

How Effective and Efficient is Prehospital Service in Malaysia?

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Information bias

- **PH model depends on many factors:**
 - **population density, topography, HC infrastructure, & local regulatory requirements.**
- **Focus on ground/land ambulance (MOH)**
- **Focus more on urban PHS – Selangor, KL**
- **Mass casualty management is excluded**

Outline

- 1. Overview PHS in Malaysia**
- 2. MOH Malaysia roles?**
- 3. EM development?**
- 4. Patient care system?**
- 5. PHS status in Malaysia?**

Prehospital Structure Model

- 1. Hospital based system**
- 2. Jurisdiction System**
- 3. Private system**
- 4. Volunteer system**
- 5. Complex system**

Malaysia

1. Hospital based PHS

- public (KKM; Universities)
- private (in-house/outsource)

2. Non-hospital based PHS

- GO: Fire Service, police
- NGO: Red Cross, St John
- private

HOSPITAL BASED PHS

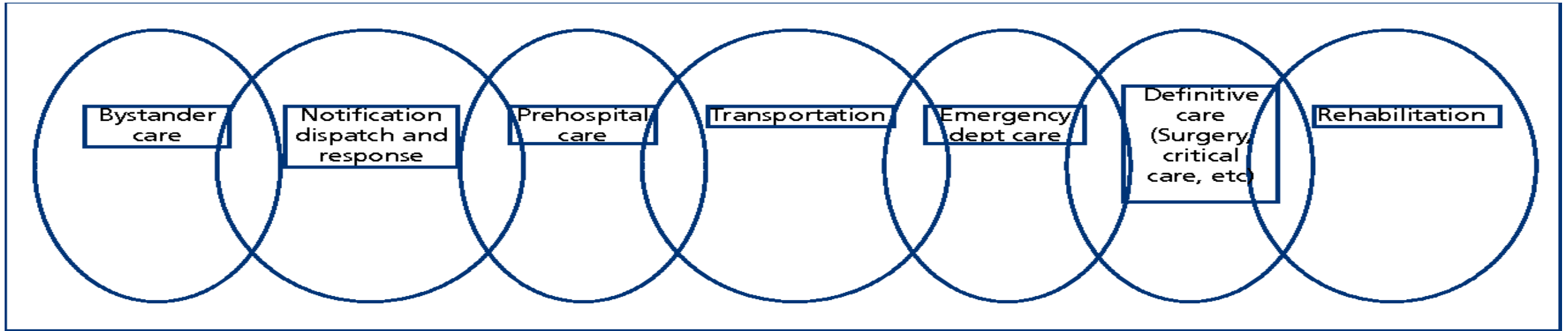
Advantages:

- 1. Seamless continuum of care**
- 2. Access to hospital resources**
- 3. Streamlined communication and coordination**

Disadvantages:

- 1. Poor coverage area**
- 2. Resource limitations during high-demand periods.**
- 3. Potential for conflicts of interest**

Seamless continuum of care



999 TALIAN KECEMASAN ANDA

Service Integration
(MERS 999)



