



#### TRAINING ROADMAP FOR

# EMERGENCY MEDICAL TECHNICIAN







#### CONTENTS

- FOREWORD 3
  - EMERGENCY MEDICAL TECHNICIAN TRAINING ROADMAP
    - wo Job Role Description and Pre-requisites  $ilde{\mathsf{5}}$
    - lue Critical Work Functions and Key Tasks  $\overline{I}$
  - wo Skills and Competencies hinspace
  - wo Technical Skills and Competencies Reference Documents  $\, oldsymbol{eta} \,$
  - Program Listing 24
- ACKNOWLEDGEMENT 25
- REFERENCES 26

The information in this publication serves as a guide for individuals, employers and training providers. SkillsFuture Singapore, Workforce Singapore, and the Ministry of Health provide no warranty whatsoever about the contents of this document, and do not warrant that the courses of action mentioned in this document will secure employment, promotion, or monetary benefits.

#### **FOREWORD**

Emergency Medical Services (EMS) in Singapore has come a long way over the decades and we will need to continue to evolve. Over the last decade we have seen the silver tsunami take root, as well as a pandemic, both of which overwhelmed emergency medical services across the country and continue to test our resilience as a system and society. While innovative solutions take shape, alternative care pathways evolve and expanded capacity materialises, we must continue to give our best to our patients and play our part in their journey back to health. For this we have to have the mindset of continuous improvement, embrace innovation and always seek to see how we can be of greatest benefit to our patients and to society. As Winston Churchill said, "To improve is to change; to be perfect is to change often."

With a constantly changing healthcare landscape, it is necessary for our training providers to equip their students with the current skills needed to practice on a background of up-to-date knowledge and professionalism. It is timely then that the Prehospital Emergency Care (PEC) community has come together to map out the training needs of Emergency Medical Technicians (EMTs) together with SSG, with the aim of ensuring good training standards by training providers that will deliver to our healthcare landscape PEC providers who meet the standards and scope of practice of EMTs locally, in accordance with the Healthcare Service Act 2020. This roadmap will guide training providers in developing efficient and

to be continued on next page

#### **FOREWORD**

#### continued

relevant courses that will meet patients' care needs, as well as introduce the profession to aspiring candidates.

A multi-ministry and multi-agency workgroup has brought together the best minds and years of experience, working and teaching in the Prehospital Emergency Care (PEC) landscape in Singapore. Their vision is to see the provision of optimal care for all patients, benchmarking against international training standards and becoming a benchmark for others. On behalf of the National PEC Training Committee (NPTC) and the Unit for Prehospital Emergency Care (UPEC), I would like to express my deepest appreciation to and congratulate the expert workgroup that has worked tirelessly for over a year, to deliver this guide and roadmap to the EMT Training community. I have full confidence that their work will see EMS providers with improved skills and knowledge and who embody professionalism, providing world-class care to our patients. It is also my personal hope that this endeavour will be a step towards professionalisation of the industry and that we always be a beacon of hope and strength to ourselves and to others around us.

#### DR NAUSHEEN EDWIN DOCTOR

Chair of National Prehospital Emergency Care Training Committee Senior Consultant, Emergency Medicine, Sengkang General Hospital Section Lead, Education & Training, Unit for Prehospital Emergency Care

# EMERGENCY MEDICAL TECHNICIAN TRAINING ROADMAP



#### **JOB ROLE DESCRIPTION AND PRE-REQUISITES**

#### **Job Role Description**

An Emergency Medical Technician is responsible for providing quality prehospital care. The EMT should work in accordance to established policies, procedures and protocols established by their organisation. He/She should also participate in continuous learning and work process improvement activities.

He/She operates in a broad setting within the prehospital field, as an independent crew leader in a Medical Transport Service, or as a crew member under supervision/direction in an Emergency Ambulance Service.

