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CAWANGAN PERKHIDMATAN
PENOLONG PEGAWAI PERUBATAN

Emergency Medicine and Trauma Services

Standard Practice Guidelines for Assistant Medical Officer in Emergency Medicine and Trauma Services

Emergency Medicine and Trauma Services

Ministry Of Health, Malaysia

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43200 Cheras,
Selangor Darul Ehsan
Tel: 603-9105 6473 Fax: 03-9105 6469
Email: p.mesbah@yahoo.com.my
p.mesbah2009@gmail.com. | p.mesbah2013@gmail.com

FORWARD MESSAGE

DIRECTOR GENERAL OF HEALTH MALAYSIA

Assalamualaikum WBT,

With the rapid evolvement of Emergency Services in Malaysia, it's high time for Assistant Medical Officers who are the backbone of Emergency and Trauma Departments Units in the Ministry of Health to come up with the Guidelines for Assistant Medical Officers in Emergency Medicine and Trauma Services. I believe the document will act as an essential source for Assistant Medical Officers operating in Emergency Services during their constant battle to preserve life and ensure fast interventions for the best outcomes. In addition, it's my fervent hope that this guideline will lead the way to the expansion, standardization, and fortification of Assistant Medical Officers in Emergency Services throughout the country.

On behalf of the Ministry of Health, I would like to extend my heartfelt congratulations to the Medical Program, esteemed Emergency Physicians, and the Assistant Medical Officer Technical Committee for their tireless efforts and commitment to publishing Guidelines for Assistant Medical Officers in Emergency Medicine and Trauma Services. I commend their hard work, great teamwork, and collaborations.

My personal heart-warming appreciation to Assistant Medical Officers throughout the country who upholds the highest standard of professionalism in the execution of their duties in order to provide quality health care to the community. The Ministry of Health Malaysia highly value the fraternity's continuous determination to deliver excellent service to the nation.

Thank You

Datuk Dr. Muhammad Radzi Bin Abu Hassan
Director General of Health Malaysia

FORWARD MESSAGE

DIRECTOR MEDICAL PRACTICE DIVISION

Emergency and trauma Medical Services are one of the main services in the Ministry of Health. This discipline of Emergency Medicine is very broad and comprehensive in providing early medical care. This emergency Medical Service starts from outside the hospital (Pre Hospital Care), inside the hospital and some discharged patients. This Emergency Medical Service focuses on main services such as critical care, semi-critical treatment, disaster management, pre-hospital and MECC.

In this Emergency Medical Service, the clinical treatment process provided is in accordance with the latest treatment and correct and accurate work process standards. The effectiveness in providing this treatment is in line with the skills and competencies of members who have been trained, professionals with efficient Emergency Medicine knowledge. The maintenance of the Standard Practice Guidelines (SPG) management policy that is highlighted is in accordance with the current work process in providing maximum impact to patient care.

Hence, this discipline should be pursued with passion, determination and vision for high quality Emergency Care. It is our great hope that this policy will lead to the expansion, standardization and strengthening of Emergency and Trauma Medical Services for Assistant Medical Officer throughout the country to continue to be on par with the best internationally.

Dr. Mohamed Iqbal bin Hamzah
Director
Medical Practice Division

FORWARD MESSAGE

HEAD OF NATIONAL EMERGENCY MEDICINE AND TRAUMA SERVICE

In The Name of Allah, The Most Gracious and The Most Merciful.

First of all, I would like to congratulate the drafting committees in completing this updated version of Standard Practice Guideline for Assistant Medical Officers in Emergency Medicine and Trauma Services.

I am certain that this booklet can become a useful tool as a guide and reference to the scope of duties of all Assistant Medical Officers who render their services in Emergency and Trauma Department, either at prehospital or hospital settings.

These practice guidelines encompass almost all aspects of emergency care, either procedural related or case management. In practice, these procedures require either direct or indirect involvement of Assistant Medical Officers.