PERTAHANAN AWAM



BOMBA



POLIS

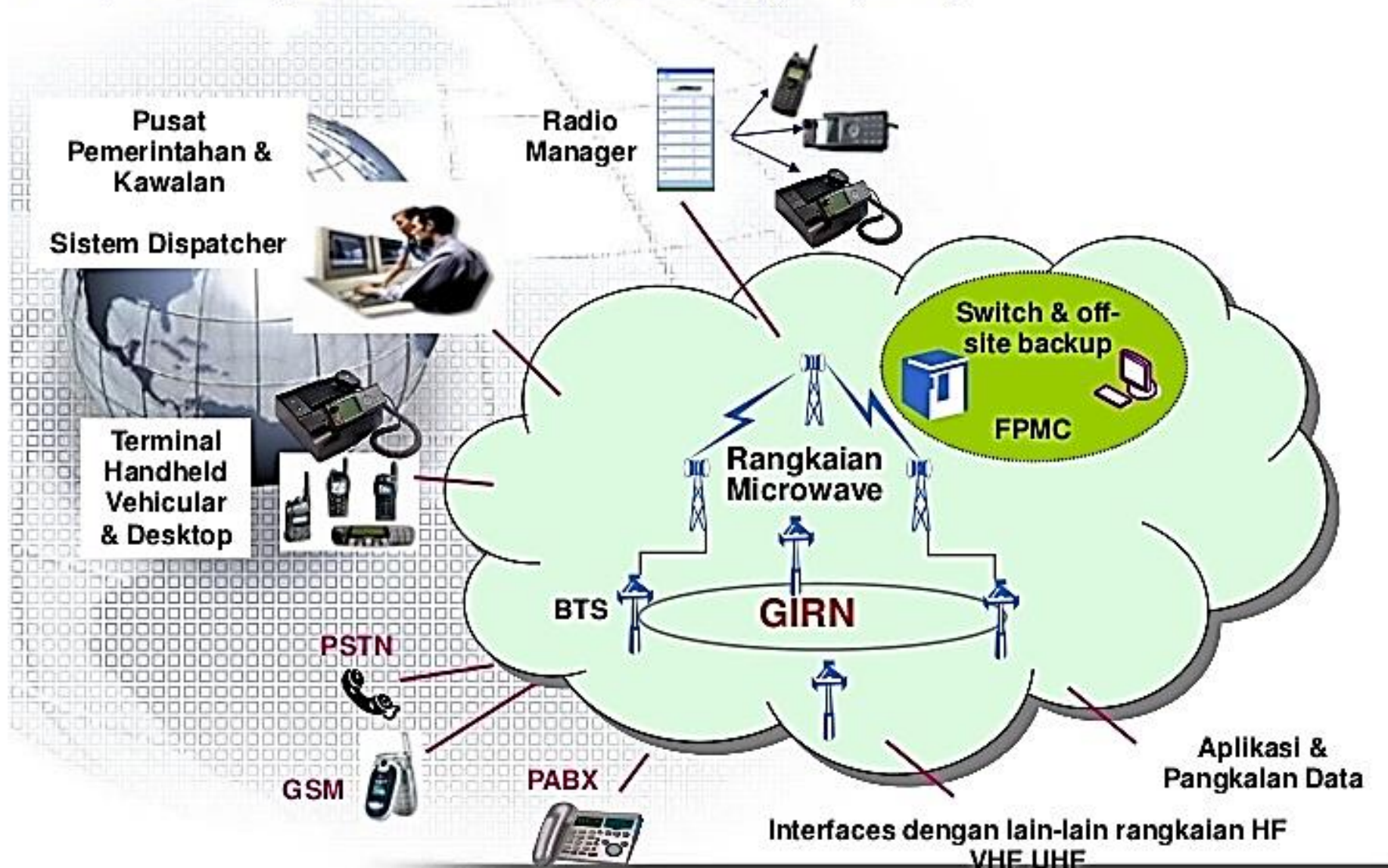


HOSPITAL



MARITIM MALAYSIA

Komponen Rangkaian Radio Bersepadu Kerajaan (GIRN)



Medical Emergency Coordinating centre (MECC)



EMS model

- 1. Anglo-American**
- 2. Franco-German**
- 3. Neglected**

Model	Franco-German model	Anglo-American model
No. of patients	*More treated on scene * few transported to hospitals	*Few treated on scene *More transported to hospitals
Provider of care	Medical doctors supported by paramedics	Paramedics with medical oversight
Main motive	Brings the hospital to the patient	Brings the patient to the hospital
Destination for transported patients	Direct transport to hospital wards ie: bypassing EDs	Direct transport to EDs
Overarching organization	EMS is a part of public health organization	EMS is a part of public safety organization

Malaysia



EMS providers

- 1. Ambulance driver**
- 2. Emergency Medical Dispatcher (EMD)**
- 3. Emergency Care Assistant (ECA)**
- 4. Emergency Medical Technician (EMT)**
- 5. Paramedic**
- 6. Emergency Physician**
- 7. Nurse Ambulance**

Malaysia PHS providers

1. Driver +/- first aider
2. Medical assistant
3. Registered nurse
4. ± doctor (critical patient)



Driver

**CERTIFICATE OF
DRIVING SAFETY**

THIS IS CERTIFY MR./MRS _____

FOR OUTSTANDING CONTRIBUTIONS TO DRIVING SAFETY

ISSUED BY _____



SIGNATURE

DATE

**CERTIFICATE OF FIRST AID
TRAINING**

This is proudly presented to

The individual has successfully completed the national
Cognitive evaluation in accordance with pro trainings
Curriculum and first aid association

