures. The changes due to review of methodology.  
<sup>2</sup> Data published in Health Facts 2013.  
Source: Database MNHA 1997-2011 - MNHA Unit, Planning Division, MoH

## Land Area

Malaysia

330,289 sq.km

Source : Department of Survey & Mapping, Malaysia

Population and Vital Statistics	2013 <sup>o</sup>			2012 <sup>p</sup>			2011		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total Population <sup>o</sup> (’000)	29,714.7	15,278.0	14,436.7	29,336.8	15,093.7	14,243.1	28,964.3	14,912.0	14,052.3
Population Density (per sq.km)	89.97			88.82			87.69		
Population By Age Group: <sup>o</sup> (number & percentage)									
• below 15 years (’000)	7,741.4 (26.0%)	3,972.6 (26.0%)	3,768.8 (26.1%)	7,757.4 (26.4%)	3,980.2 (26.4%)	3,777.2 (26.5%)	7,784.6 (26.9%)	3,993.2 (26.8%)	3,791.4 (27.0%)
• 15 – 64 years (’000)	20,352.7 (68.5%)	10,525.5 (68.9%)	9,827.3 (68.1%)	20,034.5 (68.3%)	10,369.9 (68.7%)	9,664.6 (67.9%)	19,704.5 (68.0%)	10,208.8 (68.4%)	9,495.6 (67.6%)
• 65 Years & above (’000)	1,620.6 (5.5%)	779.9 (5.1%)	840.7 (5.8%)	1,554.9 (5.3%)	743.6 (4.9%)	801.3 (5.6%)	1,475.3 (5.1%)	710.0 (4.8%)	765.3 (5.4%)
Annual Population Growth Rate (%)	1.3	1.2	1.3	1.3	1.2	1.3	1.3	1.2	1.4
Crude Birth Rate (per 1,000 population)	17.2			17.2	17.3	17.2	17.6	17.7	17.6
Crude Death Rate (per 1,000 population)	4.7			4.6	5.2	4.1	4.7	5.2	4.1
Stillbirth Rate (per 1,000 births)	4.6			4.3	4.6	4.1	4.5	4.6	4.3
Perinatal Mortality Rate (per 1,000 births)				7.4	7.9	6.7	7.6	8.1	7.0
Neonatal Mortality Rate (per 1,000 live births)				4.0	4.5	3.5	4.2	4.6	3.7
Infant Mortality Rate (per 1,000 live births)	6.6			6.3	7.0	5.6	6.5	7.1	5.9
Toddler Mortality Rate (per 1,000 population aged 1 – 4 years)				0.4	0.4	0.3	0.4	0.4	0.4
Under – 5 Mortality Rate (per 1,000 live births)				7.7	8.4	6.9	8.0	8.7	7.3
Maternal Mortality Ratio (per 100,000 live births)				25.6	-	25.6	26.2	-	26.2
Life Expectancy At Birth (in years)	74.72 <sup>e</sup>	72.56 <sup>e</sup>	77.18 <sup>e</sup>	74.54 <sup>e</sup>	70.37 <sup>e</sup>	77.03 <sup>e</sup>	74.32 <sup>p</sup>	72.16 <sup>p</sup>	76.80 <sup>p</sup>
Distribution of Live Births By Birthweight (%):									
• under 2.5 kg				11.1	10.1	12.1	11.2	10.3	12.2
• 2.5 kg and over				88.5	89.4	87.5	88.3	89.2	87.3
• unknown				0.4	0.4	0.4	0.5	0.5	0.5

<sup>o</sup>2011 - 2013: Population projections based on the adjusted Population and Housing Census of Malaysia 2010

Data not yet available

<sup>e</sup>estimated data

<sup>p</sup>Provisional/Preliminary data

The added total differ due to rounding.

Source: Department of Statistics, Malaysia

# HEALTHCARE DELIVERY STRUCTURE

## ACCESS TO HEALTHCARE

Facilities description	Ministry of Health	Non-Ministry of Health (public)	Private
Hospitals	141 39 728 beds	8 3 709	214 14 033
Special Medical Institutions	9 34 576 beds		
Health Clinics	1 039		6 801
Community Clinics	1 821		
1M Clinics	254		

