FIRST EDITION 2022

STANDARD AND SCOPE OF PRACTICE:

Emergency Medical Technician (Level 2) and Paramedic (Level 3)

Table of Contents

Developed by
Level 2 and Level 3 PEC Skills and Competencies Review Workgroup
[A workgroup appointed by National Prehospital Emergency Care Training Committee (NPTC), Ministry of Health]

Reviewed by
National Prehospital Emergency Care Training Committee (NPTC), Ministry of Health
Unit of Prehospital Emergency Care (UPEC)
Hospital Services Division, Ministry of Health
Regulatory Compliance & Enforcement Division, Ministry of Health

This document is endorsed by Director, Medical Services – Ministry of Health in July 2022

BACKGROUND

The definitions and standards for Level 2/3/4 Paramedic Training were initially developed in Singapore in 2014. In response to the rapidly evolving prehospital emergency care (PEC) landscape in recent years and to better define the roles and competencies of PEC providers, a workgroup was convened in 2021 under the National Prehospital Emergency Care Training Committee (NPTC) to review the standards.

In 2022, the standard and scopes of practice for Emergency Medical Technician (EMT) and Paramedic were developed based on the revised standard by the same workgroup.

This document provides the detailed standards and scopes of practice for Emergency Medical Technician (EMT) and Paramedics in Singapore.

AGENCIES INVOLVED

Hospital Services Division (HSD), a division of Ministry of Health, Singapore.

National Prehospital Emergency Care Training Committee (NPTC) was established by the Ministry of Health in 2018. Its primary mission is to develop and maintain the professional standards of care for paramedics and EMTs to ensure a high standard of care and patient safety.

Regulatory Compliance & Enforcement Division (RCE), a division of Ministry of Health, Singapore.

Unit for Prehospital Emergency Care (UPEC) was established by the Ministry of Health in Feb 2013 to coordinate, monitor and implement the various PEC strategies, as well as to provide clinical and operational oversight. Its vision is to establish a world-class, future ready PEC system in Singapore, readily accessible to all and providing excellent outcomes for a Healthier Population through data science.

STANDARD & SCOPE OF PRACTICE FOR LEVEL 2 EMTS IN SINGAPORE (2022)

1. OVERVIEW

1.1. The **"Standard of Practice"** refers to the minimum standard that a Level 2 Emergency Medical Technician (EMT) in Singapore is reasonably expected to perform up to, or the lowest level of proficiency that they are expected to achieve. This minimum standard is to ensure that safe and effective care is delivered to every patient.

1.2. The "**Scope of Practice"** refers to the upper boundaries within which a Level 2 EMT in Singapore is permitted to practice. The EMT is not permitted to practice skills that are beyond their scope of practice.

1.3. Together, the **"Standard of Practice"** and **"Scope of Practice"** define the **"Boundaries of Practice"** of the Level 2 EMT in Singapore.

1.4. The **"Boundaries of Practice"** apply to Level 2 EMTs working in agencies under the Ministry of Home Affairs (MHA), and Ministry of Defence (MINDEF) e.g. Singapore Civil Defence Force (SCDF), the Singapore Armed Forces (SAF), and to private ambulance operators.

1.5. The **"Boundaries of Practice"** may be changed over time due to evolving evidence pertaining to new knowledge and interventions applied in the pre-hospital setting. Updates will be provided to all ambulance service providers and stakeholders whenever modifications are made.

2. DEFINITIONS

2.1. The levels of pre-hospital personnel in Singapore are as follows:

Level 1: Basic First Aider

Level 2: Emergency Medical Technician (EMT)

Level 3: Paramedic

Level 4: Advanced Paramedic

3. CERTIFICATION AND QUALIFICATIONS

3.1 A Level 2 EMT in Singapore is a healthcare professional who holds an EMT certificate approved by the Ministry of Health, which must be **valid at all times of patient contact.** These include:

a. WSQ Higher Certificate in Healthcare Support (Pre-Hospital Emergency Medical Services); or

b. Certificate of Completion of Emergency Medical Technician Course [incorporating WSQ Higher Certificate in Healthcare (Nursing) and/or other relevant Technical Skills and Competencies as approved by SkillsFuture Singapore] issued by institutions approved by MOH. Examples of these institutions are:

i. SingHealth Alice Lee Institute of Advanced Nursing

ii. SAF Medical Training Institute

iii. Civil Defence Academy

iv. HMI Institute of Health Sciences

v. Co-operative of Singapore Civil Defence Force Employees or

c. Any other Emergency Medical Technician (Basic) qualification as approved by the Director of Medical Services

3.2 With regard to **EMT re-certification,** the following applies:

a. EMTs under SCDF have to renew their certificates by taking the EMT Certification Test (EMTCT) at frequencies stipulated by SCDF

b. EMTs employed under private ambulance operators must renew their certificates every 2 years at MOH-approved institutions (e.g. SingHealth Alice Lee Institute of Advanced Nursing) prior to certificate expiry.

3.3 All Level 2 EMTs must ensure that they hold **valid certificates** for the following:

a. Basic Cardiac Life Support (BCLS)

b. CPR + Automated External Defibrillator (AED)

4. PROFESSIONAL DEVELOPMENT

4.1 All EMTs must engage in **continuous learning**, especially with regard to the latest advancements in pre-hospital care, and the practice of evidence-based medicine. This is to ensure that a standard of excellence is upheld in the pre-hospital care delivered to all patients.

4.2 **Continuous learning** can be done through the following platforms, the list of which is non-exhaustive:

a. Training courses and workshops

b. Local, regional or international conferences

c. Morbidity and Mortality rounds

d. Journal clubs

e. EMS Chat sessions

f. Audit and follow-up of own cases

4.3 EMTs are highly encouraged to engage their peers and juniors in **pre-hospital education**, teaching and guiding them where the opportunity arises

4.4 EMTs are also highly encouraged to participate actively in **pre-hospital research activities** for the purposes of advancing new frontiers in pre-hospital care.