Instructor _____ at _____

Signature



Date

Medical assistant

1. Diploma
2. Advanced diploma
3. Bachelor of Science (EM)



Paediatric Retrieval team

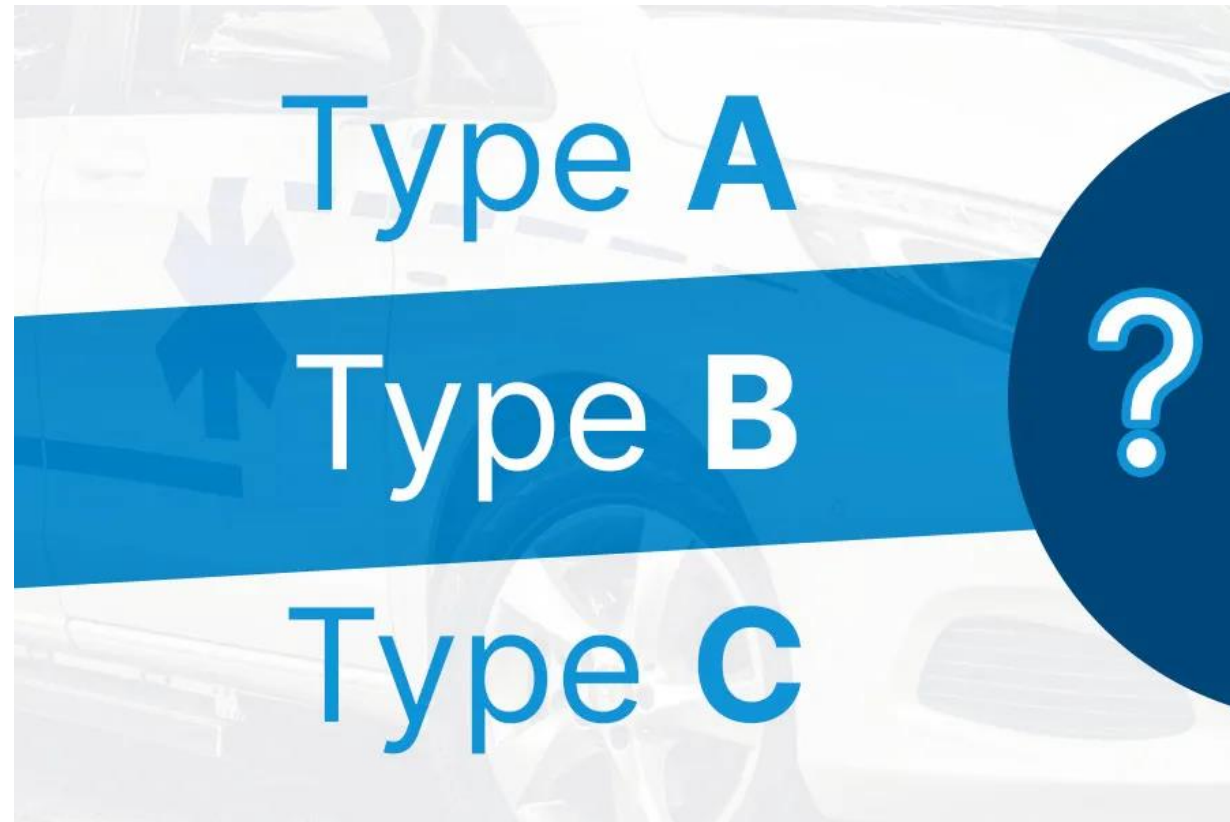


Registered Nurse

1. **Advanced diploma MA**
2. **Post Basic Emergency Nurse**



Different types of ground ambulance



Ambulance type C



Emergency and trauma kit, foldable wheel chair, spinal board, scoop stretcher, primary stretcher and oxygen tank.

Ambulance type B



Type C + O₂ resuscitator, portable suction machine, AED, vital sign transport monitor, immobilization kit, pulse oximeter and sharp container.

Ambulance type A

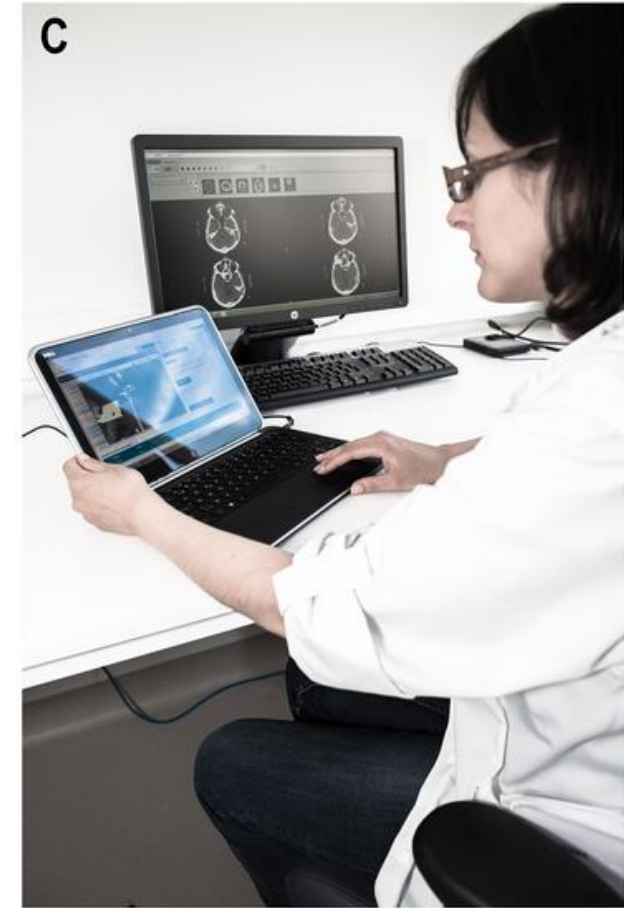


More equipment:
Portable automatic ventilator, suite helmet, safety boot, glucometer, triage card and dead body management kit.

