



RESEARCH IN OUT-OF-HOSPITAL CARDIAC ARRESTS

Past Developments & Current Research

Dr Sarah Abd Karim
Emergency Physician
Hospital Kuala Lumpur, Malaysia

INTRODUCTION

A TRULY ASIA COUNTRY



999 RESPONSE THE YESTERYEARS



- ▶ **Started in 2002**
- ▶ **Single unified emergency access number**
- ▶ **Managed by Royal Police of Malaysia**
- ▶ **Inefficiencies – low public confidence**
- ▶ **Lead to development of agency specific number**
- ▶ **Medical Emergencies**
 - **Hospital based system managed locally by Emergency Call Centre each hospital**

Confused over emergency numbers

By FAREE RAJANDRAN

PETALING JAYA: There is still much confusion among the public regarding emergency numbers, with some knowing the numbers but not knowing which service they are for.

Those interviewed by The Star said they did not know emergency numbers like 994 or 995 existed and all of them did not know that they could use their mobile phone to dial 112 for emergency services.

"I know emergency numbers such as 999 and 991, but I don't really know which department they connect me to," said 35-year-old Jennifer Chan, a manager from Taman Desa.

Many also related their experiences when using emergency numbers.

Consultant Beng Siong, 46, from Damansara said that he was aware of emergency numbers. He has called 999 before during an emergency, but it took around 10 minutes for it to be answered.

"The response time was bad and they were not efficient. However, the police did take down all the details pertaining to the emergency," he said.

"The ambulance arrived much later and the injured victim had to be taken to the hospital by taxi," he said.

Customer service executive Noorhayati Shawal, 40, said she called 999 many years ago when an incident occurred in a factory.

"The police answered the call immediately. I had called to double check if anyone had reported the incident and the police said that they were already on their way," said the executive from Petaling Jaya.

Bank worker Hanis Anisah, 31, said that when she called to report a fire, the police answered immediately and the Fire and Rescue Department arrived within five minutes.

Student Sukhvir Kaur, 22, and investment banker Aaron Agnel, 25, said they were aware of which numbers to call but have not had a reason to use them.

PUBLIC CONFUSION



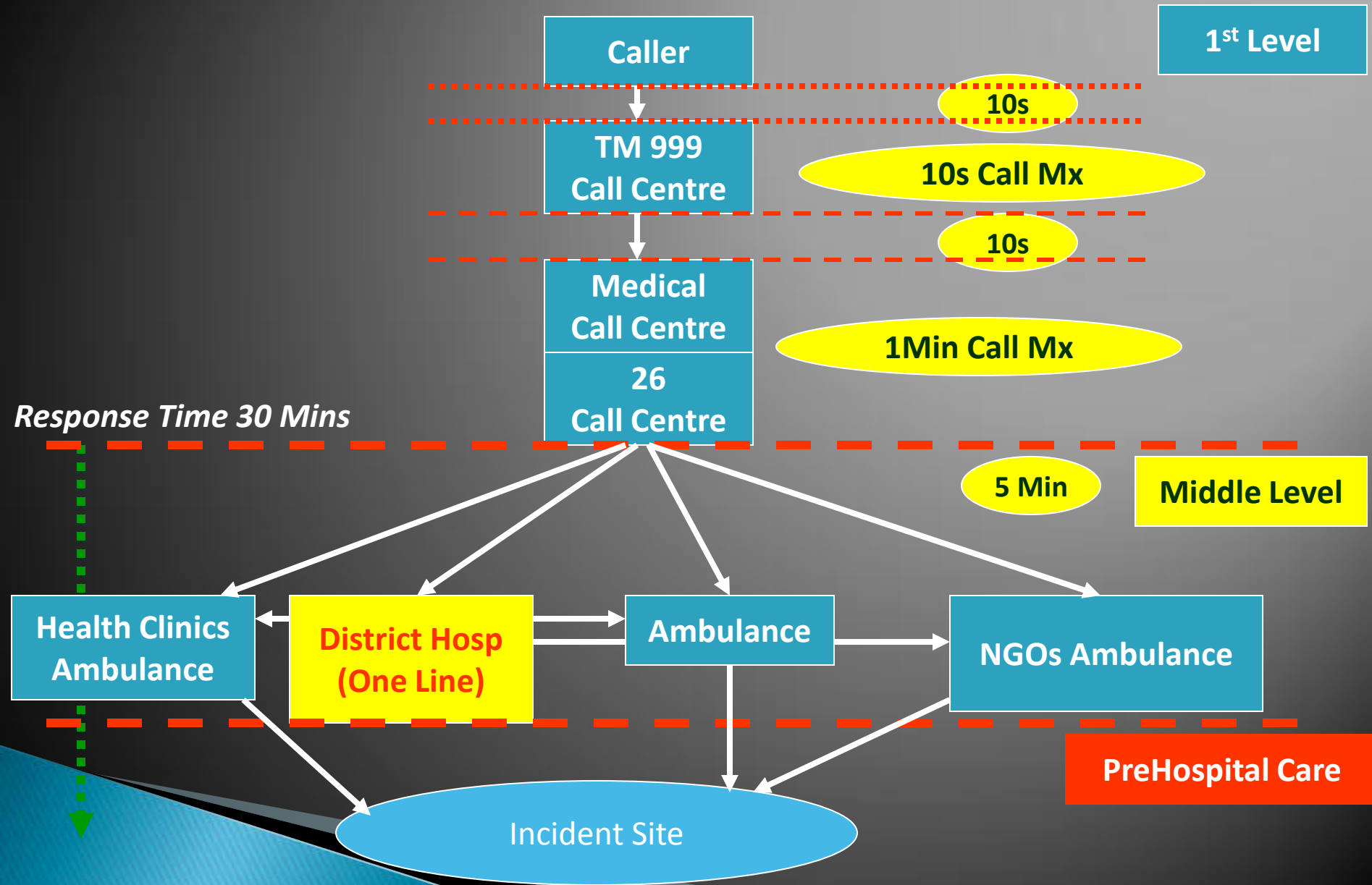
- **994 – Fire and Rescue Department**
- **991 – Civil Defence Department**
- **995 – gas-related emergencies.**
- **112 – if use cell phone**
- **3371-5005 – St Johns Ambulance Malaysia (Selangor)**
- **4257 8122 – Malaysia Red Crescent Society**
- **2615 5333 – Hospital Kuala Lumpur (Emergency Call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

