

# PRE HOSPITAL CARE SYSTEM IN MALAYSIA

DAEGU, SOUTH KOREA

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# **INTRODUCTION**

- **Malaysia is located in South East Asia**
- **Bordered by Thailand in the north and Singapore in the south**
- **Consists of 15 states and has a democratic government**
- **Comprises of multi-ethnic groups, the Malay group being the majority (70%) and others such as Chinese and Indians**
- **The land area is 330,252 square kilometers with a population of just over 25 million**

# **INTRODUCTION**

- Life expectancy at birth in 2008 for males was 70.3 years and for females, 75.2 years
- The health facilities are provided by the Ministry of Health (MOH), Ministry of Education (university hospitals), and private sectors
- Each of the 15 states are provided with a General Hospital that perform as referral center

# INTRODUCTION

- Total number of doctors of 17 442
- The ratio of doctors to population as in 2002 is 1 to 1 474
- MOH allocation to National Budget is 6.33%, amounting to Malaysian Ringgit (RM) 5 765 553 410
- 80% of which was for the operating budget and the other 20% for the development budget

# INTRODUCTION

<b>1</b>	<b>Normal Delivery</b>	<b>14.91%</b>
<b>2</b>	<b>Complications of Pregnancy</b>	<b>12.39%</b>
<b>3</b>	<b>Accident</b>	<b>9.11%</b>
<b>4</b>	<b>Diseases of the Respiratory Systems</b>	<b>7.30%</b>
<b>5</b>	<b>Diseases of the Circulatory Systems</b>	<b>7.26%</b>
<b>6</b>	<b>Perinatal Conditions</b>	<b>6.57%</b>
<b>7</b>	<b>Diseases of the Digestive Systems</b>	<b>5.20%</b>
<b>8</b>	<b>Diseases of the Urinary Systems</b>	<b>3.74%</b>
<b>9</b>	<b>Ill-defined Conditions Diseases</b>	<b>3.43%</b>
<b>10</b>	<b>Malignant Neoplasms</b>	<b>3.13%</b>

Total admission = 1,905,689

Figures from Ministry of Health Malaysia 2007

# INTRODUCTION

## *Principal Causes of Deaths In Government Hospitals Malaysia in 2007*

1	Septicemia	16.87%
2	Heart Diseases & Diseases of Pulmonary Circulation	15.70%
3	Malignant Neoplasm	10.59%
4	Cerebrovascular Diseases	8.49%
5	Pneumonia	5.81%
6	Accident	5.59%
7	Diseases of Digestive System	4.47%
8	Perinatal Conditions	4.20%
9	Kidney Diseases	3.83%
10	Ill-Defined Conditions	3.03%

Total death = 49, 586

Figures from Ministry of Health Malaysia 2007

# Pre-Hospital Care System in Malaysia

- ❑ Hospital based: Emergency department
- ❑ Emergency only
- ❑ Medical assistant/nurses as main providers
- ❑ Common 999 entry point (October 2007)
- ❑ Free
- ❑ 24 hour on demand service

# Malaysia Emergency Response System

KECEMASAN

999

Satu Negara, Satu Nombor



POLIS



BOMBA



HOSPITAL



PERTAHANAN  
AWAM



Major step.....  
June 2007



# Malaysia Emergency Response System

- i. One number – “Client focus” (response to 999 calls within 10 sec or 4 rings)
- ii. “Automatic routing system” with zero defect
- iii. Standardization of client interaction protocol for all call centers
- iv. Single “Communication network” for all agencies involved
- v. “Online incident management protocol” before arrival of response team
- vi. Trained EMD at call center

# Special Situations

□ Partners in providing the service:

- Civil defence Malaysia
- St John's Ambulance
- Malaysia Red Crescent
- Volunteer Fire & Rescue Services

# Problems in EMS in Malaysia:

- ❑ Cities are getting bigger with worsening traffic congestion
- ❑ Existing hospital ambulances struggle to cope with increase demand and area of coverage : increase response time

□ Accessibility to medical care in Malaysia is considered excellent

- ❖ 81% is within the 3 km from the health care facility
- ❖ 88% within 5 km
- ❖ 93% within 10 km

□ Emergency services in many rural health clinics are rudimentary:

- ❖ Resuscitative equipment & skill
- ❖ Roles during emergencies
- ❖ Roles of emergency transport

**ALTHOUGH ACCESSIBILITY TO MEDICAL CARE IS EXCELLENT  
ACCESSIBILITY TO EMERGENCY CARE IS STILL LACKING**

- ❑ Can the ED alone cope with the emergency ambulance services?
- ❑ Can the hospital alone cope with service?
- ❑ Can the MOH alone cope with the service?
- ❑ Can the government alone cope with this?