Paediatric Retrieval team (Ambulance A1)



Plan to: telemedicine ambulance



Plan to: Ambulance Infection- Negative Pressure



**MALAYSIA'S
LARGEST PRIVATE
AMBULANCE
OPERATOR.**

CALL US NOW





Main PHC provider in Malaysia



KEMENTERIAN KESIHATAN MALAYSIA

MOH ambulances (2017)

- 2,039 ambulances throughout Malaysia**
- 1,125 (55.17%): hospitals**
- 914 (44.83%): health clinics.**

MOH. Number of Ambulances in Hospitals & Health Clinics 2017. Putrajaya (2017)



Emergency Medicine and Trauma Services Policy



This guideline was developed by:
Medical Development Division, Ministry of Health Malaysia

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Technical Committee on EMTS Policy

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MOH/P/PAK/424.19(8P)-e

POLICY ON SAFETY OF LAND AMBULANCES

MINISTRY OF HEALTH MALAYSIA

2019



CAWANGAN PERKHIDMATAN
PENOLONG PEGAWAI PERUBATAN

Emergency Medicine and Trauma Services

Standard Practice Guidelines for Assistant Medical Officer
in Emergency Medicine and Trauma Services

Emergency Medicine and
Trauma Services

Ministry Of Health, Malaysia

Performance measurement (ART)

JARAK LIPUTAN BAGI PRIORITI KES 1 PERKHIDMATAN AMBULANS HOSPITAL BAGI TAHUN 2017 HINGGA 2021

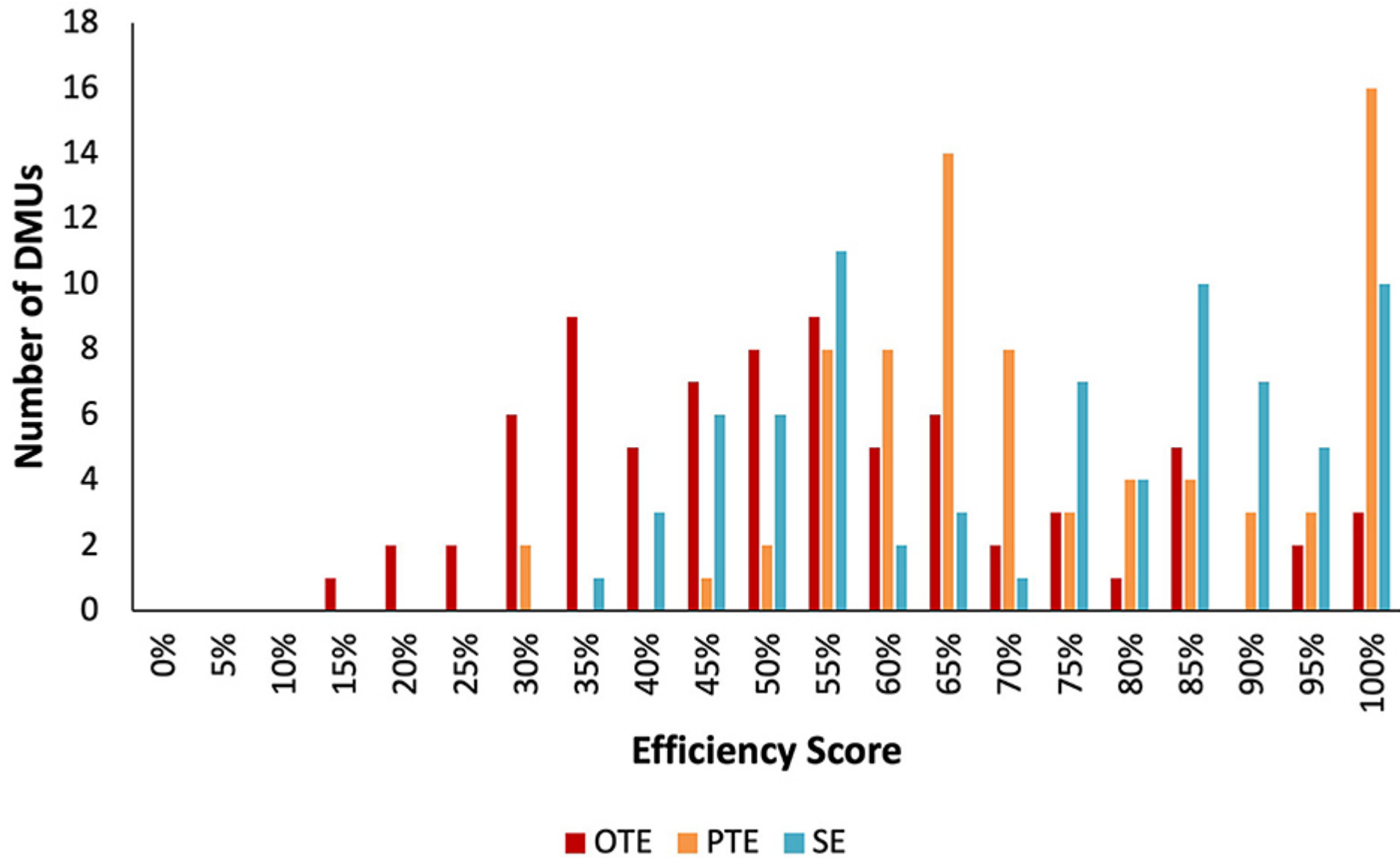
BIL.	HOSPITAL	JARAK LIPUTAN (Km Sehalu)	DAERAH/ KAWASAN LIPUTAN	PENCAPAIAN KPI (%)
1.	HPj	≤ 60	Putrajaya, Sepang, Petaling, Hulu Langat, Kuala Langat	16 - 66
2.	HTAA	≤ 136	Kuantan, Rompin, Temerloh, Jerantut, Pekan, Kawasan Jabur, Felda Neram	14 - 34
3.	HUS	≤ 398	Kuching, Bau, Kota Samarahan, Seri Aman, Sibul	10 - 22
4.	HMR	≤ 207	Miri, Limbang, Marudi, Bintulu	10 - 24
5.	HTW	≤ 450	Tawau, Sandakan, Lahad Datu, Putatan, Kota Kinabalu	14 - 44