He/She should be a team player, who is able to communicate well with crew members, patients and other healthcare providers. He/She is a critical thinker who is able to make appropriate decisions in a wide variety of situations. He/She should be motivated to maintain currency of his/her skills and knowledge.

#### **Job Role Pre-requisites**

Qualifications	NIL
Type of work experience	NIL
Other pre- requisites	Valid Standard First Aid by SRFAC     Valid Basic Cardiac Life Support / CPR +AED by SRFAC



#### CRITICAL WORK FUNCTIONS AND KEY TASKS

<b>Critical Work Functions</b>	Key Tasks
Provide prehospital	1. Perform patient assessment
patient care	2. Carry out emergency intervention
	3. Perform injury management
	4. Carry out individualised patient care
	5. Transport and handover to receiving facility
Adhere to infection	1. Perform standard precaution measures
control and prevention practices in patient care activities	2. Perform infection control activities for workstation
Participate in quality and patient safety activities	Provide feedback on risk assessment and quality management activities
Participate in	Assist in Mass Casualty Incident activities
ambulance operations	Perform reinstatement of workstations
readiness	3. Maintain adequate documentation of care episodes



#### **SKILLS AND COMPETENCIES**

#### **Technical Skills & Competencies ("TSCs")**

Initial Assessment	Level 2
Airway Assessment and Management	Level 2
Breathing Assessment and Management	Level 2
Circulation Assessment and Management	Level 2
Disability Assessment and Management	Level 2
Exposure Assessment and Management	Level 2
Trauma Assessment and Management	Level 2
Medication Administration for Prehospital Cases	Level 2
Management of Symptoms and Conditions	Level 3
Transport and Handover of Patient	Level 2
Effective Communication in Nursing	Level 2
Infection Prevention and Control in Nursing Practice	Level 2
Quality Improvement and Safe Practices	Level 2
Special Situations in Prehospital Setting	Level 2
Ambulance Readiness and Maintenance	Level 2

#### **Critical Core Skills ("CCSs")**

Decision Making	Basic
Adaptability	Basic
Self Management	Basic
Communication	Basic
Collaboration	Basic

Refer to SSG's website for the CCS Reference Document.



TSC Category: Prehospital Pa	atient Management	TSC: Initial Assessment
TSC Description	Perform initial assessment of a patient in the prehospital setting	
TSC Proficiency Level	Level 2	
TSC Proficiency Description	Assess patient using a structured assessment model	
Knowledge	<ul> <li>Principles of scene evaluation</li> <li>Components of the primary survey and secondary survey</li> <li>AVPU scale and its underlying components</li> <li>History-taking and initial management for common presenting complaints</li> <li>Vital signs and the equipment for measurement</li> <li>Levels of patient acuity</li> <li>Common chronic diseases in the general population</li> </ul>	
Abilities	<ul> <li>Evaluate a scene to identify signs of danger</li> <li>Call for appropriate reinforcements when management falls beyond their scope of practice</li> <li>Perform the primary survey</li> <li>Perform the secondary survey</li> </ul>	



TSC Category: Prehospital P	atient Management	TSC: Airway Assessment and Management
TSC Description	Perform assessment and management of the airway	
TSC Proficiency Level	Level 2	
TSC Proficiency Description	Assess airway and maintain a patent airway	
Knowledge	<ul> <li>Anatomical differences between the adult and paediatric airway</li> <li>Common causes of airway obstruction</li> <li>Signs and symptoms of airway obstruction</li> <li>Different manoeuvres used to optimise airway</li> <li>Different manoeuvres used to relieve foreign body airway obstruction</li> <li>Uses of different supraglottic and airway devices available</li> <li>Indications for suctioning of the airway</li> </ul>	
Abilities	<ul> <li>Assess airway patency</li> <li>Perform manoeuvres to optimize airway</li> <li>Perform manoeuvres to relieve foreign body airway obstruction</li> <li>Insert oropharyngeal airway device</li> <li>Perform suctioning of the airway</li> </ul>	