5. ACCOUNTABILITY

5.1. The Clinical Governance Officer of each ambulance service is responsible for ensuring that the Level 2 EMTs in their respective services maintain the above valid certificates issued by recognized institutions in Singapore, and that they consistently perform up to the minimum standards and expected levels of proficiency outlined in the "Standard of Practice" column in Table 1.

5.2. Should the EMT fall short of the standards outlined, the Clinical Governance Officer is to ensure that the EMT undergoes relevant remediation training and subsequent audit.

5.3. The Clinical Governance Officer of each ambulance service is also responsible for ensuring that the EMTs **do not** practice skills listed under the "Beyond Scope of Practice" column in Table 1 below. Practicing beyond the scope of practice is **not permitted**, and the Clinical Governance Officer will be held liable for the EMT's actions.

5.4. EMTs are also expected to practice according to the internal policies and protocols established by the Clinical Governance Officer of the ambulance service which employs them. This applies to situations whereby the ambulance service may **disallow** the EMT from practicing a skill listed under the "Standard of Practice" column of Table 1.

5.5. Conversely, should their ambulance service provider require them to practice a skill **not listed** under either the "Standard of practice" or "Beyond scope of practice" columns of Table 1, the ambulance service provider must ensure that the EMT has received sufficient documented training to practice this skill safely in the pre-hospital setting. EMTs would also only be allowed to perform these additional interventions if given permission, at the discretion of the Clinical Governance Officer or the appointed physicians.

5.6. Due to **special requirements**, EMTs specifically from agencies under MHA and MINDEF, **may** be allowed to perform interventions that are beyond the permitted scope of practice, if given adequate training and permission at the discretion of the Clinical Governance Officer or the appointed physicians.

6. BOUNDARIES OF PRACTICE

6.1. Legal, Professional and Ethical Practice

All EMTs are expected to:

a. Practice safely and effectively **within their scope of practice**, as well as **within legal boundaries** in Singapore,

b. **Be advocates** for the patient's rights, and always act with the patient's best interests in mind,

c. Provide every patient with an **appropriate level of dignity and care**, taking into account local best practices and evidence-based medicine,

d. **Respect socio-cultural differences** and be non-discriminatory in their treatment of a patient,

e. Establish **clear communication** with the patient and relatives wherever possible, including the use of interpreters as necessary,

f. Maintain **clear and concise records** of patient care episodes,

g. **Accept responsibility and accountability** for professional decisions,

h. Conduct an **appropriate handover** during transition of care to and from another medical team, and

i. Interact with fellow healthcare providers with **respect** and **collegiality.**

6.2 Patient Care

All EMTs are expected to:

a. Understand the **role of the EMT** on board the Medical Transport Service (MTS) and/or Emergency Ambulance Service (EAS)

b. Be familiar with and able to properly handle all **equipment** on board the MTS or EAS, depending on which they have been assigned to

c. Be familiar with and able to initiate and execute the MTS or EAS Provider's medical **protocols**, depending on which they have been assigned to

d. Adhere to **internal policies and protocols** specific to their ambulance service provider, in particular with regard to **administration of medications**

6.3 **Sections 1 to 11** below outline the **boundaries of practice** of a Level 2 EMT in Singapore. The **"Standard of practice"** columns outline the minimum level of knowledge and skills in pre-hospital medical care expected of a Level 2 EMT. The **"Beyond scope of practice"** columns define the skills that the Level 2 EMT is not permitted to practice in Singapore, thus outlining the upper boundary of their practice.

Section 1	Standard of practice		BEYOND Scope of practice
INITIAL ASSESSMENT	**Knowledge**	**Skills**	
	1. Explain the principles of **scene evaluation**, including considering the safety of the team 2. Describe the rationale and components of the **primary survey** and **secondary survey** 3. Describe the **AVPU scale** and its underlying components 4. Describe the approach to **history-taking** and **initial management** for common presenting complaints 5. Describe the different **vital signs** (i.e. blood pressure, heart rate, pulse oximeter, respiratory rate, body temperature), and the **equipment** used to measure them 6. Explain the different levels of **patient acuity** e.g. P1, P2, P3, and when to escalate management to appropriate services	1. **Evaluate a scene** to identify signs of danger (e.g. physical hazards, toxic gases etc.), and call for appropriate reinforcements when management falls beyond their scope of practice (e.g. 995, EAS, or police etc.) 2. Perform the **primary survey** and **secondary survey** using the skills described in Sections 1-11 of Table 1 3. Assess **general responsiveness** e.g. by using AVPU 4. Obtain **history** from the patient and/or bystanders 5. Obtain and monitor **vital signs readings** (i.e. blood pressure, heart rate, pulse oximeter, respiratory rate and body temperature) 6. Assess **patient acuity** e.g. P1, P2, P3	

Section 2	Standard of practice		BEYOND Scope of practice
AIRWAY	**Knowledge**	**Skills**	1. Insert **supraglottic airway device** 2. Perform **endotracheal intubation** 3. Perform **tracheobronchial suctioning** of an intubated patient 4. Perform **needle cricothyroidotomy** 5. Perform **surgical cricothyroidotomy** 6. **Transport** and **monitor** an **intubated patient** without supervision by paramedic, ambulance registered nurse (RN) or ambulance doctor
	1. Describe the anatomical differences between the **adult** and **paediatric airway** 2. State the common causes of **airway obstruction** 3. Identify the signs and symptoms of **airway obstruction** (e.g. stridor, choking, foreign body etc.) 4. Describe the different manoeuvres used to **optimize airway** 5. Describe the different manoeuvres used to relieve **foreign body airway obstruction** 6. Explain the purpose of the **recovery position** 7. Identify the different **supraglottic and airway devices** available, and state the indications for their use 8. List the indications for **suctioning of tracheostomy**	1. Assess **airway patency** 2. Perform manoeuvres to **optimize airway** (e.g. head-tilt-chin-lift and jaw thrust) 3. Perform manoeuvres to relieve **foreign body airway obstruction** (e.g. finger sweep, suctioning, Heimlich) 4. Place patients into the **recovery position** 5. Insert an appropriately sized **oropharyngeal airway device** correctly 6. Perform **suctioning of tracheostomy** appropriately	