Sumber: Data MECC Bagi Prioriti Kes 1 bagi tempoh 5 Tahun Mulai Tahun 2017 hingga 2021, Data KPI

* Targeted 15-minute timeframe

Data envelopment analysis for ambulance services of different service providers in urban and rural areas in Ministry of Health Malaysia

This cross-sectional study analyzed the efficiency of 76 health facilities, consisting of 62 health clinics and 14 hospitals.



Overall Technical Efficiency (OTE), the Pure Technical Efficiency (PTE), the Scale Efficiency (SE)

“The technical inefficiencies in the provision of ambulance services were mostly due to managerial inefficiency and inappropriate size (or scale inefficiency)”.

EM in Malaysia

1. Mmed EM program 2008
2. 4 Public universities
3. Parallel Pathway EM 2019
4. About 700 EPs
5. The Malaysian College of Emergency Physicians
6. The Malaysian Journal of Emergency Medicine
7. SIG: prehospital care/Disaster



COLLEGE OF EMERGENCY PHYSICIANS
SIG PRE-HOSPITAL CARE & DISASTER MANAGEMENT
NATIONAL ASSOCIATION OF PRE HOSPITAL CARE RESPONDER



EMBRACING CHANGE AND TRANSFORMATION

DATE: 10-11 MAY 2023
PLACE: MAEPS SERDANG

REGISTRATION:

NORMAL : 01/02/2023-10/04/2023

[REGISTER HERE!]

[HTTP://BIT.LY/NEMS2023REGISTER](http://bit.ly/nems2023register)

PAYMENT METHOD:

PAYMENT TO : COLLEGE OF EMERGENCY PHYSICIANS,
ACADEMY OF MEDICINE OF MALAYSIA

ACCOUNT NO : 3987324409

BANK NAME : PUBLIC BANK BERHAD

SWIFT CODE : PBBEMYKL



REGISTRATION FEES:

Category	Normal (RM)	Group of 5 (RM)	Group of 10 (RM)
Doctor	450	2025	3600
Paramedic	350	1575	2800
Student	250		