Therefore, such procedure and cases can be managed according to the best accepted practice. This will further enhance the teamwork and improve the quality of emergency care provided.

Again, I would like to convey my gratitude and appreciation to the secretariat, committee members, and expert panels who involved in drafting this Standard Practice Guideline for Assistant Medical Officers in Emergency Medicine and Trauma Services.

Kind Regards and Thank You

Datuk Dr. Mahathar Abd. Wahab
Head of National Emergency Medicine and Trauma Services, Ministry of Health, Malaysia

FORWARD MESSAGE

HEAD OF ASSISTANT MEDICAL OFFICER MALAYSIA

Assalamualaikum WBT,

The field of Emergency Medicine and Trauma Services is synonymous with Assistant Medical Officers (AMO) in Malaysia.

Their role as frontliners in an Emergency and Trauma Department in the Ministry of Health has rather been important and significant in ensuring high quality Emergency Services are delivered to the people in this country. In this field AMOs would be in constant battle to preserve life and ensuring fast intervention for a good outcome.

To ensure continuance of high-level quality services are being delivered, the daily task carried out by shall be guided by comprehensive guideline to install best practices among AMOs. Therefore, the effort to develop the Standard Practice Guidelines (SPG) for Assistant Medical Officers in Emergency Medicine and Trauma Services is commendable and timely.

This document will act as an useful resource and reference material for all AMOs while performing their daily duties. In addition, this document will also be a guide for academicians' in developing AMO curriculum models at all levels and as well as in their daily teaching activities. The development of this document is an evidence of intentness to strengthen and standardize the clinical practice performed by Assistant Medical Officers in the field of Emergency Medicine and Trauma Services. It is of paramount importance for AMOs to adhere and comply with this SPG to meet professional obligation and to produce a good outcome of care.

Lastly, I would like to take this opportunity to express my gratitude to the Head, Emergency Medicine and Trauma Services MOH, Emergency Physicians and to the dedicated Emergency Technical Committee who gave their commitment and perseverance to develop this very valuable document. May your efforts receive mercy and blessings from Allah SWT. Thank you.

Zulhelmi bin Abdullah
Head of Assistant Medical Officers
Assistant Medical Officers Services Section

ACKNOWLEDGEMENT

ADVISOR

YBhg. Datuk Dr. Mahathar bin Abd. Wahab
Ketua Perkhidmatan Perubatan Kecemasan KKM
Pakar Perunding Kanan Perubatan Kecemasn
Ketua Jabatan Kecemasan & Trauma
Hospital Kuala Lumpur

Dr. Ahmad Tajuddin bin Mohamad Nor
Pakar Perunding Kanan Perubatan Kecemasan
Ketua Jabatan Kecemasan & Trauma
Hospital Tengku Ampuan Rahimah
Jalan Langat
41200 Klang
Selangor

Dr. Razak bin Daud
Pakar Perunding Kanan Perubatan Kecemasan
Jabatan Kecemasan & Trauma
Hospital Raja Perempuan Zainab II
Jalan Hospital
15200 Kota Bharu
Kelantan

En. Zulhelmi bin Abdullah
Ketua Penolong Pegawai Perubatan Malaysia
Cawangan Perkhidmatan Penolong Pegawai Perubatan
Kementerian Kesihatan Malaysia

COORDINATOR

En. Alias bin Abu Hassan
Ketua Sektor Dasar dan Perancangan Strategik
Cawangan Perkhidmatan Penolong Pegawai Perubatan
Kementerian Kesihatan Malaysia

En. Shaiful Bahari bin Muhammad Shah
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Sektor Dasar dan Perancangan Strategik
Cawangan Perkhidmatan Penolong Pegawai Perubatan
Kementerian Kesihatan Malaysia

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Penolong Pegawai Perubatan
Sektor Dasar dan Perancangan Strategik
Cawangan Perkhidmatan Penolong Pegawai Perubatan
Kementerian Kesihatan Malaysia