# EMS ORGANIZATION IN MALAYSIA



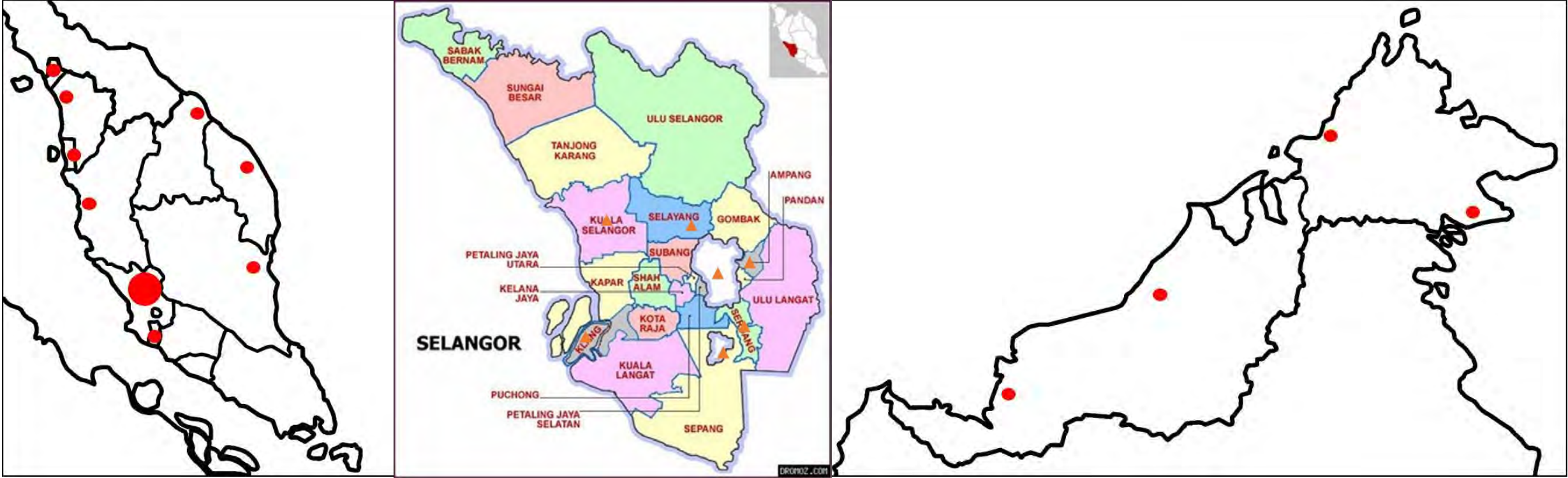
# PRE HOSPITAL ORGANIZATION

## THE DELIVERY OF SERVICE

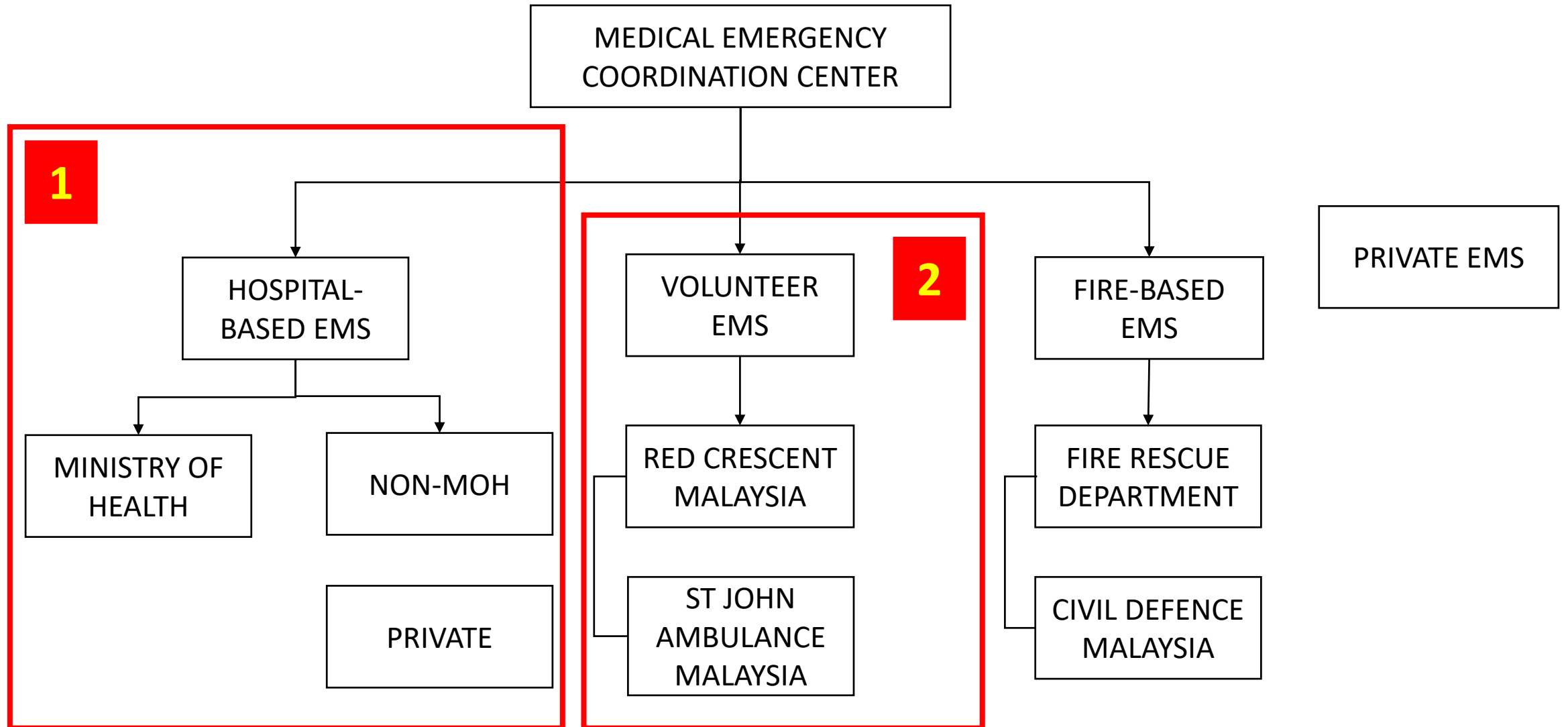
- Multiple service providers
  - Hospital based – Ministry of Health or Private Hospitals
  - Support agency – Civil Defence Malaysia
  - Non-Government Organizations – RCM, SJAM
- Access based on location of emergency
  - Caller must know which agency nearest
  - Local or foreign tourist? GBY

- 994 – Fire and Rescue Department
- 991 – Civil Defence Department
- 995 – gas-related emergencies.
- 112 – if use cell phone
- 3371-5005 – St Johns Ambulance Malaysia (Selangor)
- 4257 8122 – Malaysia Red Crescent Society
- 2615 5333 – Hospital Kuala Lumpur (Emergency Call Centre)

# REGIONALIZATION OF PRE HOSPITAL CARE



# EMS COORDINATION – MALAYSIA



# BOUNDARY EXPECTATION HOSPITAL-BASED RESPONDERS



- Majority within 10mile radius
- Occasionally expands to 15 mile radius
- Health Clinics
  - Expectation of coverage between 8am – 5pm
  - Multitasking after 5pm
    - Man the clinic for emergency cases
    - Interfacility transfers main priority
    - 999 response secondary
- Patient ownership still an issue