**COMMUNITY INVOLVEMENT is the key to any emergency ambulance service, serving the community**

# STEPS TAKEN:

## RURAL AREAS

- ❑ Rural Health Clinic must play primary role
  - ❖ Accessibility and community participation
  - ❖ Primary response to emergencies
  - ❖ Providing first aid and as first responder
  - ❖ Transporting emergency patients to nearby health center

Training

Equipment supplies

Ambulances

# SMALL TOWNS

## □ Hospitals & Health Clinic Sharing

- ❖ Mapping of coverage areas
- ❖ Common system and communications
- ❖ Sharing of resources and supplies

Training

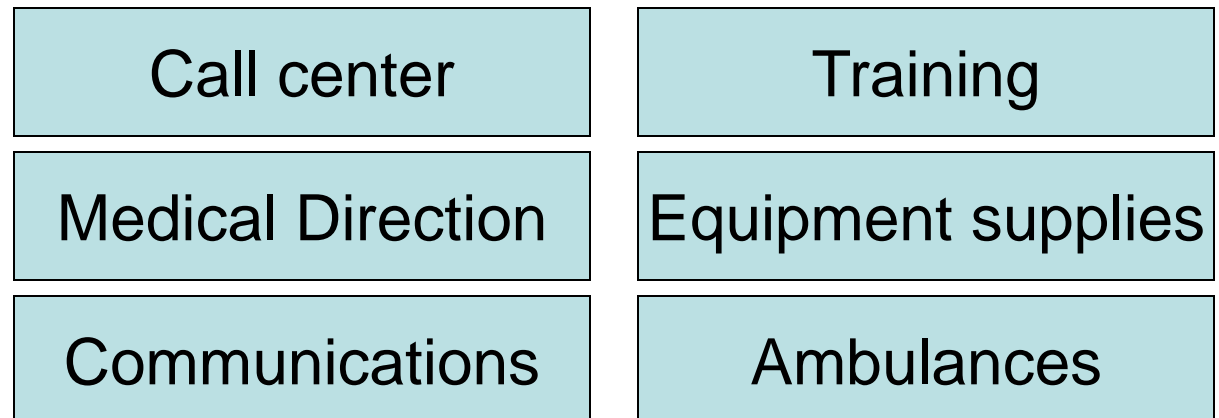
Equipment supplies

Ambulances

# LARGE CITIES/TOWNS

## □ Multi agencies involvement

- ❖ NGOs cooperation needed
- ❖ “Centralize Call Center”
- ❖ Decentralize ambulances