MALAYSIA EMERGENCY RESPONSE SERVICE 999 (MERS 999)



- ▶ **2007 – service rebranding**
- ▶ **Streamlined all numbers into ONE UNIVERSAL ACCESS NUMBER 999**
- ▶ **Call management system**
 - **Professional Emergency Operators (Telekom Malaysia)**
 - **Professional Emergency Dispatcher**

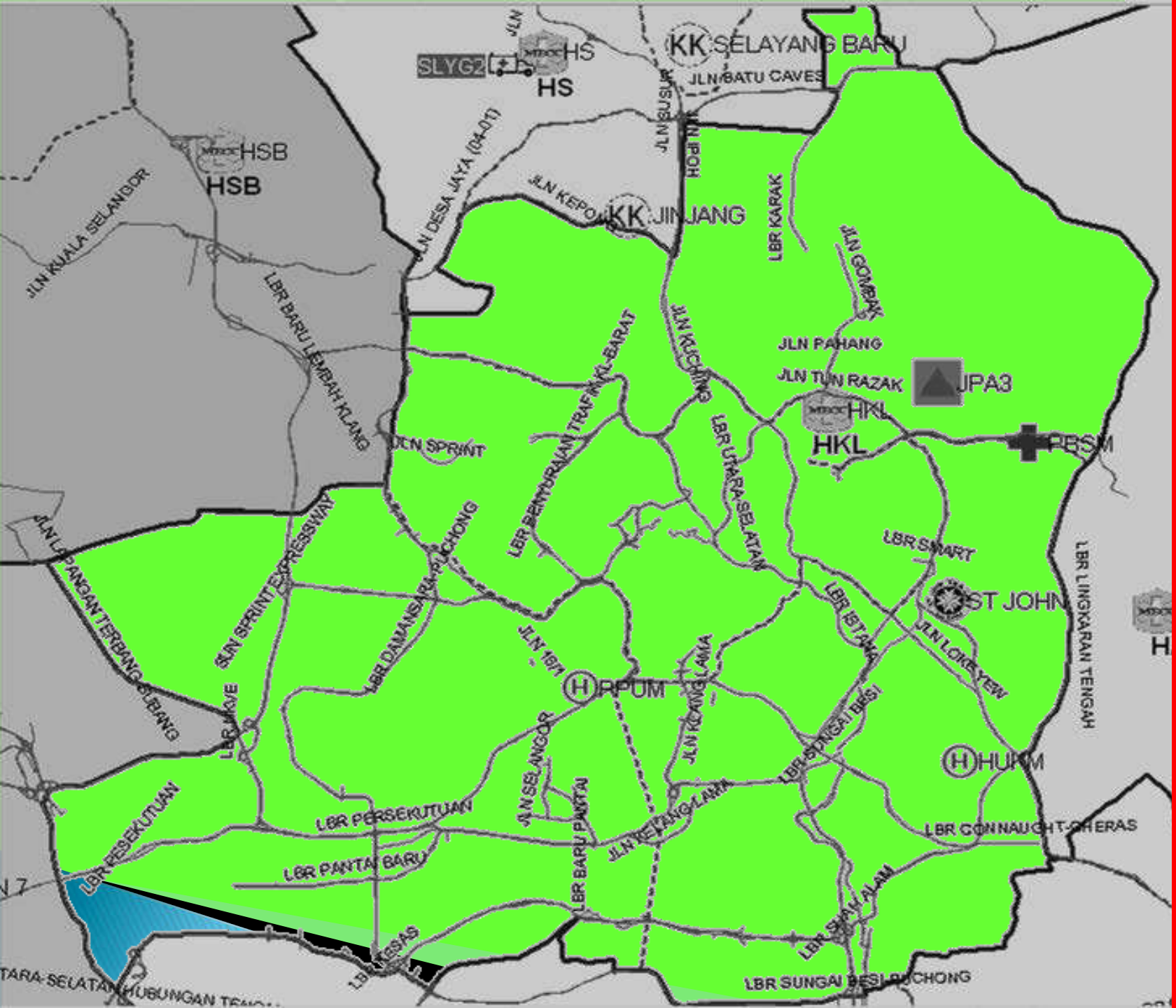
COMMUNICATION FLOW - MECC



MEDICAL EMERGENCY COORDINATION CENTRE (MECC)



- ▶ **Developed as part of MERS 999 system**
- ▶ **Regionalization**
 - **Medical Emergency Call Management System**
 - **Emergency Ambulance Services Coordination**
- ▶ **26 centers in Malaysia**
 - **Emergency Physician as Medical Director**
 - **Communications hub for multi-agency ambulance network**



MECC HKL AMBULANCE NETWORK

AMBULANCE SERVICES PROFESSIONAL STANDARDS



- ▶ **Static base system**
 - Hospital-based
 - HQ based system
- ▶ **Hospital based providers**
 - Ministry of Health or University Hospitals
 - Intermediate Care to Advanced Care
- ▶ **Civil Defence and NGO**
 - Basic Life Support First Responders

AMBULANCE SERVICES

KEY PERFORMANCE INDEX



- ▶ **Emergency Call Management**
 - 100% call answered within 10 secs/4 Rings
 - 0 drop calls
- ▶ **Ambulance Dispatch Network**
 - 90 seconds ambulance dispatch time for ECHO response
 - 90% of scramble time within 5 minutes
- ▶ **Ambulance Response Standards**
 - 95% of Ambulance Response to incident site within 30 mins within the 5 km distance from the Responding Hospital or Base Station.

OUT OF HOSPITAL ARREST RESEARCH INTEREST



- ▶ **Based on Chain of Survival**
- ▶ **3 major components**
 - **Bystanders**
 - **EMS system and Responders**
 - **Hospital System**
- ▶ **Previous researches in Malaysia**
 - **Majority focused on BYSTANDERS perspectives**

OUT OF HOSPITAL ARREST BYSTANDER PERSPECTIVES



- ▶ **Highlight of research between 2005 to 2008**
 - **Current guidelines on CPR focused on bystander learners**