# HOSPITAL-BASED PRE HOSPITAL CARE RESPONDER IDENTITY

Scope	ASISSTANT MEDICAL OFFICER	Nurses
Entry Certification	Diploma in Medical Assistant	Diploma in Nursing
License of Practice	Medical Assistant Act (Annual Certificate of Practice)	Nursing Act (Annual Certificate of Practice)
Service Objectives	Community health Disaster management. Counsel or preventive health care Orthopedics, O&G, surgery. Pre hospital care & ambulance service. MAIN FOCUS: HOSPITAL AND CLINIC BASED SERVICES (Technical)	Nursing care Provide health quality , promotion, effective prevention, health education & rehabilitation. Assist doctors to carry out patient care. MAIN FOCUS: PATIENT CARE & WARD MANAGEMENT
Experience in Dispatch	Since call centre was introduce in ED 1998	Since call centre upgraded to MECC in 2010 (HKL pilot project)

# MEDICAL ASSISTANT EDUCATION PREPARATION

- Basic education focus mainly hospital-based services
- Scope of service expects pre hospital care management without specific credits assigned.



## PROGRAMME STRUCTURES

Theoretical teaching is classroom based delivery of theory whilst practical teaching includes lab based teaching, demonstration, site visits/field trips, simulated clinical teaching, but does not include posting, industrial attachment, clinical placement and professional development training.

No.	Levels		Subject	Theory Credit (Minimum)
1.	Basic Medical Sciences	1.1	Anatomy & Physiology	6
		1.2	Bioscience	2
		1.3	Microbiology/Parasitology	2
2.	Professional Module	2.1	Medical	10
		2.2	Emergency Medicine	8
		2.3	Surgical	8
		2.4	Public Health	8
		2.5	Orthopedic	4
		2.6	Nursing	4
		2.7	Pharmacology	4
		2.8	Behaviour Science	2
3.	Clinical Placement	3.1.	Medical Placement	3
		3.2.	Surgical Placement	2
		3.3.	Community Health Placement	4
		3.4.	Psychiatry Placement	2
		3.5.	Emergency Placement	6

# SUMMARY

## HOSPITAL-BASED SYSTEM IN MALAYSIA

- Started as service to help nearby community
  - Rural population provided access to EMS
  - In Malaysia, involvement of primary health clinics allows EMS to be closer to community
- Closes the gap between EMS and hospitals – Malaysia
- Cost-effectiveness is unknown?
- In public safety domain
  - Operational biasness in meeting community demand
  - Require frequent operational assessment to meet public expectation of public safety initiatives

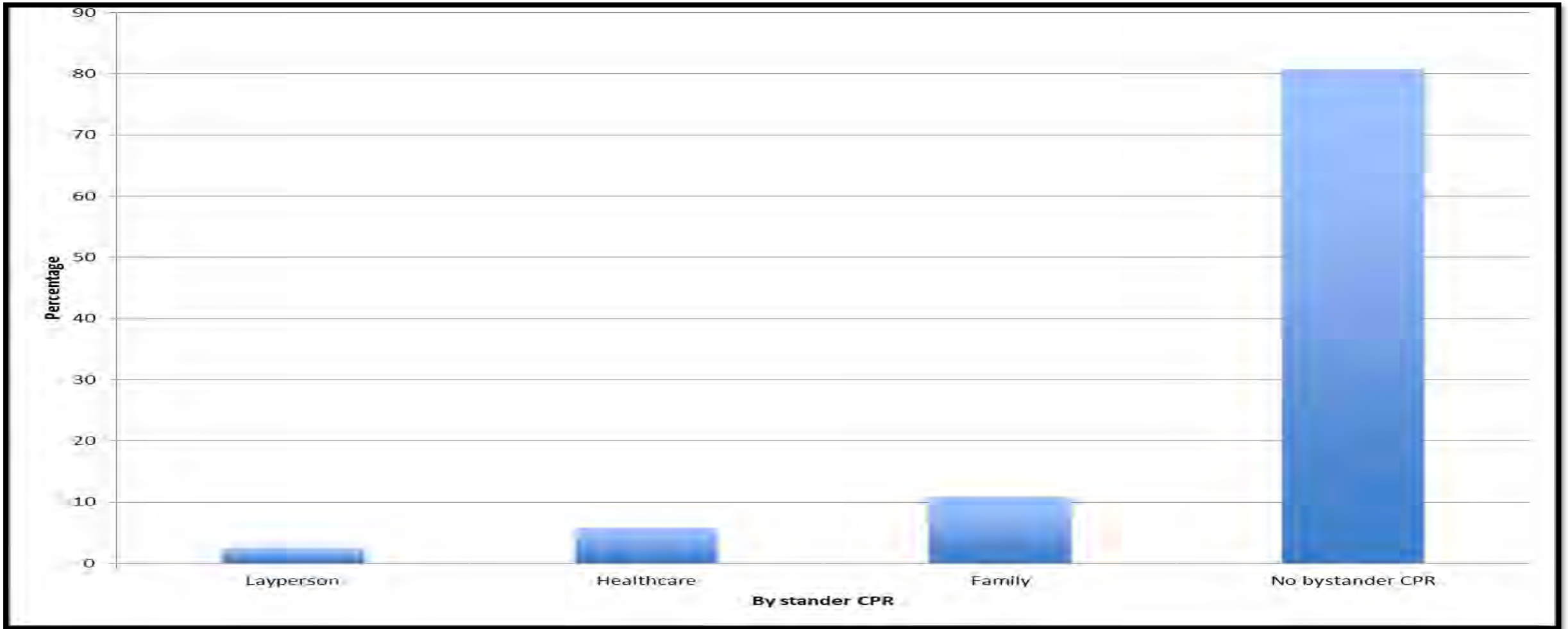
# CHALLENGES IN OHCA MANAGEMENT



**SARAH ABDUL KARIM**  
Emergency and EMS Physician  
Pre Hospital Care Unit  
Emergency Department  
Hospital Sungai Buloh  
sarahabdkarim@gmail.com