COMMITTEE MEMBERS

Tn. Hj. Shamsuri bin Mat
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Jabatan Kesihatan Negeri Terengganu

En. Samsuri bin Md. Isa
Penolong Pegawai Perubatan
Jabatan Kesihatan Negeri Pahang

Tn. Hj. Mudzaffar bin Abdul Ghaffar
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Putrajaya

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Jabatan Kecemasan & Trauma
Hospital Kuala Lumpur

En. Rosli bin Ahmad
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Pulau Pinang

En. Aswadi bin Mohammad@Ghafar
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Raja Perempuan Zainab II, Kota Bharu

Tn. Hj. Ahmad Muzakir bin Mohd Kassim
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Sultanah Nur Zahirah, Kuala Terengganu

En. Mohd Syukri bin Ruzlan
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Tengku Ampuan Afzan, Kuantan

Tn. Hj. Muhammad Romzi bin Hussin
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Tanah Merah

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Jabatan Kecemasan & Trauma
Hospital Sungai Buloh

En. Wan Rosli bin Wan Ismail
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Kajang, Selangor

En. Mohd Ashraff bin Abd Halim
Penolong Pegawai Perubatan
Jabatan Kecemasan & Trauma
Hospital Tengku Ampuan Rahimah
Klang, Selangor

LIST OF EXTERNAL REVIEWERS

Prof. Madya Dr. Mohd Johar bin Jaafar
Pensyarah & Pakar Perunding Perubatan Kecemasan
Hospital Canselor Tuanku Mukhriz
Pusat Perubatan Universiti Kebangsaan Malaysia

Dr. Izwan Effendy bin Ismail
Pakar Perubatan Keluarga
Klinik Kesihatan Puchong Batu 14
Selangor

En. Ismail bin Mat Tahir
Pengajar & Ketua Program Lanjutan
Institut Latihan Kementerian Kesihatan Malaysia
Seremban, Negeri Sembilan

Tn. Hj. Shahrul Azhar bin Mohd Aznan
Pengajar
Institut Latihan Kementerian Kesihatan Malaysia
Sultan Azlan Shah, Ulu Kinta
Ipoh, Perak

En. Nurhan Norris Ma Weng Chuen
Pengajar & Pengarah Program
Faculty of Technology and Applied Sciences
Open University, Malaysia

En. Muhamamad Norzein bin Ab Rahim
Ketua Program
Diploma of Medical Assisstant
UniKL

En. Bala Krishnan a/l Muniandy
Penolong Pegawai Perubatan
Hospital Canselor Tuanku Mukhriz
Pusat Perubatan Universiti Kebangsaan Malaysia

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GLOSSARY OF TERMINOLOGIES

NO.	TERMINOLOGY	EXPLAINATION
1	AEFI	An **adverse event following immunization** (AEFI) is an unwanted or unexpected health effect that happens after someone receives a vaccine, which may or may not be caused by the vaccine.
2	Anaphylaxis	An acute allergic reaction to an antigen (e.g. a bee sting) to which the body has become hypersensitive.
3	Atypical chest pain	When one experiences chest pain that doesn't meet the criteria for angina, it's known as atypical chest pain.
4	Balanced Fluid	An intravenous fluid that have a sodium, potassium and chloride content closer to that of extracellular fluid and when given intravenously have fewer adverse effects on acid-base balance.
5	CHRA	The **Chemical Health Risk Assessment** (CHRA) is an assessment that has to be conducted by the employer arising from the use, handling, storage, or transportation of chemicals hazardous to health in their workplace as required by the Occupational Safety and Health.
6	Decontamination Area	Decontamination (sometimes abbreviated as decon, dcon, or decontam) is the process of removing contaminants on an object or area, including chemicals, micro-organisms or radioactive substances.
7	Designated Area / Zone	An area that has been designated for a specific purpose
8	Emergency Response Team	Emergency Response Team (ERT) is a group of people who prepare for and respond to any emergency incident.
9	Fluid Therapy	The administration of fluids to a patient as a treatment or preventative measure.
10	Focus Assessment	Maybe performed during initial assessment or to identify new or overlooked or specific problems.