TERMS AND CONDITION APPLY

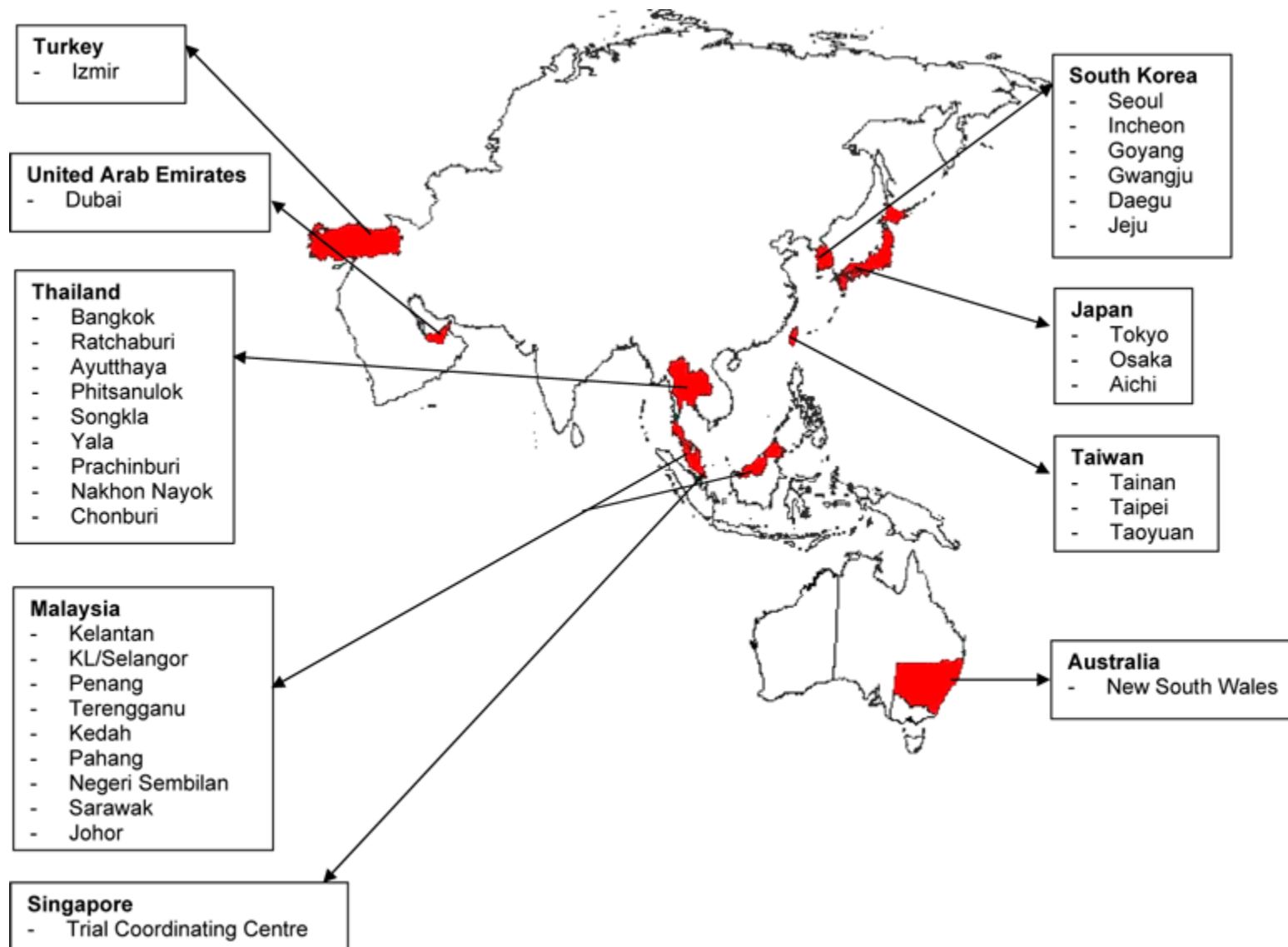
ORGANIZED BY



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Pan-Asian Resuscitation Outcomes Study (PAROS)





Pan-Asian Resuscitation Outcomes Study (PAROS): Rationale, Methodology, and Implementation

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Table 1 Performance indicators

Indicator type	Definitions	EMS systems performance index examples
Structure	Characteristics of the different components of the system	(i) Facilities (ii) Equipment (iii) Staffing (iv) Knowledge base of providers (v) Credentials (vi) Deployment (vii) Response times
Process	Combination or sequence of steps in patient care intended to improve patient outcome	(i) Medical protocols (ii) Medication administration (iii) Transport to appropriate facility
Outcome	Changes in health and well-being related to antecedent care 6 Ds ^a (i) Death (ii) Disease (iii) Disability (iv) Discomfort (v) Dissatisfaction (vi) Destitution	(i) Out of hospital cardiac arrest survival (ii) Patient Satisfaction (iii) Improvement in pain score

^aEMS outcomes defined by Emergency Medical Services Outcomes Project (EMSOP).



Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Clinical Paper

Outcomes for out-of-hospital cardiac arrests across 7 countries in Asia: The Pan Asian Resuscitation Outcomes Study (PAROS)[☆]