DISTRIBUTION OF AMO WITNESSED BYSTANDER PERFORMING CPR AMONG  
OHCA PATIENTS ATTENDED BY AMO FROM HKL  
FROM PERIOD OF JANUARY 2011 TILL 31ST DECEMBER 2012



N = 466

# OUT-OF-HOSPITAL CARDIAC ARREST CHARACTERISTICS AMONG SITES FOR PAROS

Prehospital intervention (n, %)	Japan (n = 51,377)	Korea (n = 7990)	Malaysia (n = 389)	Singapore (n = 3023)	Thailand (n = 573)	Taiwan (n = 3023)	UAE (n = 405)
Bystander CPR	19,176 (40.2)	2854 (40.9)	81 (22.6)	677 (24.3)	83 (15.8)	845 (31.4)	41 (10.5)
Prehospital defibrillation	5260 (10.2)	1833 (22.9)	9 (2.6)	697 (23.4)	32 (9.2)	357 (11.8)	145 (35.8)
Bystander defibrillation	313 (0.6)	22 (0.3)	Not available	29 (1.1)	1 (0.3)	Not available	3 (0.8)
Prehospital adrenaline	4346 (8.5)	Not available	44 (12.7)	1414 (47.4)	135 (23.6)	552 (18.3)	4 (1.0)

# TEACH COMMUNITY TO USE 999 EFFECTIVELY

**THE STAR ONLINE**

Home > News > Nation

Friday, 17 January 2014

## 99% of calls to 999 are hoaxes

BY ZORA CHAN

FACEBOOK TWITTER GOOGLE+ LINKEDIN



**A A**

**More in News**

- Woman falls to her death from 38th floor condo
- Malaysian postgraduate student found dead in Taiwan
- 1MDB will be shell company, says Anul Kanda
- Girl repeatedly raped by boss
- 1MDB report: Ex-CEO Shahrol says no wrongdoing during his time

**KUALA LUMPUR:** About 99% of the 2.8 million emergency calls made each month are false.

Bernama reported Urban Wellbeing, Housing and Local Government Minister Datuk Abdul Rahman Dahlan as saying that the false calls over 999 were either made by callers who remained silent, or mischievous children.

"It is most unfortunate that, because of this irresponsible act, the 999 line is always busy, preventing genuine calls from getting through," he

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## London Ambulance Service **NHS**

NHS Trust

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About us Calling 999 Working for us Talking with us News Health professionals Getting involved

Location: Home | Calling 999

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### Calling 999

- When to call 999
- How to call 999
- What happens when you call 999
- Who will treat you
- Emergency heart care
- Emergency stroke care
- Emergency trauma care
- What to do if you have flu symptoms



### Calling 999

In this section you can learn more about:

- When to call 999
- How to call 999
- What happens when you call 999
- Who will treat you
- Emergency heart care
- Emergency stroke care
- Emergency trauma care

### When to call 999

You should always call 999 in a life-threatening emergency—if someone is seriously ill or injured, and their life is at risk.

Know when to call 999

### How to call 999

### EasyRead documents and prompt cards



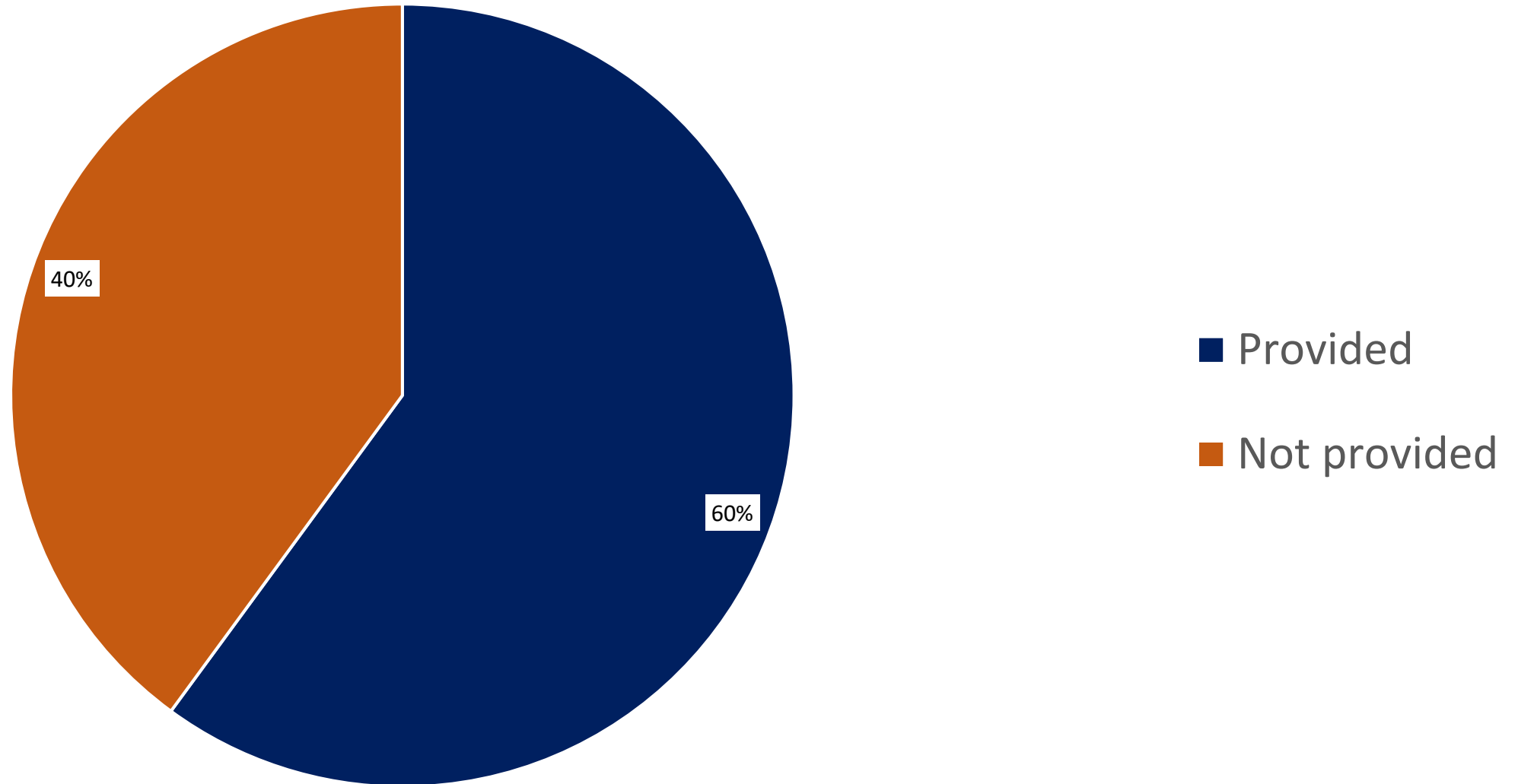
We have EasyRead prompt cards to show you how you can get help if you are unwell or hurt.