NO.	TERMINOLOGY	EXPLAINATION
11	Focused History	Focusing on one main complaint of the patient in the history of present illness.
12	Initial Assessment	The initial assessment, also known as **triage**, helps to determine the nature of the problem and prepares the way for the ensuing assessment stages
13	JumpSTART Triage	The JumpSTART pediatric triage MCI triage tool (usually shortened to JumpSTART) is a variation of the simple triage and rapid treatment (START) triage system. Both systems are used to sort patients into categories at Mass Casualty Incidents (MCIs).
14	KPI	KPI stands for **Key Performance Indicator**, a quantifiable measure of performance over time for a specific objective. KPIs provide targets for teams to shoot for, milestones to gauge progress, and insights that help people across the organization make better decisions.
15	Mass Casualty Incident	A mass casualty incident describes as an accident or disaster involving many casualties and loss of life resulting in disruption, paralysis of the health service infrastructure.
16	Meaningful Intervention	Interventions that are effectively implemented are associated with improved patient and staff outcomes and increased cost-effectiveness of care
17	MSQH	Malaysia Society for Quality in Health The MSQH 6th Edition Hospital Accreditation Standards provide a benchmark against which healthcare organisations can regularly assess their organizational/facility's performance and continuously improve in an ongoing and reiterative basis. The MSQH Hospital Accreditation Standards have been reviewed and updated.
18	OSH	Occupational safety and health (OSH), also commonly referred to as occupational health and safety (OHS), occupational health, or occupational safety, is a multidisciplinary field concerned with the safety, health, and welfare of people at occupation.

NO.	TERMINOLOGY	EXPLAINATION
19	Primary Triage	The process of acquiring the main presenting complaint and rapid identification of patients with the evident or potential life-threatening or limb/organ injuries or illness and or high-risk medical profile patients exhibiting the above shall be accorded a triage category of higher acuity instantaneously.
20	START Triage	Simple Triage and Rapid Treatment (START) is a triage method used by first responders to quickly classify victims during a Mass Casualty Incident (MCI) based on the severity of their injury.
21	Typical Chest pain	Typical chest pain is retrosternal. Pain may radiate to the arms, jaw, and / or back.

GLOSSARY OF ABBREVIATIONS

A.B.C.D.E	Airway, Breathing, Circulation, Disability, Exposure
AED	Automated External Defibrillator
ALS	Advanced Life Support
AMO	Assistant Medical Officer
AMPLE	Allergies, Medications, Past Medical History, Last Meal
ATLS	Advanced Trauma Life Support
AVPU	Alert, Verbal, Pain, Unresponsive
BLS	Basic Life Support
BP	Blood Pressure
BVM	Bag Valve Mask
C&P	Credentialing & Privileging
CBRNE	Chemical, Biological, Radiological, Nuclear and Expolsives
CCTVR	Skin colour, cold/warm extremities, capillary filling time <2sec, Pulse Volume and Rate
CPG	Clinical Practice Guidelines
DKA	Diabetic Ketoacidosis
ECG	Electro-Cardiogram
EMTS	Emergency Medicine And Trauma Services
ETD / EU	Emergency and Trauma Department / Emergency Unit
ETT	Endotracheal Tube
FAST	Focused Assessment Sonography in Trauma
FLACC	Face, Legs, Activity, Cry, Consolability
GCS	Glasgow Coma Scale
I/V	Intravenous
IPPA	Inspection, Palpation, Percussion, Auscultation
JBPM	Jabatan Bomba & Penyelamat Malaysia
KPI	Key Performance Indicator
MCI	Mass Casualty Incident