Section 3	Standard of practice		BEYOND Scope of practice
BREATHING	**Knowledge**	**Skills**	1. Perform **needle thoracostomy** 2. Perform **finger thoracostomy** 3. Insert **chest tube** 4. **Set or adjust ventilator settings** for patient on non-invasive or invasive ventilation
	1. Describe the anatomy and physiology of the **respiratory system** 2. Describe the definitions of **common respiratory emergencies (**e.g. asthma, chronic obstructive pulmonary disease (COPD), acute pulmonary edema, pulmonary embolism, pneumothorax etc.) 3. Identify the **signs of respiratory distress** 4. State the normal range for **pulse oximeter readings** 5. Identify the devices used for delivery of **supplementary oxygen**, and describe the principles of administration of **oxygen therapy** 6. Identify the devices used for administration of **nebulised** and **inhaled medications** 7. Identify the devices used for **manual ventilation** of patients	1. Assess if patient's **breathing** is adequate 2. Assess the severity of **respiratory distress** 3. Interpret **pulse oximeter** reading 4. Provide **oxygen therapy** through intranasal cannula, simple face mask and non-rebreather mask appropriately for patient's condition 5. Apply **nebuliser mask** during administration of nebulised medications correctly 6. Apply **spacer device** during administration of inhaled medications correctly 7. Perform **bag-valve-mask ventilation** and **bag-valve-tube ventilation** correctly	

Section 4	Standard of practice		BEYOND Scope of practice
CIRCULATION	**Knowledge**	**Skills**	1. Perform **manual defibrillation** 2. Perform **intraosseous cannula insertion** 3. Perform **synchronised cardioversion** 4. Perform **transcutaneous pacing** 5. Insert **invasive lines** (e.g. intra-arterial line, central venous catheter, dialysis catheter etc.)
	1. Describe the anatomy and physiology of the **cardiovascular system** 2. State the causes and signs and symptoms of **hypotension** and **shock** 3. Describe the definitions and clinical presentation of **life-threatening cardiac emergencies** (e.g. acute coronary syndrome and acute myocardial infarction etc.) 4. Identify normal and abnormal **capillary refill time** and **pulse** 5. State the normal range for **blood pressure** and **heart rate** 6. List the common **sites of hemorrhage** 7. Recognise **cardiac arrest ECG rhythms:** a) Asystole b) Pulseless electrical activity c) Pulseless ventricular tachycardia d) Ventricular fibrillation 8. Describe correct **CPR techniques** for adult, child, infant and neonate 9. Describe correct **defibrillation techniques** for adult and child	1. Assess **capillary refill time** and **pulse** 2. Interpret **blood pressure** and **heart rate** 3. Arrest **active hemorrhage** (e.g. application of direct pressure, bandaging, dressings, and tourniquet etc.) 4. Perform **lead II ECG monitoring** 5. Interpret **cardiac arrest ECG rhythms:** a) Asystole b) Pulseless electrical activity c) Pulseless ventricular tachycardia d) Ventricular fibrillation 6. Perform **CPR** for adult, child, infant and neonate 7. Perform **defibrillation** using automated external defibrillator on adult and child correctly	

Section 5	Standard of practice		BEYOND Scope of practice
DISABILITY	**Knowledge**	**Skills**	
	1. Describe the anatomy and basic physiology of the **neurological system** 2. Explain the definitions and signs and symptoms of **hypoglycemia** and **hyperglycemia** 3. List the components of the **Glasgow Coma Score (GCS)** 4. List the common causes of an **abnormal GCS** 5. State the normal range for **pupil sizes** 6. List the common causes of **abnormal pupil sizes** 7. Describe the causes and signs and symptoms of **stroke** 8. Recognise **generalized tonic clonic seizure**	1. Assess and interpret **Glasgow Coma Score** 2. Assess and interpret **pupil size** 3. Perform **blood glucose monitoring** 4. Perform **stroke screening** (e.g. by using Cincinnati Prehospital Stroke Scale) 5. Manage **generalised tonic clonic seizure**	

Section 6	Standard of practice		BEYOND Scope of practice
EXPOSURE	**Knowledge**	**Skills**	
	1. State the normal range for **body temperature** 2. Describe the definition and causes of **heat injury** 3. Recognise the signs and symptoms of **heat injury**	1. Interpret **body temperature** reading i.e. hypothermia, hyperthermia 2. Manage **heat injury** (e.g. removing clothes, apply cold compress etc.)	

Section 7	Standard of practice		BEYOND Scope of practice
TRAUMA	**Knowledge**	**Skills**	1. Perform **needle decompression** of tension pneumothorax 2. Apply **traction splint** 3. Perform **manipulation and reduction** of dislocations or fractures 4. Perform **toilet and suture** of wounds
	1. Explain the differences between **blunt** and **penetrating trauma** 2. Describe **hemorrhagic** and **neurogenic shock** 3. Describe the indications and principles of **spinal motion restriction** 4. Identify **suspected cervical spine injury** 5. Identify **sites of active hemorrhage** 6. List the techniques used to **arrest hemorrhage** (e.g. application of direct pressure, bandagings, dressings, and tourniquet etc.) 7. State the complications that can occur with **tourniquet application** 8. Recognise different types of **burn injuries** 9. Recognise **impaled object** 10. Recognise **organ evisceration** 11. Recognise **limb amputation** 12. Identify **limb fracture and joint dislocation** 13. Describe how to **extricate** a patient safely 14. Identify equipment used for **transfer of patients** in trauma	1. **Restrict cervical spinal motion** in patients with suspected cervical spine injury using appropriate equipment (e.g. cervical collar, head blocks, spinal immobilisation, spinal board etc.) 2. Perform **helmet stabilisation/ removal** 3. Perform **log roll** 4. Arrest **active hemorrhage** (e.g. application of direct pressure, bandagings, dressings, and tourniquet etc.) 5. Assess the **extent of burns** (e.g. based on rule of nines) 6. Manage different types of **burn injuries** appropriately 7. Manage **impaled object** and immobilise object appropriately during transfer of patient 8. Manage **organ evisceration** (i.e. cover with moist sterile gauze) 9. Manage **limb amputation** (e.g. preserving and transferring amputated part, protecting remnant limb etc.)	

