1 **SUPPLEMENTAL MATERIAL**

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FINAL

NATIONAL PRE-HOSPITAL EMERGENCY CARE SYSTEM 5 YEAR PLAN (2009 – 2014) EXECUTIVE SUMMARY

I Introduction

Definition

1 Pre-hospital emergency care (PEC) is the provision of emergency medical care in a pre- or out-of-hospital setting, to an acutely ill or injured patient. It is a uniquely time-sensitive domain of healthcare where early recognition and intervention have profound impact on patient outcome.

Current Status and Resources in Pre-hospital Emergency Care

2 There has been a lack of national coordination, planning and oversight of PEC. Different organisations (e.g. National First Aid Council (NFAC), National Resuscitation Council (NRC), Singapore Armed Forces (SAF) and Singapore Civil Defence Force (SCDF)) operate independently of each other and have separately driven development in the areas of first aid, resuscitation and PEC Services.

Need for a National Policy on Pre-hospital Emergency Care

Ageing and Disease Trends

3 Singapore's population structure is expected to age progressively in the next 10 to 15 years. Emergency medical conditions in the elderly are anticipated to increase and place greater demands on PEC resources. It is projected that, between 2006 and 2015, the number of acute resident hospitalisations for ischaemic heart disease, stroke and injuries/poisoning would have increased by 21%, 57% and 12% or on an average of about 350, 400 and 400 each year respectively.

Ambulance Trends

4 Singapore currently has a ratio of one emergency ambulance to every 126,000 people. This is far below international standards[1]. Furthermore, 109,459 emergency calls were received by the SCDF in 2007 - an increase of 13,442 or 14% from 2006. This is expected to rise with our ageing population and related chronic disease trends.

Performance Gaps

5 Local performance has fallen short of international benchmarks. The local out-of-hospital cardiac arrest (OHCA) survival-to-hospital-discharge rate is 2.0%[2], below the median survival rate of 8.4% reported in a review of 10

[1] Kuehl A. Prehospital Systems and Medical Oversight. 2002;3rd Edition. – The National Association of EMS Physicians (NAEMSP), USA, recommends that urban EMS systems should have approximately one ambulance for every 40000 people with twice this ratio during peak call periods.
[2] Ong EHM CY, Anantharaman V., Lau ST, Lim SH, Seldrup J. Cardiac Arrest and Resuscitation Epidemiology in Singapore (CARE I study). *Prehospital Emergency Care*. 2003;7:427-433.

PEC systems in North America[3]. 15.3% of pre-hospital trauma deaths were found to be 'potentially preventable' and 7.1% were 'frankly preventable'[4]. For stroke, 91% of patients were found to be unsuitable for thrombolytic therapy because they had presented to the hospital late (>2h from symptom onset)[5]. These data reveal shortfalls spanning the entire PEC system ranging from community recognition and response, ambulance standards, paramedical skillset to promptness of appropriate medical intervention

A National Policy

6 A coherent, integrated and long-term national policy and workplan for PEC is hence necessary to drive the advancement of this largely unaddressed area of healthcare delivery in Singapore. It is proposed that a national blueprint focusing on the strategic imperatives of leadership, community responsiveness, ambulance responsiveness, emergency department responsiveness, skills development and technology be implemented in phases, over the next 5 years.

II National Pre-hospital Emergency Care Policy

A) Vision:
The vision is for Singapore to possess a world-class PEC system, readily accessible to all, and providing excellent patient outcomes.

B) Aims:
- i) To develop a coherent and viable framework for inter-agency collaboration and coordination in the long-term development of PEC in Singapore.
- ii) To promote public responsiveness in pre-hospital emergencies.
- iii) To strengthen Singapore's PEC Services to world-class standards.
- iv) To ensure that PEC is seamlessly integrated into the health care system.
- v) To create a supportive environment for research into PEC to improve health outcomes.

C) Values that underpin the policy:
- i) PEC and its promotion is a multi-agency, multi-sectoral, long term effort.
- ii) PEC must be evidence-based and cost-effective.
- iii) PEC requires broad public education and involvement to achieve the best patient outcomes from early recognition and intervention.