MDI	Metered Dose Inhaler
MIST	Mechanism (and time) of Injury, Injury Found & Suspected, Symptoms & Signs, Treatment Initiated
MKN	Majlis Keselamatan Negara
MSQH	Malaysia Society For Quality in Health
MTC	Malaysian Triage Category
NCORT	National Committee on Resuscitation Training
NRS	Numerical Rating Scale
OSH	Occupational Safety and Health
PEFR	Peak Expiratory Flow Rate
PHC	Pre Hospital Care
PPE	Personnel Protective Equipment
RR	Respiration Rate
RSI	Rapid Sequence Intubation
SGA	Supraglottic Airway Devices
START	Simple Triage and Rapid Treatment
STEMI	ST-Elevation Myocardial Infarction
TCP	Transcutaneous Pacing
VAS	Visual Analogue Score
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

LIST OF APPENDICES

CHAPTER 1 : COMMUNICATIONS IN EMERGENCY CARE PROVIDER

1.0 INTRODUCTION

Many healthcare organizations, regulators, and professional bodies are well aware of the importance of communication skills among healthcare workers. The lack of effective communication skills will have a negative impact on patient care. Poor communication is a major contributor to unfavourable conditions and medical blunders, as well as one of the leading sources of patient complaints to healthcare facilities (Willis, S. & Dalrymple, R. 2015). The Assistant Medical Officer (AMO) interactions with co-workers, managers and other healthcare professionals are hampered by a lack of communication. This in and of itself causes a slew of issues when working in such a fast-paced setting.

2.0 TYPES OF COMMUNICATION

2.1. Verbal

Tone, pitch, language, pace, and loudness are all essential components of verbal communication. It's critical to be aware of not just how the AMO's uses these while interacting with their patients, but also how patients use all of these parts of verbal communication when communicating with the AMO's.

- talking calmly, using reassuring words
- talking slowly, but assertively, to gain control
- not raising the voice
- using forms to support verbal communication

2.2. Non-Verbal

Non-verbal communication makes up the majority of communication (Mehrabian, 1981). Most patient will communicate through the way they move their arms and legs, as well as the way they hold their bodies. Findings are usually noticed during patient general assessment by AMO's. As a result, AMO's must be able to recognise, and act on nonverbal clues in addition to verbal communication. When a patient needs assistance, they must be able to employ nonverbal and body language cues to assist and reassure the patient, as well as assert authority and control during stressful situations. According to Hargie (2011), Non-verbal communication is conveyed

using:

- Body posture
- Eye contact
- Touch (tactile communication)
- Proximity (physical distance)
- Facial expressions

3.0. GENERAL STEP TO START A CONVERSATION

3.1. Introduces ourselves and position

3.2. Look at the patient's/partner face (eye contact), smile and greet warmly

3.3. Begin with an open-ended question (If there is a language barrier, seek assistance from someone who speaks the language)

3.4. Pay attention during conversation

3.5. Wait until the patient/partner has completed his or her speech.

3.6. Response to the question immediately

3.7. Ask clarifying questions as necessary

3.8. Finally, express gratitude at the end of the conversation.

4.0. I.S.B.A.R. FRAMEWORK

Clinical handover is defined as "the communication of information about a patient between health professionals, usually in conjunction with a transfer of control or responsibility for the patient." It's one of the most important steps in a patient's treatment. (Burgess et.al, 2020).
The World Health Organization has endorsed the ISBAR framework as a standardized approach to communication that can be applied in a variety of clinical scenarios, including shift changeover, patient transfer for a test or appointment, inter-hospital transfers, and escalation of a deteriorating patient. (WHO,2011).