TSC Category: Prehospital P	atient Management	TSC: Breathing Assessment and Managemen	nt
TSC Description	Perform assessment and management of patient's respiratory system		
TSC Proficiency Level	Level 2	Level 2	
TSC Proficiency Description	Assess and manage respiratory emergencies		
Knowledge	Anatomy and physiology of the respiratory system		
	<ul> <li>Definitions of common respiratory emergencies</li> <li>Signs of respiratory distress</li> </ul>		
	Normal range for pulse oximeter reading		
	<ul> <li>Devices used for delivery of supplementary oxygen</li> <li>Principles of administration of oxygen therapy</li> <li>Devices used for manual ventilation of patients</li> </ul>		
Abilities	Assess adequacy of patient's breathing		
Abilities	<ul> <li>Assess the severity of respiratory</li> </ul>	distress	
	<ul> <li>Interpret pulse oximeter reading</li> </ul>		
	<ul> <li>Provide oxygen therapy appropria</li> </ul>	, .	
	<ul> <li>Perform bag-valve-mask ventilat</li> </ul>	ion and bag-valve-tube ventilation	
William.			



tient Management	TSC: Circulation Assessment and Management	
Perform assessment and management of patient's circulatory system		
Level 2		
Assess and manage circulatory emergencies		
Anatomy and physiology of the cardiovascular system Causes and signs and symptoms of hypotension and shock Definitions and clinical presentation of life-threatening cardiac emergencies Normal and abnormal capillary refill time and pulse Normal range for blood pressure and heart rate Common sites of haemorrhage Sinus rhythm and cardiac arrest rhythms CPR techniques for adult, child, infant and neonate Defibrillation techniques for adult and child  Assess capillary refill time and pulse Interpret blood pressure and heart rate Arrest active haemorrhage Perform lead II ECG monitoring Perform 12 lead ECG Recognise sinus rhythm and cardiac arrest ECG rhythms Perform CPR for adult, child, infant and neonate Perform defibrillation using automated external defibrillator on adult and child		



TSC Category: Prehospital Pa	atient Management	TSC: Disability Assessment and Management	
TSC Description	Perform assessment and management of common neurological emergencies		
TSC Proficiency Level	Level 2		
TSC Proficiency Description	Assess and provide basic management of common neurological emergencies		
Knowledge	<ul> <li>Anatomy and basic physiology of the neurological system</li> <li>Definitions and signs and symptoms of hypoglycemia and hyperglycemia</li> <li>Components of the Glasgow Coma Score (GCS)</li> <li>Common causes of an abnormal GCS</li> <li>Normal range for pupil sizes</li> <li>Common causes of abnormal pupil sizes</li> <li>Signs and symptoms of stroke</li> <li>Signs of a generalized tonic clonic seizure</li> </ul>		
Abilities	<ul> <li>Assess and interpret Glasgow Coma Score</li> <li>Assess and interpret pupil size</li> <li>Perform blood glucose monitoring</li> <li>Perform Cincinnati Prehospital Stroke Scale screening</li> <li>Prevent injury during generalised tonic clonic seizure</li> </ul>		



ISC Category: Prehospital Pa	atient Management	TSC: Exposure Assessment and Management
<b>TSC Description</b>	Perform assessment and managem	nent of patient's environmental exposure
SC Proficiency Level	Level 2	
SC Proficiency Description	Assess and manage heat injury	
Knowledge	<ul> <li>Normal range for body temperature</li> <li>Definition and causes of heat injure</li> <li>Signs and symptoms of heat injure</li> </ul>	ту
Abilities	<ul> <li>Interpret body temperature reading</li> <li>Manage heat injury</li> </ul>	g