TRAUMA (Con't)		10. Manage **limb fracture and joint dislocation** (e.g. apply arm sling or splinting device to upper and lower limb etc.) 11. Extricate entrapped casualties using **extrication device** 12. **Transfer patients safely** with appropriate equipment in trauma (e.g. canvas sheet, orthopaedic stretcher / scoop, spinal board etc.)	

Section 8	Standard of practice		BEYOND Scope of practice
PREPARATION & ADMINISTRATION OF MEDICATIONS	**Knowledge**	**Skills**	1. Administer **intraosseous drugs** 2. Administer **intraosseous crystalloid infusion** 3. Administer or maintain an **infusion of blood** or **blood products** 4. Administer medications via the following routes: a) Rectal b) Intravenous **(excluding crystalloid infusions)** c) Intra-nasal d) Intra-arterial
	1. Explain their ambulance service provider's policies and protocols with regard to **administration of medications** 2. Describe the principles of patient safety when **administering medications** 3. Describe the **pharmacology** of medications used (including indications, contraindications, mechanism of action, side effects) 4. Explain **storage and safe-keeping** issues for medications 5. Describe equipment used for **intravenous access and drips**	1. Adhere to their ambulance service provider's policies and protocols with regard to **administration of medications** 2. Prepare **oral**, **sublingual, inhaled / nebulised medications** 3. Prepare **intravenous medications** and **crystalloids** 4. Administer **oral**, **sublingual, inhaled / nebulised** medications in accordance with protocols, under instructions by a Level 3 or 4 paramedic, ambulance RN or ambulance doctor 5. Monitor **intravenous peripheral lines and infusions** 6. Assist patient in self-administration of the following **existing prescribed medications** in a life-threatening situation: a) Asthma / COPD MDI relievers e.g. Ventolin, Symbicort etc. b) Epi-pen auto-injector	

Section 9	Standard of practice		BEYOND Scope of practice
SPECIAL SITUATIONS	**Knowledge**	**Skills**	
	1. State the definition and describe the principles of management of a **mass casualty incident (MCI)** 2. Describe the role of EMTs in a **mass casualty incident** 3. Explain the public health concerns of a **hazardous materials incident** 4. Describe the obvious signs and symptoms of a **pregnant patient in delivery**	1. Manage a **hazardous materials incident** a) **Recognise the presence** of **hazardous materials** (no need to identify exact material involved) b) Wear appropriate **personal protective equipment (PPE)** c) **Activate appropriate resources** (e.g. HAZMAT team) 2. Recognise a **pregnant patient in delivery**	

<table>
<tr><th>Section 10</th><th colspan="2">Standard of practice</th><th>BEYOND Scope of practice</th></tr>
<tr><td rowspan="5">CLINICAL ASSESSMENT & MANAGEMENT</td><td>Knowledge</td><td>Skills</td><td rowspan="5">1. As described in the “Beyond scope of practice” columns in Sections 1-9, and 11 of Table 1</td></tr>
<tr><td colspan="2">Approaches to Symptoms</td></tr>
<tr><td>1. Develop an approach to identification and assessment of patients with the following <u>undifferentiated symptoms</u>:

a) Chest pain
b) Shortness of breath
c) Severe abdominal pain
d) Altered mental status
e) Syncope
f) Seizure

2. Understand why, when and how to escalate to relevant parties when management falls <u>beyond their scope of practice</u></td><td>1. Institute initial management of patients with the following <u>undifferentiated symptoms:</u>

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b) Shortness of breath
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d) Altered mental status
e) Syncope
f) Seizure</td></tr>
<tr><td colspan="2">Conditions</td></tr>
<tr><td>1. Understand the pathophysiology and clinical presentation of these <u>differentiated conditions</u>:

a) Cardiac arrest
b) COPD / Asthma
c) Stroke
d) Hypoglycemia
e) Anaphylaxis
f) Trauma
g) Burns

2. Understand why, when and how to escalate to relevant parties when management falls <u>beyond their scope of practice</u></td><td>1. Initiate management of the following <u>differentiated conditions</u>:

a) Cardiac arrest
b) COPD / Asthma
c) Stroke
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</table>

Section 11	Standard of practice		BEYOND Scope of practice
GENERAL	**Knowledge**	**Skills**	1. Insert **nasogastric tube** 2. Insert **urinary catheter** 3. Re-insert **dislodged devices** (e.g. tracheostomy tube etc.) 4. Obtain **arterial blood sample** 5. Obtain **blood cultures**
	1. Describe the **common chronic diseases (**e.g. hypertension, hyperlipidemia and diabetes mellitus etc.) 2. Describe the definitions, clinical presentation, and modes of transmission of **common infectious diseases** 3. Explain the rationale and indication for wearing of **personal protective equipment (PPE)** 4. Explain the rationale and indication for **decontamination** of work area and equipment used after managing a standard or infectious case 5. Explain the principles of proper and appropriate **documentation** 6. Explain the rationale and principles of appropriate **reporting of adverse events** 7. Describe the principles **of proper handover** of patients during transition of care 8. Explain the importance of extending **empathy** to patients and next-of-kin in the pre-hospital setting 9. List the **common medical devices** that patients may have in-situ and how to **transfer** them safely	1. **Don and doff PPE** safely and appropriately to prevent contamination of self and others 2. Manage a **suspected infectious disease** case safely a) Recognise suspected infectious disease b) Wear appropriate PPE c) Inform receiving facility (either prior to, or on arrival) 3. Perform **decontamination** of work area and equipment used after managing a standard or infectious case 4. Perform **documentation of events** accurately 5. Conduct a **proper handover** of patients during transition of care to and from another medical team 6. **Provide emotional support** to patients and next-of-kin 7. **Transfer and maintain** patients with medical devices in-situ (e.g. nasogastric tubes, tracheostomy tubes and urinary catheter, etc.)	