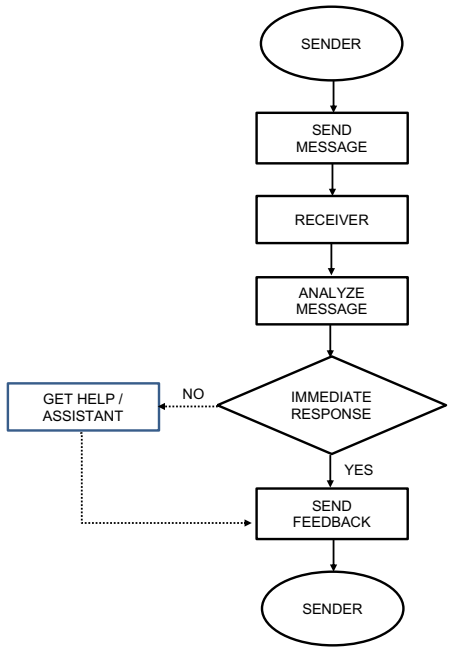
I.S.B.A.R

The ISBAR framework consists of five (5) elements focused on communication, which include:

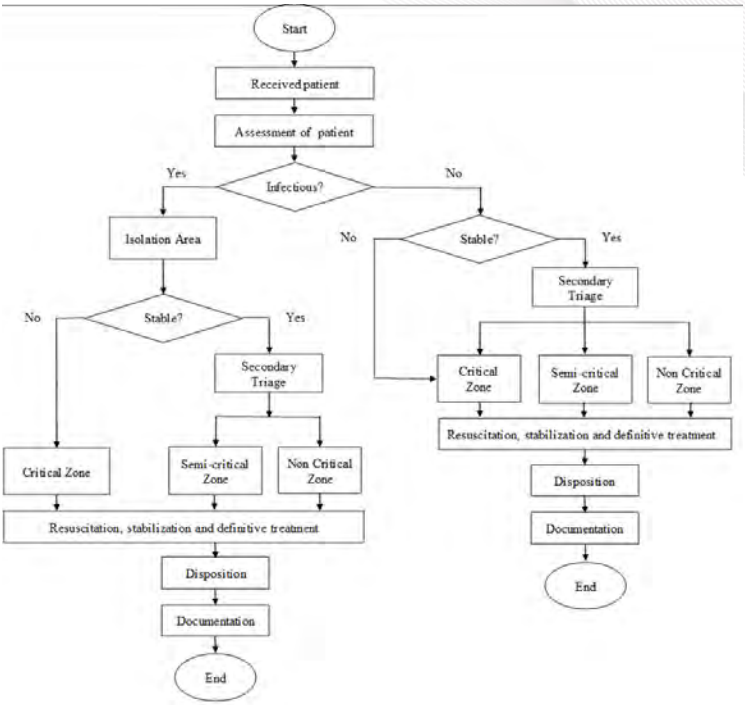
Elements	Description
Introduction	Who you are, your role, where you are and why you are communicating?
Situation	What is happening at the moment?
Background	What are the issues that led up to this situation?
Assessment	What do you believe the problem is?
Recommendation	What should be done to correct this situation?

Figure 1: World Health Organization (W.H.O., 2011). *Patient safety curriculum guide: Multi-professional edition.*