TSC Description	Perform assessment and management of traumatic injuries			
		9000		
TSC Proficiency Level	Level 2		4114	
TSC Proficiency Description	Assess for and manage traumatic i	njuries	00010	
Knowledge	Basic anatomy of the musculosker	letal system	2012	
	<ul> <li>Differences between blunt and pe</li> </ul>	netrating trauma		
	Haemorrhagic and neurogenic should be a second of the	_		
	Indications and principles of spinal			
	<ul> <li>Types of haemorrhage and techni</li> </ul>			
	_	•		
	Complications that can occur with	i tourniquet application		
	Types of burn injuries	12.2.2.10.10.10.10		
	Upper and lower limb fractures an	d joint dislocations		
	<ul> <li>Principles of safe extrication</li> </ul>			
	<ul> <li>Equipment used for transfer of pa</li> </ul>	tients in trauma		
Abilities	Perform cervical spinal motion res	striction manoeuvres		
Abilities	<ul> <li>Perform helmet stabilisation/ rem</li> </ul>			
	Arrest active haemorrhage	· · · · ·		
		culate the body surface area of burns		
	-	•		
	<ul> <li>Manage different types of burn injuries</li> <li>Recognise and manage impaled object, and immobilise object appropriately during transfer of patient</li> </ul>			
			uring transfer of patien	
	Recognise and manage organ evisceration			
	Recognise and manage limb amputation, limb fracture and joint dislocation			
	Extricate entrapped casualties using extrication device			
	<ul> <li>Transfer patients with traumatic in</li> </ul>	niuries using relevant equipment		



TSC Category: Prehospital Pa	atient Management	TSC: Medication Administration for Prehospital Cases	
TSC Description	Prepare and administer medication for prehospital cases		
TSC Proficiency Level	Level 2		
<b>TSC Proficiency Description</b>	Safe preparation and administration of medications		
Knowledge	Principles of patient safety when administering medications		
<b>3</b>	Basic pharmacology of medications used		
	Storage and safe-keeping issues for medications		
Devices used for administration of nebulised and inha-		f nebulised and inhaled medication	
	Equipment used for intravenous a	ccess and drips	
Abilities • Prepare oral, sublingual, inhaled / nebulised medications		nebulised medications	
	Prepare intravenous medications and crystalloids		
	<ul> <li>Administer oral, sublingual, inhaled / nebulised medications, under instructions by authorised medical personnel</li> </ul>		
	Monitor intravenous peripheral lines and infusions		
	<ul> <li>Assist patients with the self-administration of existing prescribed medication using asthma/COPD MDI relievers or epi-pen auto-injector in life-threatening situations</li> </ul>		



TSC Category: Prehospital Pa	atient Management TS	C: Management of Symptoms and Conditions	
TSC Description	Assess and manage patient's symptoms		
TSC Proficiency Level	Level 3		
<b>TSC Proficiency Description</b>	Assess and manage undifferentiated symptoms and listed conditions		
Knowledge	<ul> <li>Approach to identification and assessing of undifferentiated symptoms:         <ul> <li>Chest pain</li> <li>Shortness of breath</li> <li>Severe abdominal pain</li> <li>Altered mental status</li> <li>Syncope</li> <li>Seizure</li> </ul> </li> </ul>	ment  Basic understanding of the pathophysiology and clinical presentation of the conditions:  Cardiac arrest  COPD / asthma  Stroke  Hypoglycemia  Anaphylaxis  Trauma  Burns	
Abilities	Start initial management of patients we these undifferentiated symptoms:     » Chest pain     » Shortness of breath     » Severe abdominal pain     » Altered mental status     » Syncope     » Seizure	<ul> <li>Identify the clinical presentation and perform the appropriate management of the conditions:         <ul> <li>Cardiac arrest</li> <li>COPD / asthma</li> <li>Stroke</li> <li>Hypoglycemia</li> <li>Anaphylaxis</li> <li>Trauma</li> <li>Burns</li> </ul> </li> </ul>	