GENERAL (Con't)	10. List ambulance transport equipment used during **transfer of patients,** and describe their **function**	8. Use ambulance transport equipment to **transfer patients safely** (e.g. ambulance trolley, wheelchair, stretcher etc.)	

7. REFERENCES

a. Definitions and Standards for Level 2 and Level 3 EMTs / Paramedics (2015)

b. Healthcare Services (Emergency Ambulance Service and Medical Transport Service) Regulations (2021)

c. Minimum Competencies List for Level 2 and Level 3 EMTs / Paramedics (2021)

d. Paramedic and EMT Professional Qualifications Framework, Healthcare Services Division, MOH (2014)

STANDARD & SCOPE OF PRACTICE FOR LEVEL 3 PARAMEDICS IN SINGAPORE (2022)

1. OVERVIEW

1.1. The **"Standard of Practice"** refers to the minimum standard that a Level 3 Paramedic in Singapore is reasonably expected to perform up to, or the lowest level of proficiency that they are expected to achieve. This minimum standard is to ensure that safe and effective care is delivered to every patient.

1.2. The "**Scope of Practice"** refers to the upper boundaries within which a Level 3 Paramedic in Singapore permitted to practice. The Paramedic is not permitted to practice skills that are beyond their scope of practice.

1.3. Together, the **"Standard of Practice"** and **"Scope of Practice"** define the **"Boundaries of Practice"** of the Level 3 Paramedic in Singapore.

1.4. The **"Boundaries of Practice"** apply to Level 3 Paramedics working in agencies under the Ministry of Home Affairs (MHA), and Ministry of Defence (MINDEF) e.g. Singapore Civil Defence Force (SCDF), the Singapore Armed Forces (SAF), and to private ambulance operators.

1.5. The **"Boundaries of Practice"** may be changed over time due to evolving evidence pertaining to new knowledge and interventions applied in the pre-hospital setting. Updates will be provided to all ambulance service providers and stakeholders whenever modifications are made.

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2.1. The levels of pre-hospital personnel in Singapore are as follows:

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Level 2: Emergency Medical Technician (EMT)

Level 3: Paramedic

Level 4: Advanced Paramedic

3. CERTIFICATION AND QUALIFICATIONS

3.1 A Level 3 Paramedic in Singapore is a healthcare professional who holds a valid certificate issued by institutions approved by the Ministry of Health, which must be **valid at all times of patient contact.** Examples of these institutions are:

a. Singapore Armed Forces Medical Training Institute (SMTI),

b. Civil Defence Academy (CDA),

c. Nanyang Polytechnic (NYP) and

d. Institute of Technical Education (ITE)

e. Any other qualification as approved by the Director of Medical Services

3.2 With regard to **Paramedic re-certification,** the following applies:

a. Paramedics under SCDF have to renew their certificates by taking the Paramedic Specialist Certification Test (PSCT) at frequencies stipulated by SCDF

b. Paramedics employed under private ambulance operators accredited through ITE (higher NITEC) or who are qualified under the Joint ITE-UPEC Certificate in Prehospital Emergency Care must renew their certificates every 2 years prior to certificate expiry.

3.3 All Level 3 Paramedics must ensure that they hold **valid certificates** for the following:

a. Basic Cardiac Life Support (BCLS)

b. CPR + Automated External Defibrillator (AED)

3.4 Level 3 paramedics are encouraged to be certified in the following:

a. Advanced Cardiac Life Support (ACLS)

b. Advanced Paediatric Life Support (APLS)

c. Pre-Hospital Trauma Life Support (PHTLS)

d. HAZMAT Medical Life Support (HMLS)

4. PROFESSIONAL DEVELOPMENT

4.1 All Paramedics must engage in **continuous learning**, especially with regard to the latest advancements in pre-hospital care, and the practice of evidence-based medicine. This is to ensure that a standard of excellence is upheld in the pre-hospital care delivered to all patients.

4.2 **Continuous learning** can be done through the following platforms, the list of which is non-exhaustive:

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f. Audit and follow-up of own cases

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4.4 Paramedics are also highly encouraged to participate actively in **pre-hospital research activities** for the purposes of advancing new frontiers in pre-hospital care

5. ACCOUNTABILITY

5.1. The Clinical Governance Officer of each ambulance service is responsible for ensuring that the Level 3 Paramedics in their respective services maintain the above valid certificates issued by recognised institutions in Singapore, and that they consistently perform up to the expected levels of proficiency outlined in the "Standard of Practice" column in Table 1.

5.2. In the event that the Paramedic fall short of the standards outlined, the Clinical Governance Officer is to ensure that the Paramedic undergoes relevant remediation training and subsequent audit.

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5.6. Due to **special requirements**, Paramedics specifically from agencies under MHA and MINDEF, **may** be allowed to perform interventions that are beyond the permitted scope of practice, if given adequate training and permission at the discretion of the Clinical Governance Officer or the appointed physicians.