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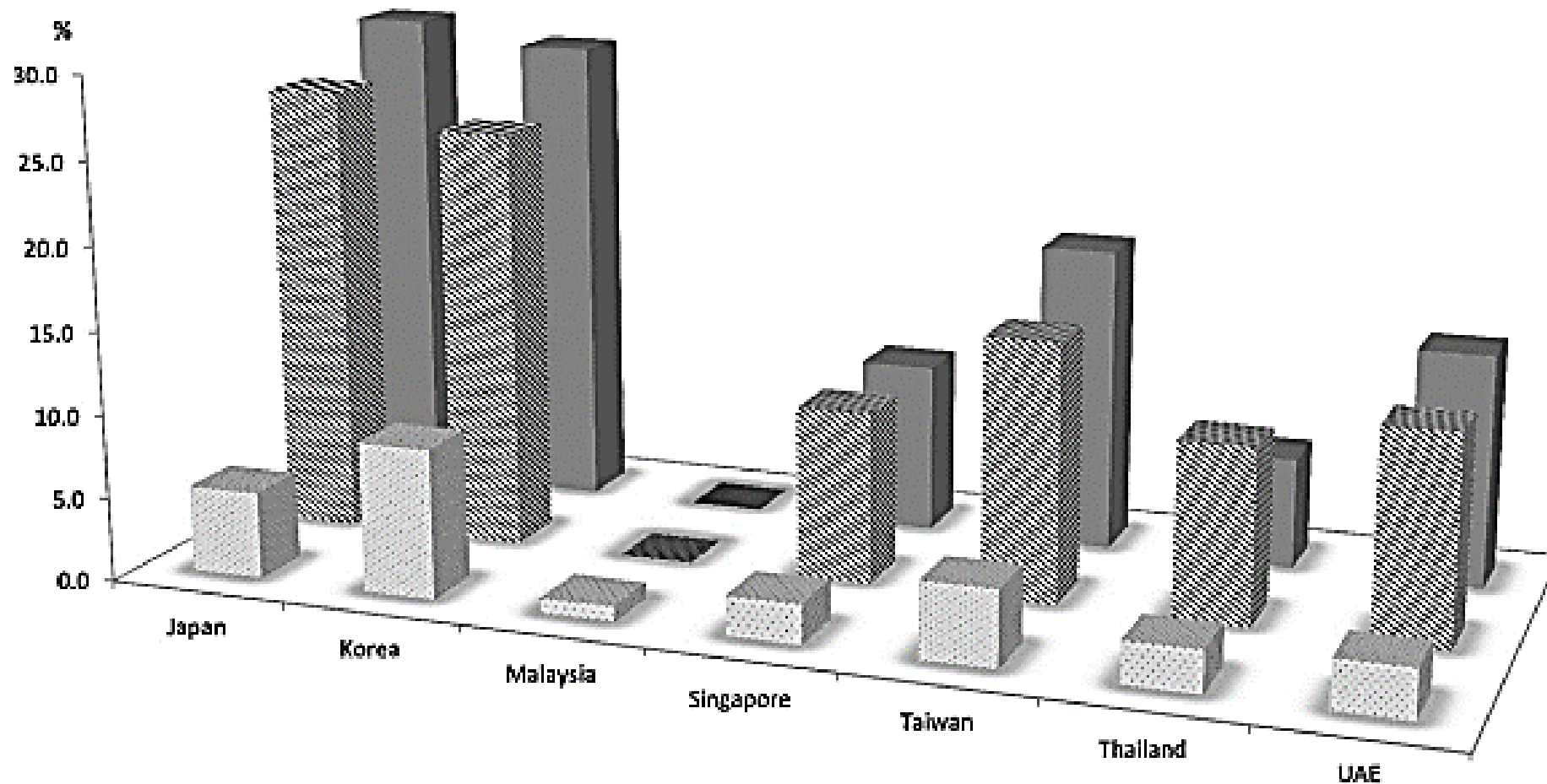
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Table 1
Characteristics of study sites.

Country	City	Service area population	Population density (per km ²)	No. of ambulances	No. of hospitals	No. of participating EMS agencies	Ambulance:population ratio	Type of providers ³	Operation of ambulance ^{3,7}	Tiered response ^{3,7}	Data entry
Japan	Aichi	7,434,996	1439.5	249	155	36	1:30,000	First aid class one, standard first aid class, emergency life-saving technician	Fire-based	BLS single	Export
Japan	Osaka	8,860,280	4659.8	285	272	33	1:32,000	First aid class one, standard first aid class, emergency life-saving technician	Fire-based	BLS single	Export
Japan	Tokyo	13,286,735	6070.7	218	276	1	1:61,000	First aid class one, standard first aid class, emergency life-saving technician	Fire-based	BLS single	Export
Korea	Seoul	10,249,679	16,941.6	140	63	24	1:74,000	Emergency medical technician-basic (EMT-B)/emergency medical technician-intermediate (EMT-I)	Fire-based	BLS single	Export
Malaysia	Klang Valley	1,749,059	3869.6	12	2	2	1:146,000	EMT-B/medical assistant	Hospital-based and non-profit community	BLS/ALS single	Direct entry
Malaysia	Kota Bahru	491,237	1247.0	30	2	4	1:17,000	EMT-B/medical assistant	Hospital-based and non-profit community	BLS/ALS single	Direct entry
Malaysia	Penang	1,520,143	1500.0	7	1	5	1:218,000	EMT-B/medical assistant	Hospital-based and non-profit community	BLS/ALS single	Direct entry
Singapore	Singapore	5,076,700	7252.4	46	7	1	1:111,000	EMT-I	Fire-based	BLS single	Direct entry
Thailand	Bangkok	2,521,240	19,014.4	16	2	1	1:158,000	Doctor/nurse	Hospital-based	BLS and ALS	Direct entry
Thailand	Songkla	55,144	1326.5	4	1	4	1:14,000	Doctor/nurse	Hospital-based	BLS and ALS	Direct entry
Taiwan	Taipei	2,650,968	9753.4	50	22	1	1:54,000	Paramedic/EMT-B	Fire-based	BLS and ALS	Export
UAE	Dubai	2,003,170	474.8	68	5	1	1:30,000	Paramedic	Fire-based	ALS single	Direct entry



- ▣ Survived to discharge (EMS Treated)
- ▤ Survived to discharge (Shockable rhythm)
- Survived to discharge (Shockable rhythm and bystander witnessed)

A Study on the Effectiveness of Video Call Dispatcher-Assisted Cardiopulmonary Resuscitation in Enhancing the Quality of Cardiopulmonary Resuscitation Among Laymen Bystanders in Malaysia

© Mohamad Faizal Zulkhifli, © Rashidi Ahmad, © Mohd Zahir Amin Mohd Nazri, © Abdul Muhaimin Noor Azhar

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Out-of-Hospital Cardiac Arrest Prognostics Modelling using Machine Learning Techniques

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The status of PHS in Malaysia?