TSC Category: Prehospital Pa	atient Management	TSC: Transport and Handover of Patient
TSC Description	Assess and manage patient's symptoms	
TSC Proficiency Level	Level 2	
<b>TSC Proficiency Description</b>	Safe transfer and handover of patients see	
Knowledge	<ul> <li>Principles of safe lifting, transferring and positioning of patients</li> <li>Ambulance equipment and supporting devices used during patient transfer</li> <li>Common in-situ medical devices</li> <li>Principles of proper and appropriate documentation</li> <li>Principles of proper handover of patients during transition of care</li> </ul>	
Abilities	<ul> <li>Perform safe lifting, transferring and positioning of patients</li> <li>Transfer patients with in-situ medical devices</li> <li>Perform documentation of events accurately</li> <li>Conduct a proper handover of patients during transition of care to and from another medic</li> </ul>	



TSC Category: Patient Care	TSC: Effective Communication in Nursing	
TSC Description	Demonstrate efficient communication to promote patients' physical and mental well- being to achieve health-related goals	
TSC Proficiency Level	Level 2	
TSC Proficiency Description	Provide information to patients, families and/or caregivers, and healthcare teams	
Knowledge	<ul> <li>Principles of effective verbal and non-verbal communication</li> <li>Methods to build trust and rapport with patients, families and healthcare teams</li> <li>Cultural influences on effective communication</li> <li>Principles of active listening</li> <li>Types of barriers in communication</li> <li>Organisational guidelines and procedures on communications</li> <li>Escalation policies and procedures</li> <li>Guidelines for documentation of interventions and/or communicated information provided to patient</li> </ul>	
Abilities	<ul> <li>Build rapport with patients, families and healthcare teams</li> <li>Communicate with patients and families to deliver care and facilitate understanding of patients' needs, taking into consideration cultural context of patients and their families</li> <li>Identify barriers to communication and escalate to relevant personnel</li> <li>Engage in effective verbal communication and active listening skills</li> <li>Check effectiveness of communication and adapt accordingly</li> <li>Document written, electronic and verbal communication clearly</li> <li>Secure patient privacy, security and confidentiality in communication provided</li> </ul>	



TSC Category: Quality and Pa	_	TSC: Infection Prevention and Control in Nursing Practice
TSC Description	Prevent the spread of infectious agents through infection control practices and regular audits to ensure preventive measures are in place	
<b>TSC Proficiency Level</b>	Level 2	
TSC Proficiency Description	Adhere to organisation's infection control and prevention processes	
Knowledge	<ul> <li>Basic medical terminologies</li> <li>Organisation's specific infection prevention and control procedures</li> <li>Standard and Transmission Based Precaution</li> <li>Infectious Disease Isolation policy</li> <li>General waste management</li> <li>Biohazard waste management</li> <li>Guidelines on disinfection and sterilisation procedures</li> <li>Five moments of hand hygiene and surgical hand wash procedures</li> <li>Patients' values and needs</li> </ul>	
Abilities	<ul> <li>Select and use appropriate Personal Protective Equipment (PPE)</li> <li>Practice standard and transmission-based precautions in accordance with patient's conditions</li> <li>Practice strict hand hygiene in accordance with five moments of patient's contact</li> <li>Reinforce appropriate infection control practices to patients and caregivers</li> </ul>	



TSC Category: Quality and Pa	atient Safety	TSC: Quality Improvement and Safe Practices
TSC Description	Drive continuous improvement, risk management and implementation of safety design principles to achieve quality and patient safety outcomes	
TSC Proficiency Level	Level 2	
TSC Proficiency Description	Assist in continuous improvement and patient safety processes within own work areas	
Knowledge	<ul> <li>Quality improvement concepts</li> <li>Patient safety concepts</li> <li>Individual role in preventing errors</li> <li>Rationale and principles of appropriate reporting of adverse events</li> </ul>	
<ul> <li>Abilities</li> <li>Suggest areas for continuous improvement in prehospital setting</li> <li>Apply continuous improvement techniques</li> <li>Apply best practice standards to provide safe care</li> <li>Carry out improvement activities in accordance with action plans under supervisi</li> </ul>		chniques provide safe care