6. BOUNDARIES OF PRACTICE

6.1. Legal, Professional and Ethical Practice

All Paramedics are expected to:

a. Practice safely and effectively **within their scope of practice**, as well as **within legal boundaries** in Singapore,

b. **Be advocates** for the patient's rights, and always act with the patient's best interests in mind,

c. Provide every patient with an **appropriate level of dignity and care**, taking into account local best practices and evidence-based medicine,

d. **Respect socio-cultural differences** and be non-discriminatory in their treatment of a patient,

e. Establish **clear communication** with the patient and relatives wherever possible, including the use of interpreters as necessary,

f. Maintain **clear and concise records** of patient care episodes,

g. **Accept responsibility and accountability** for professional decisions,

h. Conduct an **appropriate handover** during transition of care to and from another medical team, and

i. Interact with fellow healthcare providers with **respect** and **collegiality.**

6.2 Patient Care

All Paramedics are expected to:

a. Understand the **role of the Paramedic** on board the Medical Transport Service (MTS) and/or Emergency Ambulance Service (EAS)

b. Be familiar with and able to properly handle all **equipment** on board the MTS or EAS, depending on which they have been assigned to

c. Be familiar with and able to initiate and execute the MTS or EAS Provider's medical **protocols**, depending on which they have been assigned to

d. Adhere to **internal policies and protocols** specific to their ambulance service provider, in particular with regard to **administration of medications**

6.3 **Sections 1 to 11** below outline the **boundaries of practice** of a Level 3 Paramedic in Singapore. The **"Standard of practice"** columns outline the minimum level of knowledge and skills in pre-hospital medical care expected of a Level 3 Paramedic. The **"Beyond scope of practice"** columns defines the skills that the Level 3 Paramedic is not permitted to practice in Singapore, thus outlining the upper boundary of their practice.

Section 1	Standard of practice		BEYOND Scope of practice
INITIAL ASSESSMENT	**Knowledge**	**Skills**	
	1. Explain the principles of **scene evaluation**, including considering the safety of the team 2. Describe the rationale and components of the **primary survey** and **secondary survey** 3. Describe the **AVPU scale** and its underlying components 4. Describe the approach to **history-taking** and **initial management** for common presenting complaints 5. Describe the different **vital signs** (i.e. blood pressure, heart rate, pulse oximeter, respiratory rate, body temperature), and the **equipment** used to measure them 6. Explain the different levels of **patient acuity** e.g. P1, P2, P3, and when to escalate management to appropriate services 7. Perform **differential diagnoses**	1. **Evaluate a scene** to identify signs of danger (e.g. physical hazards, toxic gases etc.), and call for appropriate reinforcements when management falls beyond their scope of practice (e.g. 995, EAS, or police etc.) 2. Perform the **primary survey** and **secondary survey** using the skills described in Sections 1-11 of Table 1 3. Assess **general responsiveness** e.g. by using AVPU 4. Obtain **history** from the patient and/or bystanders 5. Obtain and monitor **vital signs readings** (i.e. blood pressure, heart rate, pulse oximeter, respiratory rate and body temperature) 6. Assess **patient acuity** e.g. P1, P2, P3 7. Use paediatric emergency tape to estimate weight, medication dose and equipment size for paediatric patients (e.g. Broselow tape)	

Section 2	Standard of practice		BEYOND Scope of practice
AIRWAY	**Knowledge**	**Skills**	1. Perform **endotracheal intubation** 2. Perform **tracheobronchial suctioning** of an intubated patient 3. Perform **needle cricothyroidotomy** 4. Perform **surgical cricothyroidotomy** 5. **Transport** and **monitor** an **intubated patient** without supervision by ambulance doctor
	1. Describe the anatomical differences between the **adult** and **paediatric airway** 2. State the common causes of **airway obstruction** 3. Identify the signs and symptoms of **airway obstruction** (e.g. stridor, choking, foreign body etc.) 4. Describe the different manoeuvres used to **optimise airway** **5.** Describe the different manoeuvres used to relieve **foreign body airway obstruction** **6.** Explain the purpose of the **recovery position** 7. Identify the different **supraglottic and airway devices** available, and state the indications for their use 8. List the indications for **suctioning of tracheostomy**	1. Assess **airway patency** 2. Perform manoeuvres to **optimize airway** (e.g. head-tilt-chin-lift and jaw thrust) 3. Perform manoeuvres to relieve **foreign body airway obstruction** (e.g. finger sweep, suctioning, Heimlich) **4.** Place patients into the **recovery position** 5. Insert an appropriately sized **oropharyngeal airway device** correctly **6.** Insert appropriate **supraglottic airway device** 7. Perform **suctioning of tracheostomy** appropriately	

Section 3	Standard of practice		BEYOND Scope of practice
BREATHING	**Knowledge**	**Skills**	1. Perform **needle thoracostomy** 2. Perform **finger thoracostomy** 3. Insert **chest tube** 4. **Set or adjust ventilator settings** for patient on non-invasive or invasive ventilation
	1. Describe the anatomy and physiology of the **respiratory system** 2. Describe the definitions of **common respiratory emergencies (**e.g. asthma, chronic obstructive pulmonary disease (COPD), acute pulmonary edema, pulmonary embolism, pneumothorax etc.) 3. Identify the **signs of respiratory distress** 4. State the normal range for **pulse oximeter readings** 5. Identify the devices used for delivery of **supplementary oxygen**, and describe the principles of administration of **oxygen therapy** **6.** Identify the devices used for administration of **nebulised** and **inhaled medications** 7. Identify the devices used for **manual ventilation** of patients	1. Assess if patient's **breathing** is adequate 2. Assess the severity of **respiratory distress** 3. Interpret **pulse oximeter** reading 4. Perform lung auscultation and **identify wheeze and/or crepitations** 5. Provide **oxygen therapy** through intranasal cannula, simple face mask and non-rebreather mask appropriately for patient's condition 6. Apply **nebuliser mask** during administration of nebulised medications correctly 7. Apply **spacer device** during administration of inhaled medications correctly 8. Perform **bag-valve-mask ventilation** and **bag-valve-tube ventilation** correctly	