- ▶ **Main questions posed**
 - **“Are Malaysians willing to perform CPR in out of hospital environment?”**
 - **“ How many out of hospital arrests, had CPR performed by bystanders prior to ambulance arrival?”**

How frequent is bystander cardiopulmonary resuscitation performed in the community of Kota Bharu, Malaysia?



- ▶ **Sample population – patients responded by ambulance network at HUSM**
 - 23 patients
- ▶ **Study period:**
 - March 2005 to March 2006
- ▶ **Less than one third of laymen bystanders perform CPR in witnessed arrest.**

Survey on first aid and CPR among health personnel in Malaysia



- ▶ **Anonymous questionnaire survey distributed among public health personnel.**
- ▶ **Study centered on knowledge and personal skill to perform CPR**
- ▶ **Total of 4989 personnel responded**
- ▶ **Less than half had the knowledge and confidence to perform CPR**

OUT OF HOSPITAL ARREST FUTURE OF RESEARCH



- ▶ **Increased awareness and interest**
 - Availability of Emergency Physicians in majority of specialist hospitals in Malaysia
 - Increasing interest in Emergency Medicine specialty among young medical officers
 - Introduction to Emergency Medical and Trauma Services to house officers
- ▶ **Database availability**
 - National Trauma Database
 - Computer Aided Dispatch database platform
 - National level study can be performed

OUT OF HOSPITAL ARREST FUTURE OF RESEARCH



- ▶ **Regional EMS network**
 - **Larger population catchment**
 - **Population geographical and socioeconomic factors**
 - **Responders characteristics and level of credentialling**

OUT OF HOSPITAL ARREST CONCLUSION



- ▶ **Emergency Medical and Trauma Services regionalization coordination of Pre Hospital Care Services began 2007**
- ▶ **Previous research fascination on bystander CPR**
- ▶ **Future research in regionalized promises better perspective either demographic or clinical outcomes**



THANK YOU