TSC Category: Ambulance Op	perations Readiness	TSC: Special Situations in Prehospital Setting
TSC Description	Support the management of special situations in prehospital setting	
TSC Proficiency Level	Level 2	
TSC Proficiency Description	Assist in special situations	
Knowledge	<ul> <li>Definition of mass casualty incident</li> <li>Principles of management of a mass casualty incident</li> <li>Role of EMTs in a mass casualty incident</li> <li>Public health concerns of a hazardous materials incident</li> <li>Obvious signs and symptoms of a pregnant patient in delivery</li> </ul>	
Abilities	<ul> <li>Recognise a mass casualty incident</li> <li>Assist medical teams in management of a mass casualty incident</li> <li>Recognise the presence of hazardous materials (no need to identify exact material involved)</li> <li>Wear appropriate personal protective equipment in a hazardous material incident</li> <li>Active appropriate resources in a hazardous material incident</li> <li>Recognise a pregnant patient in delivery</li> </ul>	



TSC Category: Ambulance Op	perations Readiness	TSC: Ambulance Readiness and Maintenance
TSC Description	Maintain and manage inventory control and equipment for ambulance and storage area	
TSC Proficiency Level	Level 2	
<b>TSC Proficiency Description</b>	Perform inventory control and equipment checks	
Knowledge	<ul> <li>Rationale for ensuring operational readiness of the ambulance</li> <li>Ambulance equipment use and maintenance</li> <li>Principles of inventory management</li> </ul>	
Abilities	<ul> <li>Maintain cleanliness of ambulance and equipment</li> <li>Ensure consumables and medication are within validity date</li> <li>Conduct checks on equipment, materials and appliances to ensure that they are functioning appropriately</li> <li>Maintain the availability of materials and appliances</li> <li>Reinstate ambulance to operational state in between patients</li> </ul>	



#### **PROGRAM LISTING**

Refer to SSG's website for the list of programs.

#### **ACKNOWLEDGEMENT**

#### **Members of NPTC Sub-Panel for Emergency Medical Technician Training Roadmap**

Dr Nausheen Edwin Doctor Chair, National Pre-Hospital Emergency Care Training Committee

(Advisor) Unit for Pre-hospital Emergency Care (UPEC)

**Dr Lee Yue Yen (Chairperson)** Unit for Pre-hospital Emergency Care (UPEC)

Mr Yeo Chit Ming School of Applied and Health Sciences, ITE College East

Ms Siti Suhaila bin Bahari School of Health and Social Science, Nanyang Polytechnic

Ms Vivienne Teo School of Health and Social Science, Nanyang Polytechnic

Ms Daphne Tan SAF Medical Training Institute, Singapore Armed Forces

Ms Vikneswari Selathorai SAF Medical Training Institute, Singapore Armed Forces

MAJ Carolyn Low Civil Defence Academy, Singapore Civil Defence Force

**Dr Justin Ng**Singapore Civil Defence Force

**Dr Poon Kei Jun** Singapore Civil Defence Force

Ms Cheah Le Le SingHealth Alice Lee Institute of Advanced Nursing

Mr Enoch Chan Unit for Pre-hospital Emergency Care (UPEC)

#### REFERENCES

- 1. Definitions and Standards for Level 2 and Level 3 EMTs / Paramedics (2015)
- 2. Healthcare Services (Emergency Ambulance Service and Medical Transport Service) Regulations (2020)
- 3. Minimum Competencies List for Level 2 and Level 3 EMTs / Paramedics (2021)
- 4. Paramedic and EMT Professional Qualifications Framework, Healthcare Services Division, MOH (2014)
- 5. Standard and Scope of Practice for Level 2 EMTs in Singapore (2022)



For more information, please visit moh.gov.sg