Section 4	Standard of practice		BEYOND Scope of practice
CIRCULATION	**Knowledge**	**Skills**	1. Perform **manual defibrillation** 2. Perform **synchronised cardioversion** 3. Perform **transcutaneous pacing** 4. Insert **invasive lines** (e.g. intra-arterial line, central venous catheter, dialysis catheter etc.)
	1. Describe the anatomy and physiology of the **cardiovascular system** 2. State the causes and signs and symptoms of **hypotension** and **shock** 3. Describe the definitions and clinical presentation of **life-threatening cardiac emergencies** (e.g. acute coronary syndrome and acute myocardial infarction etc.) 4. Identify normal and abnormal **capillary refill time** and **pulse** **5.** State the normal range for **blood pressure** and **heart rate** 6. List the common **sites of hemorrhage** **7.** Recognise **cardiac arrest ECG rhythms:** a) Asystole b) Pulseless electrical activity c) Pulseless ventricular tachycardia d) Ventricular fibrillation 8. Describe correct **CPR techniques** for adult, child, infant and neonate 9. Describe correct **defibrillation techniques** for adult and child	**1.** Assess **capillary refill time** and **pulse** **2.** Interpret **blood pressure** and **heart rate** **3.** Arrest **active hemorrhage** (e.g. application of direct pressure, bandagings, dressings, and tourniquet etc.) **4.** Perform **lead II ECG monitoring** **5.** Interpret **cardiac arrest ECG rhythms:** a) Asystole b) Pulseless electrical activity c) Pulseless ventricular tachycardia d) Ventricular fibrillation 6. Lead the team in **cardiopulmonary resuscitation** for adult, child, infant and neonate 7. Perform **defibrillation** using automated external defibrillator on adult and child correctly **8.** Perform **intraosseous cannula insertion**	

Section 5	Standard of practice		BEYOND Scope of practice
DISABILITY	**Knowledge**	**Skills**	
	1. Describe the anatomy and basic physiology of the **neurological system** 2. Explain the definitions and signs and symptoms of **hypoglycemia** and **hyperglycemia** **3.** List the components of the **Glasgow Coma Score (GCS)** 4. List the common causes of an **abnormal GCS** 5. State the normal range for **pupil sizes** 6. List the common causes of **abnormal pupil sizes** 7. Describe the causes and signs and symptoms of **stroke** 8. Recognise **generalized tonic clonic seizure**	1. Assess and interpret **Glasgow Coma Score** 2. Assess and interpret **pupil size** 3. Perform **blood glucose monitoring** 4. Perform **stroke screening** (e.g. by using Cincinnati Prehospital Stroke Scale) 5. Manage **generalised tonic clonic seizure**	

Section 6	Standard of practice		BEYOND Scope of practice
EXPOSURE	**Knowledge**	**Skills**	
	1. State the normal range for **body temperature** 2. Describe the definition and causes of **heat injury** 3. Recognise the signs and symptoms of **heat injury** 4. Recognise the signs and symptoms **of cold injury**	1. Interpret **body temperature** reading i.e. hypothermia, hyperthermia 2. Manage **heat injury** (e.g. removing clothes, apply cold compress etc.) 3. Manage **cold injury**	

Section 7	Standard of Practice		BEYOND Scope of practice
TRAUMA	**Knowledge**	**Skills**	1. Perform **needle decompression** of tension pneumothorax 2. Apply **traction splint** 3. Perform **manipulation and reduction** of dislocations or fractures 4. Perform **toilet and suture** of wounds
	1. Explain the differences between **blunt** and **penetrating trauma** 2. Describe **hemorrhagic** and **neurogenic shock** 3. Describe the indications and principles of **spinal motion restriction** 4. Identify **suspected cervical spine injury** 5. Identify **sites of active hemorrhage** 6. List the techniques used to **arrest hemorrhage** (e.g. application of direct pressure, bandagings, dressings, and tourniquet etc.) 7. State the complications that can occur with **tourniquet application** 8. Recognise different types of **burn injuries** 9. Recognise **impaled object** 10. Recognise **organ evisceration** 11. Recognise **limb amputation** 12. Identify **limb fracture and joint dislocation** 13. Describe how to **extricate** a patient safely	1. **Restrict cervical spinal motion** in patients with suspected cervical spine injury using appropriate equipment (e.g. cervical collar, head blocks, spinal immobilisation, spinal board etc.), including for paediatric patients 2. Perform **helmet stabilisation/ removal** 3. Perform **log roll** 4. Arrest **active hemorrhage** (e.g. application of direct pressure, bandagings, dressings, and tourniquet etc.) 5. Assess the **extent of burns** (e.g. based on rule of nines) 6. Manage different types of **burn injuries** appropriately 7. Manage **impaled object** and immobilise object appropriately during transfer of patient 8. Manage **organ evisceration** (i.e. cover with moist sterile gauze)	

TRAUMA (Con't)	14. Identify equipment used for **transfer of patients** in trauma	9. Manage **limb amputation** (e.g. preserving and transferring amputated part, protecting remnant limb etc.) 10. Manage **limb fracture and joint dislocation** (e.g. apply arm sling or splinting device to upper and lower limb etc.) 11. Extricate entrapped casualties using **extrication device** 12. **Transfer patients safely** with appropriate equipment in trauma (e.g. canvas sheet, orthopaedic stretcher / scoop, spinal board etc.)	

Section 8	Standard of practice		BEYOND Scope of practice
PREPARATION & ADMINISTRATION OF MEDICATIONS	**Knowledge**	**Skills**	1. Administer or maintain an **infusion of blood** or **blood products** 2. Administer medications via the following routes: a) Intra-nasal b) Intra-arterial c) Through central venous catheters
	1. Explain their ambulance service provider's policies and protocols with regard to **administration of medications** 2. Describe the principles of patient safety when **administering medications** 3. Describe the **pharmacology** of medications used (including indications, contraindications, mechanism of action, side effects) 4. Explain **storage and safe-keeping** issues for medications **5.** Describe equipment used for **intravenous access and drips**	1. Adhere to their ambulance service provider's policies and protocols with regard to **administration of medications** 2. Prepare and administer **oral**, **sublingual, rectal, inhaled / nebulised and intramuscular medications** 3. Prepare and administer **intravenous medications** and **crystalloids through peripheral IV cannula** 4. Prepare and administer **intraosseous medications** and **crystalloids** 5. Monitor **intravenous peripheral lines and infusions**	