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[3] Nichol G, Thomas E, Callaway CW, et al. Regional Variation in Out-of-Hospital Cardiac Arrest Incidence and Outcome. *JAMA* 2008;300(12):1423-1431.
[4] Iau PTC, Ong CL, Chan STF. Preventable Trauma Deaths in Singapore. *Aust. N.Z.J. Surg.* 1998;68:820-825.
[5] De Silva DA, Ong SH, Elumbra D, Wong MC, Chen CL, Chang HM. Timing of hospital presentation after acute cerebral infarction and patients' acceptance of intravenous thrombolysis. *Annals of the Academy of Medicine, Singapore.* 2007;36(4):244-246.

iv) PEC providers must be trained and empowered to act in emergencies.

III National Pre-hospital Emergency Care System

7 It is proposed that the national 5 year plan for PEC system focus on achieving the following 6 strategic imperatives to address the capability gaps[6] identified.

Strategic Imperative 1: Leadership and Oversight

Objectives are to:

i) Establish leadership and ownership for the long term coordination of resources into a holistic PEC system.
ii) Establish a formal system for trained Emergency physicians to assist in the medical oversight and audit of PEC.

Strategic Imperative 2: Community Responsiveness

Objectives are to:

i) Establish baseline understanding of public knowledge, attitudes and practices towards First Aid (FA), Cardio-Pulmonary Resuscitation (CPR) and Automated External Defibrillators (AEDs) through research
ii) Improve rates of first responder in FA, CPR and AEDs.
iii) Strengthen coordination of community training in FA, CPR and AEDs.
iv) Improve public access to AEDs.
v) Standardise training programmes for FA, CPR and AEDs.

Strategic Imperative 3: Ambulance Responsiveness

Objectives are to:

i) Strengthen inter-agency coordination of PEC Services development.
ii) Enhance emergency medical dispatch systems.
iii) Establish optimal numbers and deployment of emergency ambulances.
iv) Raise service standards for emergency ambulance services (EAS) and non-emergency patient transport (NEPT) services.
v) Develop a clear 'lights and sirens' policy.
vi) Standardise medical treatment protocols for EAS and NEPT services.

[6] Reference to Appendix A

Strategic Imperative 4: Emergency Department Responsiveness

Objectives are to:

i) Ensure a seamless integration of PEC services into ED services
ii) Systematically identify and review emergency service gaps focusing on the following 3 key aspects:
 a) Infrastructure and emergency department (ED) competencies
 b) Levels of medical capabilities (LMCs)
 c) Specific capabilities for managing key diseases where effective ED intervention significantly impacts morbidity and mortality (e.g. acute myocardial infarction (AMI), stroke, trauma etc.)
iii) Improve symptom-to-treatment times for critical pre-hospital medical emergencies such as AMI and stroke
iv) Optimise ambulance catchment zone distribution amongst the EDs..

Strategic Imperative 5: Skills Development

Objectives are to:

i) Strengthen coordination of the development of paramedic expertise (including emergency medical technician and emergency medical dispatcher expertise).
ii) Develop paramedic training and continuing medical education standards.
iii) Enhance paramedic career pathways and professional recognition.

Strategic Imperative 6: Technology

Objectives are to:

i) Implement a monitoring and data collection system to assess outcomes for out-of-hospital cardiac arrest (OHCA) etc.
ii) Enhance integration between pre-hospital and ED services.
iii) Review national capabilities for the real-time surveillance of infectious disease, chemical, biological and terrorist threats.

8 The benefits of successful implementation of this plan include:

i) The entrenchment of national coordination, oversight and long-term planning for PEC to attain world-class standards.
ii) Increased number and competency of first responders.
iii) Increased capability and capacity with the appropriate personnel and resources to tackle the emerging pre-hospital and emergency care needs of an ageing population.

iv) Increased use of technology that streamlines, manages and improves effectiveness of service delivery.

And most importantly,

v) Increased patient survival and improved outcomes for major emergencies.

~ End of Executive Summary ~