# Pilot Projects:

## □ Penang State

- ❖ Within & among districts
  - MOH hospitals + Health Clinics + NGOs

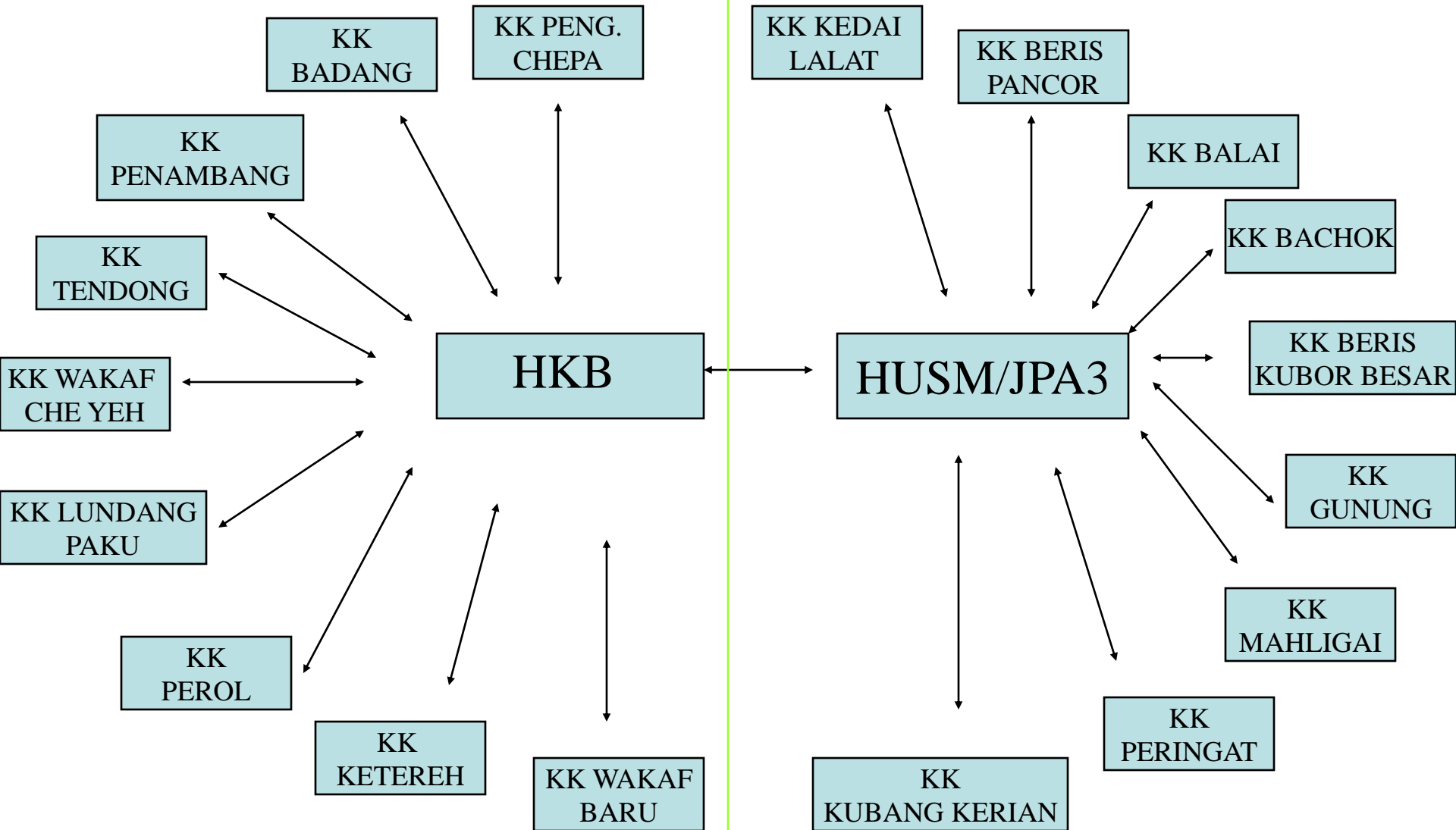
## □ Johor state

- ❖ Within district
  - MOH hospitals + Health clinics

## □ Klang Valley (KL)

- ❖ Zones
  - MOH Hospitals + University Hospitals + Health Clinics + NGOs

# DISTRICT OF KOTA BHARU NETWORK FOR CALL CENTER



# Acute hospital care

In the past time.....

No doctors

Time ?

Transportation problems

Health Centers



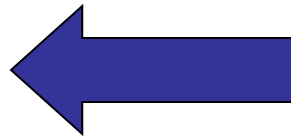
District hospital

Small ED  
Limited no of  
doctors

Time ?



**OUTCOME  
POOR**



Tertiary Hospital

Equipped  
ED  
Emergency  
Physicians

Beyond the Golden / Platinum Hours : SURVIVAL POOR

# Acute hospital care

In the present time.....

Doctors/MA present

Health Center

District hospital

Transportation Time  
Communication Time

REDUCED

Tertiary Hospitals

Emergency Medicine developing  
Better equipped ED  
Better transportation

# MOH FOCAL ACTIVITIES:

- ❑ Designated PHC units
- ❑ Call center development
- ❑ Ambulance purchase
- ❑ Radio communication and network
- ❑ Clinical protocol/medical direction
- ❑ Motorcycle squads
- ❑ Training - first responder, BLS, BTLS

# Malaysia Emergency Response System

Call center - Hospital based



# Vehicles (staff & equipment)



**Old Days !!!!**

Manned by non paramedics  
Ambulance driver with  
nursing staff  
Minimally trained &  
equipped

**Scoop & Run Concept**

# Vehicles (staff & equipment)



Better equipped  
Trained nursing staff  
Accompanied by doc





# Response time (dispatch)

*Ambulance Response Time (ART) Before and After Emergency Medical Dispatcher (EMD) Training Program (Statistics January Till December 2007 from Call Center Hospital Universiti Sains Malaysia)*

GROUP	Call Processing Time (CPT)	Time Taken to Prepare Team (TTP)	Time Taken To Arrive At Scene (TTTS)	Ambulance Response Time (ART)
<b>Without EMD</b>				
<i>Mean</i>	117.00	203.91	1325.29	<b>1646.21</b>
<i>Number of Calls</i>	1000	1000	1000	1000
<i>Std Deviation</i>	54.93	115.24	1572.30	1609.39
<b>With EMD</b>				
<i>Mean</i>	117.67	117.00	676.83	<b>911.50</b>
<i>Number of Calls</i>	1000	1000	1000	1000
<i>Std Deviation</i>	55.20	54.93	1451.08	399.34

***Mean Time in seconds***  
***ART = CPT + TTP + TTTS***

P=0.002

# Response time (dispatch)

## *Mean Ambulance Response Time At Tertiary Hospitals In Three Different Cities in Malaysia*

Cities	Mean Call Processing Time (CPT)	Mean Time Taken to Prepare Team (TTP)	Mean Time Taken To Arrive At Scene (TTTS)	Mean Ambulance Response Time (ART)
Kota Bharu	117.67	117.00	676.83	<b>911.50</b>
Penang	154.07	218.56	896.33	<b>1268.96</b>
Kuala Lumpur	135.48	196.22	1208.08	<b>1539.78</b>

**Mean Time in seconds**

P<0.05

# PRESENT & FUTURE CHALLENGES

- i. Multiple providers
- ii. Non standard training program/certification
- iii. Poorly or untrained EMS staff
- iv. Poor public comprehension about EMS
- v. Non uniformity of allocation in services
- vi. Poorly equipped ambulances
- vii. Poor quality ambulances
- viii. Lack of EMS research and quality control
- ix. Privatizing the service ???