▶ EasyRead documents

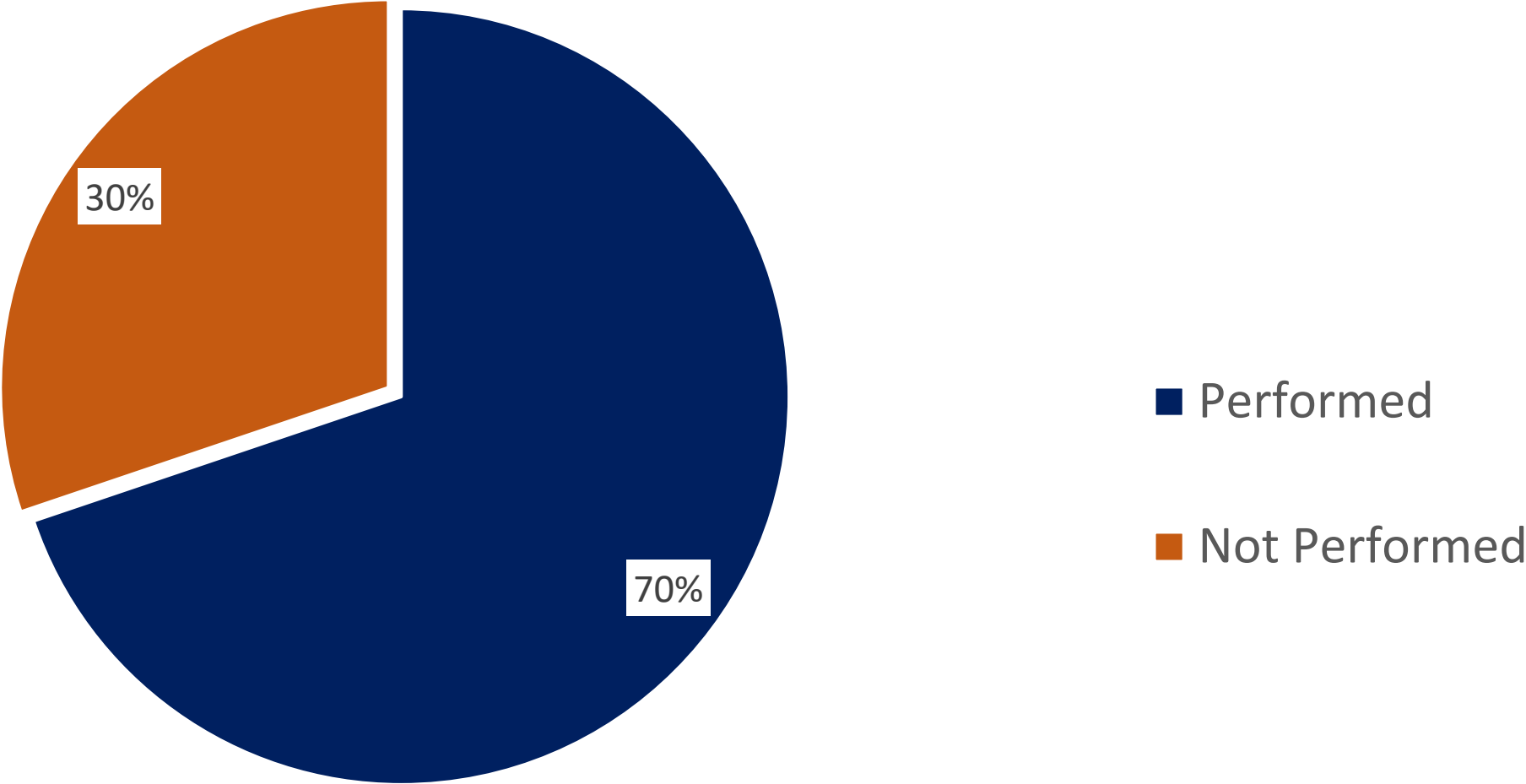
“If it hadn't been for Eddie's prompt action and his ability to use a defibrillator, and the care given by the ambulance staff, I wouldn't be here today.”