Underdeveloped system?

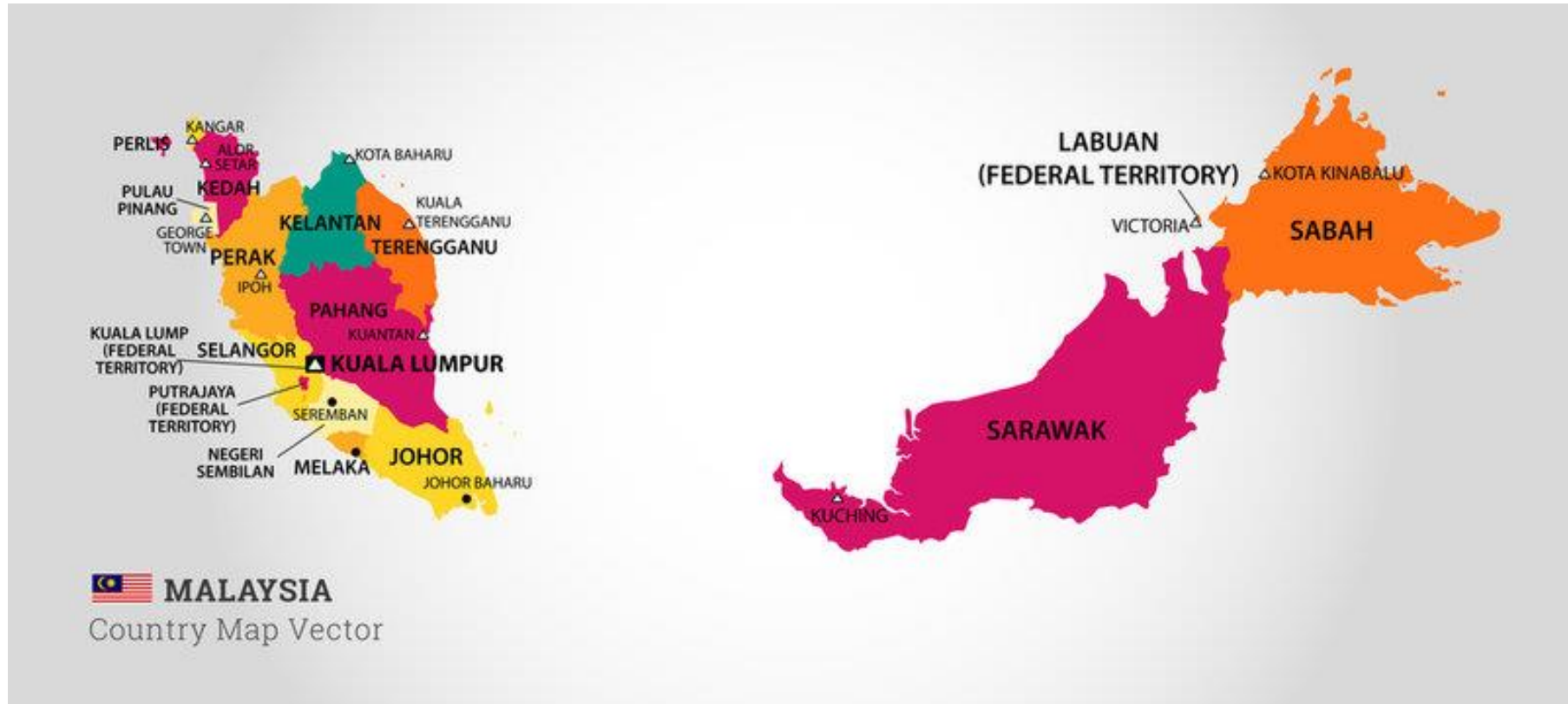
Developing system?

Mature system?

Comparison of patient care systems

	Country class		
	Underdeveloped	Developing	Mature
Emergency physicians	Housestaff, other doctors	Some EM residency trained	All EM residency trained
Emergency department director	Other specialty	EM physician	EM-certified physician
Prehospital care	Private car, taxi	BLS or EMT ambulance	Paramedic or doctor
Transfer system	No	No	Yes
Trauma system	No	No	Yes

Arnold JL. International EM and the recent development of EM worldwide. Ann Emerg Med 1999;33:97-103.



Developing to mature EMS system

سُبْحَانَكَ اللَّهُمَّ رَبَّنَا
اللَّهُمَّ صَلِّ وَسَلِّمْ
عَلَى نَبِيِّنَا مُحَمَّدٍ
وَعَلَى آلِهِ الطَّيِّبِينَ الطَّاهِرِينَ
وَالْحَمْدُ لِلَّهِ رَبِّ الْعَالَمِينَ

Thank you