Section 9	Standard of practice		BEYOND Scope of practice
SPECIAL SITUATIONS	**Knowledge**	**Skills**	
	1. State the definition and describe the principles of management of a **mass casualty incident (MCI)** 2. Describe the **triage process and categories** in an MCI 3. Describe the role of Paramedics in an **MCI** 4. Explain the public health concerns of a **hazardous materials incident** 5. Describe the obvious signs and symptoms of a **pregnant patient in delivery** 6. Describe the steps in **basic care of a newborn**	1. Perform **triage** during an MCI 2. Set up and operate a **First Aid Post** in an MCI scenario 3. Manage a **hazardous materials incident** a) **Recognise the presence** of **hazardous materials** (no need to identify exact material involved) b) Wear appropriate **personal protective equipment (PPE)** c) **Activate appropriate resources** (e.g. HAZMAT team) 4. Administer auto-injectors in a HAZMAT incident 5. Recognise a **pregnant patient in delivery** 6. Manage a **normal vaginal delivery** 7. Recognise a **complicated vaginal delivery** 8. Perform **basic postpartum care** (e.g. external uterine massage) 9. Perform **basic care of the newborn**	

SPECIAL SITUATIONS (Con't)		10. Manage a **suspected sexual assault case** a) Recognise suspected sexual assault b) Aid in preservation of evidence c) Activate appropriate resources (e.g. police) d) Provide emotional support to victim 11. Manage a **suspected crime scene** a) Recognise suspected sexual assault b) Aid in preservation of evidence c) Activate appropriate resources (e.g. police) d) Provide emotional support to victim	

<table>
<tr><th>Section 10</th><th colspan="2">Standard of practice</th><th>BEYOND Scope of practice</th></tr>
<tr><td rowspan="5">CLINICAL ASSESSMENT & MANAGEMENT</td><td>Knowledge</td><td>Skills</td><td rowspan="5">1. As described in the “Beyond scope of practice” columns in Sections 1-9, and 11 of Table 1</td></tr>
<tr><td colspan="2">Approaches to Symptoms</td></tr>
<tr><td>1. Develop an approach to identification and assessment of patients with the following <u>undifferentiated symptoms</u>:

a) Chest pain
b) Shortness of breath
c) Severe abdominal pain
d) Altered mental status
e) Syncope
f) Seizure
g) Bradycardia
h) Tachycardia

2. Understand why, when and how to escalate to relevant parties when management falls <u>beyond their scope of practice</u></td><td>1. Institute initial management of patients with the following <u>undifferentiated symptoms:</u>

a) Chest pain
b) Shortness of breath
c) Severe abdominal pain
d) Altered mental status
e) Syncope
f) Seizure
g) Bradycardia
h) Tachycardia</td></tr>
<tr><td colspan="2">Conditions</td></tr>
<tr><td>3. Understand the pathophysiology and clinical presentation of these <u>differentiated conditions</u>:

a) Cardiac arrest
b) Acute coronary syndrome
c) Acute pulmonary oedema
d) COPD / Asthma
e) Stroke
f) Hypoglycemia
g) Anaphylaxis
h) Trauma
i) Burns</td><td>2. Initiate management of the following <u>differentiated conditions</u>:

a) Cardiac arrest and post-cardiac arrest care (Return of spontaneous circulation)
b) Acute coronary syndrome
c) Acute pulmonary oedema
d) COPD / Asthma
e) Drug overdose and poisoning
f) Smoke and toxic gas inhalation
g) Stroke</td></tr>
</table>

CLINICAL ASSESSMENT & MANAGEMENT (Con't)	4. Understand why, when and how to **escalate to relevant parties** when management falls beyond their scope of practice	h) Hypoglycemia i) Hyperglycemia j) Anaphylaxis k) Normal vaginal delivery l) Trauma m) Burns n) Haemorrhage (both traumatic and atraumatic)	

Section 11	Standard of practice		BEYOND Scope of practice
GENERAL	**Knowledge**	**Skills**	
	2. Describe the **common chronic diseases (**e.g. hypertension, hyperlipidemia and diabetes mellitus etc.) 3. Describe the definitions, clinical presentation, and modes of transmission of **common infectious diseases** 4. Explain the rationale and indication for wearing of **personal protective equipment (PPE)** 5. Explain the rationale and indication for **decontamination** of work area and equipment used after managing a standard or infectious case 6. Explain the principles of proper and appropriate **documentation** 7. Explain the rationale and principles of appropriate **reporting of adverse events** 8. Describe the principles **of proper handover** of patients during transition of care 9. Explain the importance of extending **empathy** to patients and next-of-kin in the pre-hospital setting 10. List the **common medical devices** that patients may have in-situ and how to **transfer** them safely	1. **Don and doff PPE** safely and appropriately to prevent contamination of self and others 2. Manage a **suspected infectious disease** case safely a) Recognise suspected infectious disease b) Wear appropriate PPE c) Inform receiving facility (either prior to, or on arrival) 3. Perform **decontamination** of work area and equipment used after managing a standard or infectious case 4. Perform **documentation of events** accurately 5. Conduct a **proper handover** of patients during transition of care to and from another medical team 6. **Provide emotional support** to patients and next-of-kin 7. **Transfer and maintain** patients with medical devices in-situ (e.g. nasogastric tubes, tracheostomy tubes and urinary catheter, etc.)	1. Insert **nasogastric tube** 2. Insert **urinary catheter** 3. Re-insert **dislodged devices** (e.g. tracheostomy tube etc.) 4. Obtain **arterial blood sample** 5. Obtain **blood cultures**

GENERAL (Con't)	11. List ambulance transport equipment used during **transfer of patients,** and describe their **function**	8. Use ambulance transport equipment to **transfer patients safely** (e.g. ambulance trolley, wheelchair, stretcher etc.)	

7. REFERENCES

a. Definitions and Standards for Level 2 and Level 3 EMTs / Paramedics (2015)

b. Healthcare Services (Emergency Ambulance Service and Medical Transport Service) Regulations (2021)

c. Minimum Competencies List for Level 2 and Level 3 EMTs / Paramedics (2021)

d. Paramedic and EMT Professional Qualifications Framework, Healthcare Services Division, MOH (2014)