Steve Hodder  
Cardiac arrest survivor

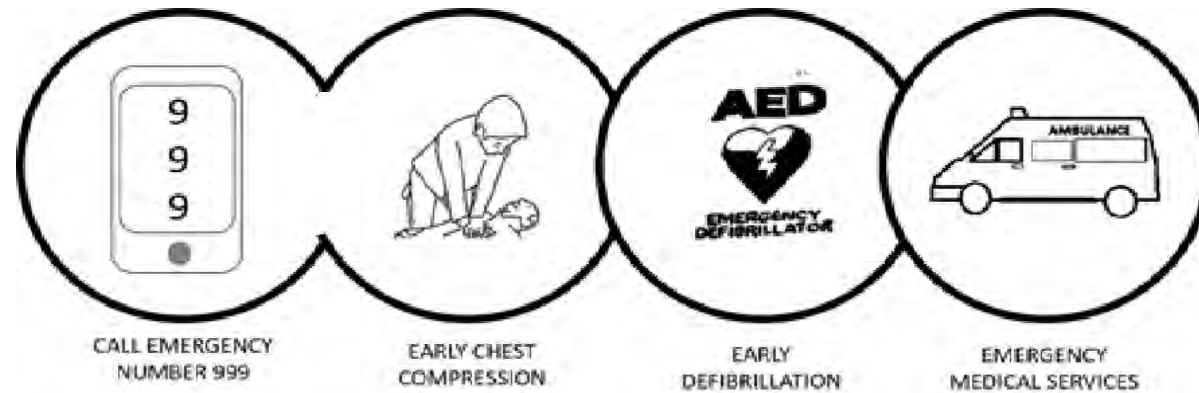
# PERCENTAGE OF DISPATCH CPR INSTRUCTIONS GIVEN BY EMERGENCY MEDICAL DISPATCHERS IN 5 MECC IN MALAYSIA FROM MAY 2014 TILL APRIL 2015



**PERCENTAGE OF BYSTANDER CHEST COMPRESSION AFTER DISPATCH CPR INSTRUCTIONS IS GIVEN BY EMERGENCY MEDICAL DISPATCHERS IN 5 MECC IN MALAYSIA FROM MAY 2014 TILL APRIL 2015**



# FOR BYSTANDER CPR THROUGH HAVING 999 WE HAVE ACHIEVED



## BUT WE ARE STILL HAUNTED BY

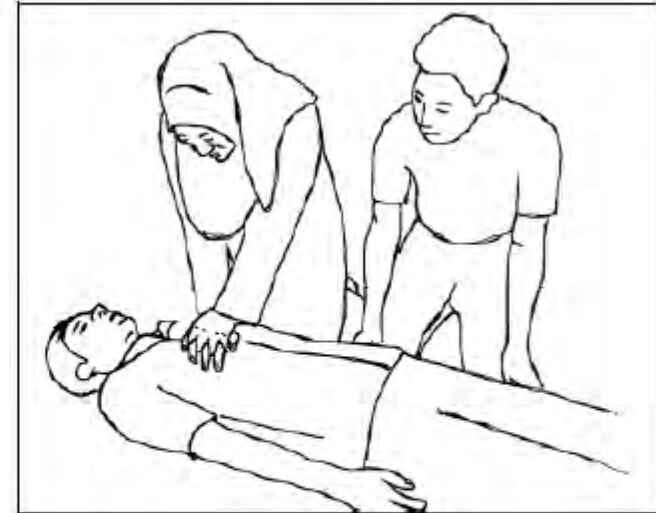
Prehospital intervention (n, %)	Japan (n = 51,377)	Korea (n = 7990)	Malaysia (n = 389)	Singapore (n = 3023)	Thailand (n = 573)	Taiwan (n = 3023)	UAE (n = 405)
Bystander CPR (witnessed by paramedics)	19,176 (40.2)	2854 (40.9)	81 (22.6)	677 (24.3)	83 (15.8)	845 (31.4)	41 (10.5)

# WHY POOR BYSTANDER CPR CONSISTENCY

MANUAL ON CARDIOPULMONARY RESUSCITATION FOR LAYPERSON, PRE HOSPITAL CARE UNIT HSGB

If victim is still not breathing, then chest compressions must be restarted.

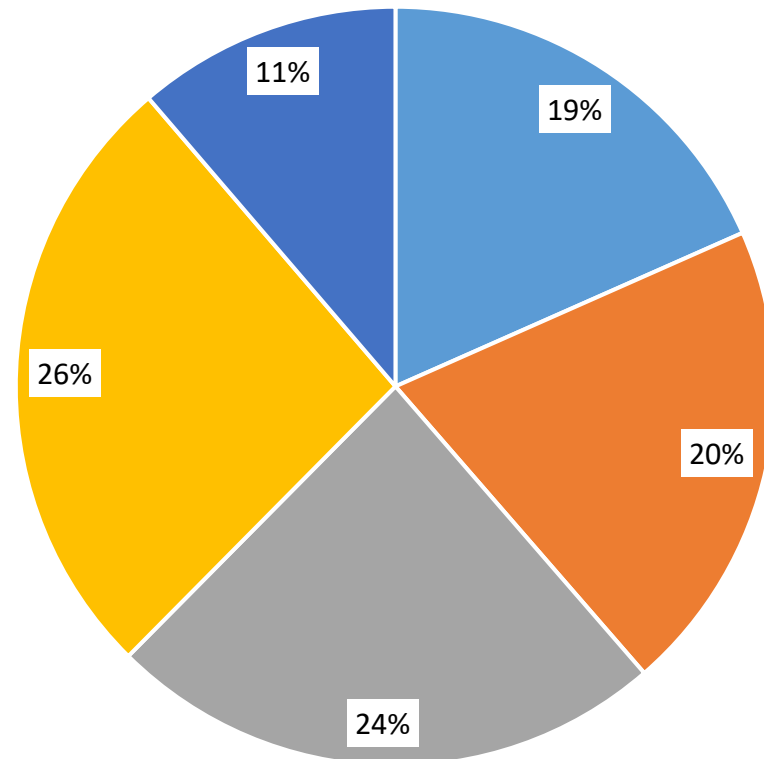
If there is another person that is willing to help, get them to perform chest compressions instead.



Performing chest compressions requires energy and is tiring. The longer you perform it continuously, the weaker and more ineffective your compressions become. Therefore, changing roles in performing chest compressions when there are many bystanders makes it more effective.

# HOW LONG IS AVERAGE BYSTANDER WAITING TIME FOR AMBULANCE?

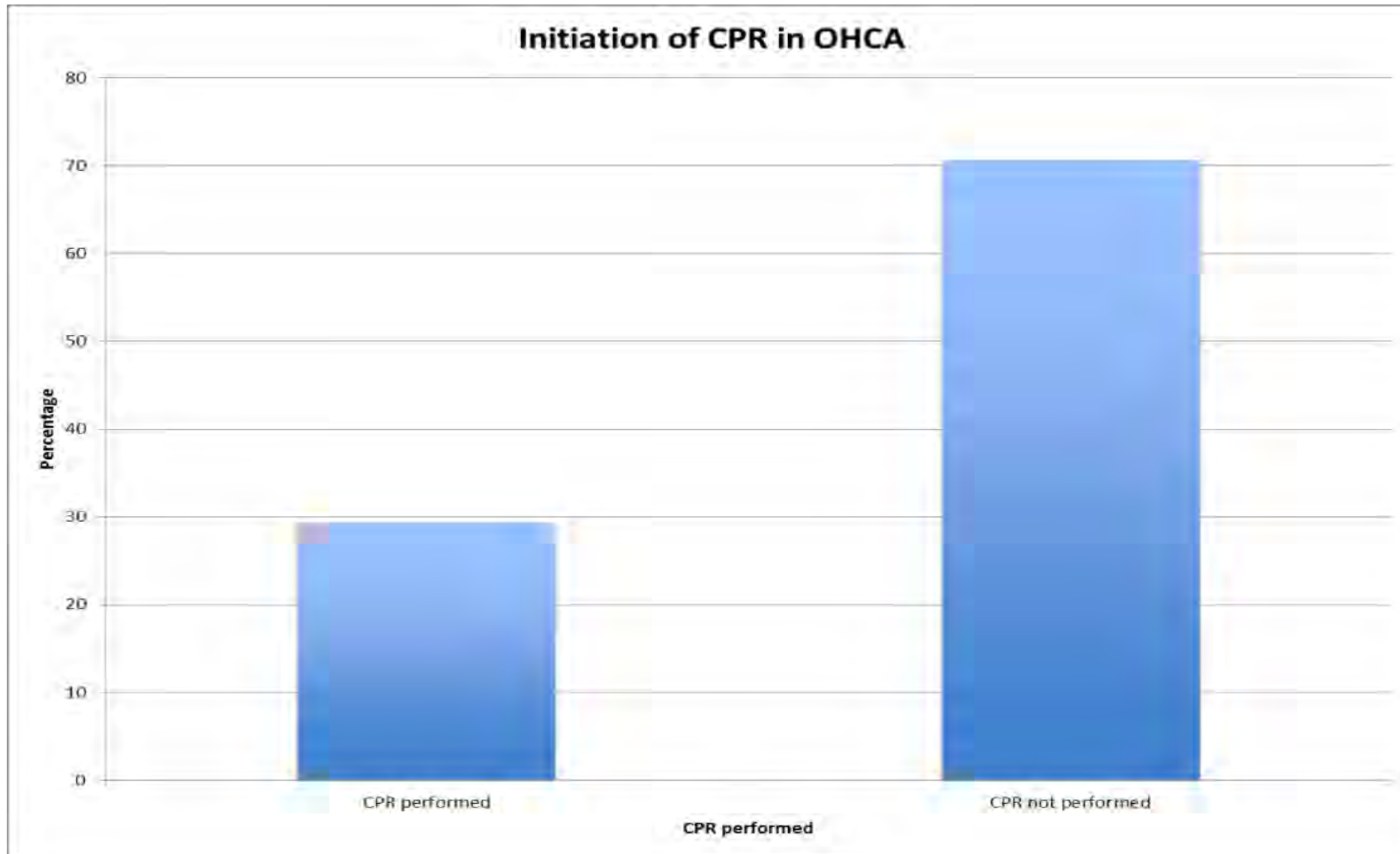
AMBULANCE RESPONSE TIME FOR PATIENTS CATEGORIZED AS CRITICALLY ILL



- BELOW 10MIN
- ABOVE 10 TILL 15 MIN
- ABOVE 15 TILL 20 MIN
- ABOVE 20 TILL 30 MIN
- MORE THAN 30 MIN



# DISTRIBUTION OF CPR AMONG OHCA PATIENTS PERFORMED BY AMO FROM HKL FROM PERIOD OF JANUARY 2011 TILL 31ST DECEMBER 2012



# LOW RATE OF CPR BY RESPONDERS

- Varying opinion on futility of resuscitation
- Predictable outcome from resuscitation
  - “Bawak pergi hospital pun tak buat apa-apa.”
- Abuse of privilege to terminate
  - Loose application of “ambulance tak boleh bawak mayat”
- Guidelines and consensus not translated to practice in the field

**RECOMMENDATIONS ON THE  
MINIMUM STANDARDS REQUIRED  
FOR THE MANAGEMENT OF ADULT  
OUT OF HOSPITAL CARDIAC ARREST  
IN PREHOSPITAL CARE SERVICES**

**COLLEGE OF EMERGENCY PHYSICIANS  
ACADEMY OF MEDICINE MALAYSIA**

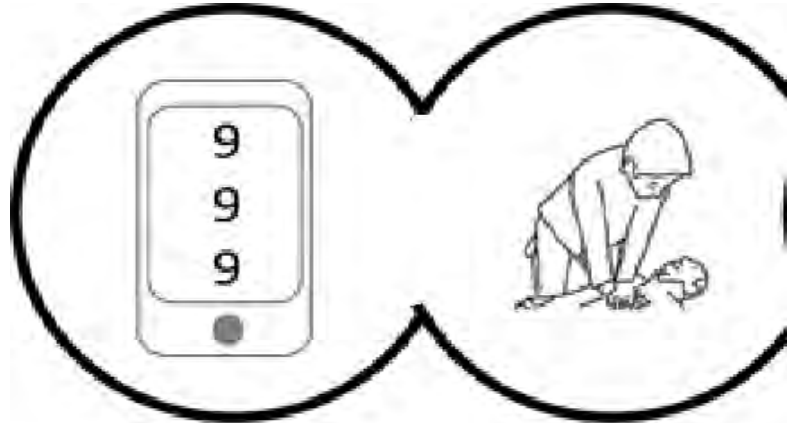


*Published by*  
College of Emergency Physicians  
Academy of Medicine of Malaysia

# OUR SURVIVAL RATE OUTCOMES AMONG PAROS SITES

Outcomes (n, %)	Japan (n = 51,377)	Korea (n = 7990)	Malaysia (n = 389)	Singapore (n = 3023)	Thailand (n = 573)	Taiwan (n = 3023)	UAE (n = 405)
Survived to admission	3644 13,339 (27.3)	1593 (20.4)	31 (8.0)	514 (17.0)	159 (27.7)	179 (5.9)	32 (7.9)
Survived to discharge	2677 (5.2)	681 (8.5)	2 (0.5)	76 (2.5)	24 (4.2)	139 (4.6)	12 (3.0)
Post arrest CPC 1/2	1436 (2.8)	236 (3.0)	Not available	50 (1.7)	9 (1.6)	87 (2.9)	11 (2.7)

# OUR OVERALL ACHIEVEMENT - SILOS

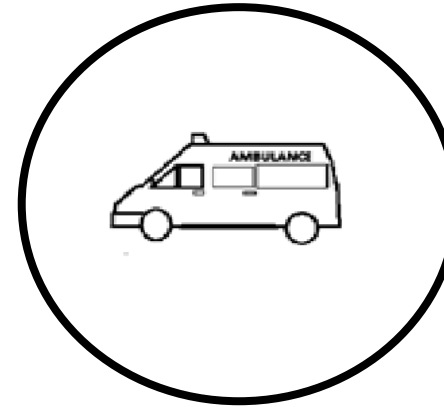


CALL EMERGENCY  
NUMBER 999

EARLY CHEST  
COMPRESSION



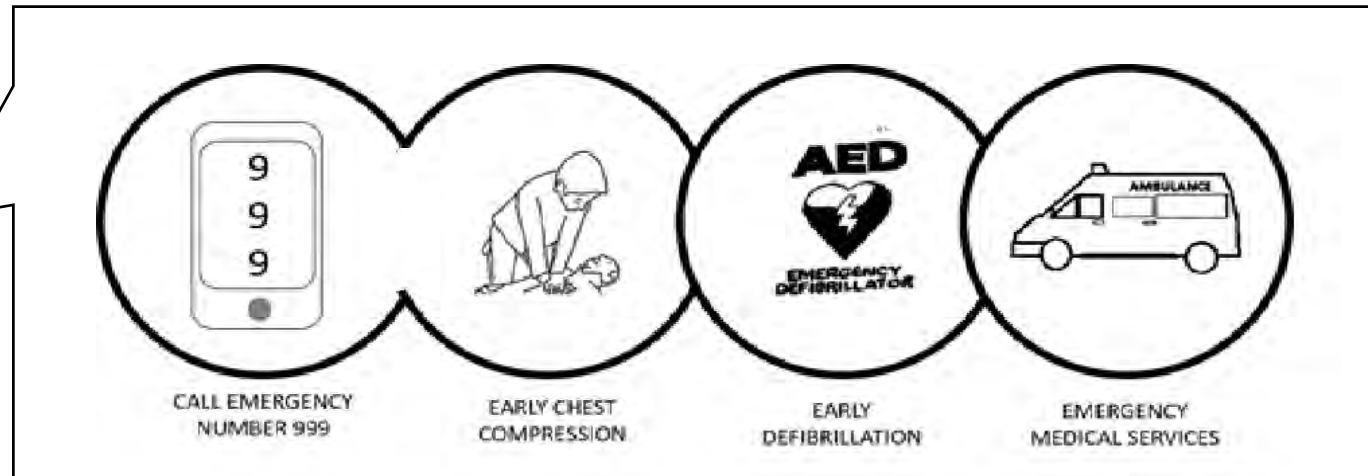
LIMITED AED  
COVERAGE



EMS AND FIRST  
RESPONDER  
NETWORK



DEFINITIVE CARE



CALL EMERGENCY  
NUMBER 999

EARLY CHEST  
COMPRESSION

EARLY  
DEFIBRILLATION

EMERGENCY  
MEDICAL SERVICES

# WE NEED TO IMPROVE FOR MALAYSIA

- Individual organization approach through mass media has been ineffective
- National Pre Hospital Care agenda must implement systems approach
  - Gap measures of buying ambulances and increasing responders will not work
- Only when PHCS brings the right patient to healthcare network will then be positive push to healthcare systems approach to community cardiac care



## NATIONAL HEART AGENDA

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**Nation** Home - News - Nation

Thursday, 24 April 2014

### Call for AED devices to be set up at public places

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PETALING JAYA: Public places should be equipped with devices that check heart rhythm to address the high prevalence of heart disease among Malaysians.

This call was made by the Citizen's Action and Response in Emergencies (CARE), an initiative by the Federation of Private Medical Practitioners Association of Malaysia and St John's Ambulance of Malaysia.

Federation president and CARE founder Dr Steven Chow said cardiovascular disease was likely to strike one in 12 Malaysians.

He also pointed out that 70% of heart attacks occurred without warning.

"This makes it important for Automated External Defibrillators (AEDs) to be made readily available with the necessary training provided to members of the public," Dr Chow said in a statement during the federation's Kuala Lumpur and Selangor branch annual dinner.

AED is a portable device that is used to treat cases of sudden cardiac arrests.

If needed, it can be used to send an electric shock to the heart to try to restore a normal rhythm.

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