5.0 FLOW CHART COMMUNICATION

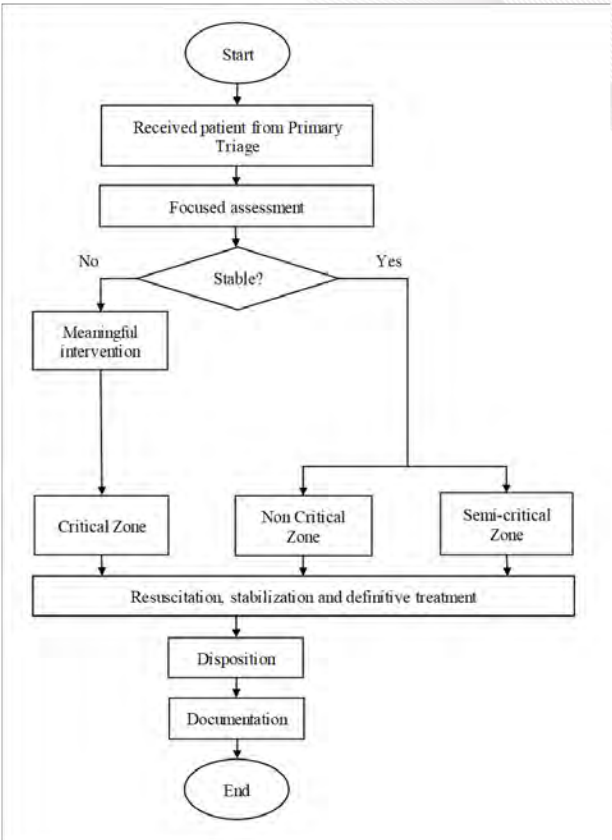


CHAPTER 2 : PRIMARY TRIAGE

Component	Description
Objective	1. To assess patient severity and infectivity. 2. To manage patients accordingly and direct them to appropriate treatment areas.
Scope	All patients presented to ETD / EU.
Flow chart	

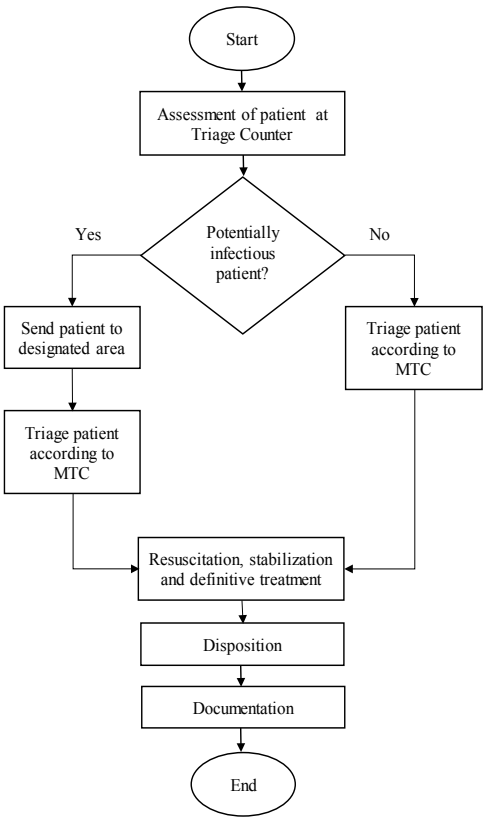
Activity	Work Process	Standard	Requirement
Receive Patient	1. Approach and attend to patient's need. 2. Perform proper and safe extrication if required	• MOH EMTS Policy 2011 • KPI (MSQH MOH) • Pain management in ETD 2nd edition 2020 • Pain as The 5th Vital Sign Guideline: 3rd Edition • MOH Policies & Procedures On Infection Prevention and Control 2019	• Triage form / Triage card • PPE
Patient assessment	1. Perform rapid assessment and obtain a focused history 2. Assess a. Level of consciousness -AVPU b. Respiratory assessment - RR - Breathing effort c. CCTVR 3. Identify infectivity status 4. Send the patient to designated area 5. Provide an appropriate immobilization and bandaging if required. 6. Provide an appropriate mode of transportation to the designated zone.		• PPE • Stethoscope • Gauze and bandage • Immobilization set • Oxygen delivery apparatus • Wheelchair • Transfer Trolley
Categorize the patient into appropriate zone	Refer to EMTS Policies		Bell / alarm system
Documentation	Completion of triage form/ system		• Triage form • Kad Rawatan Pesakit / Sistem IT

CHAPTER 3 : SECONDARY TRIAGE

Component	Description
Objective	1. To assess patient severity. 2. To reassess for infectivity. 3. To manage patient accordingly and direct to appropriate treatment area.
Scope	All patients who subjectively hemodynamically stable.
Flow chart	

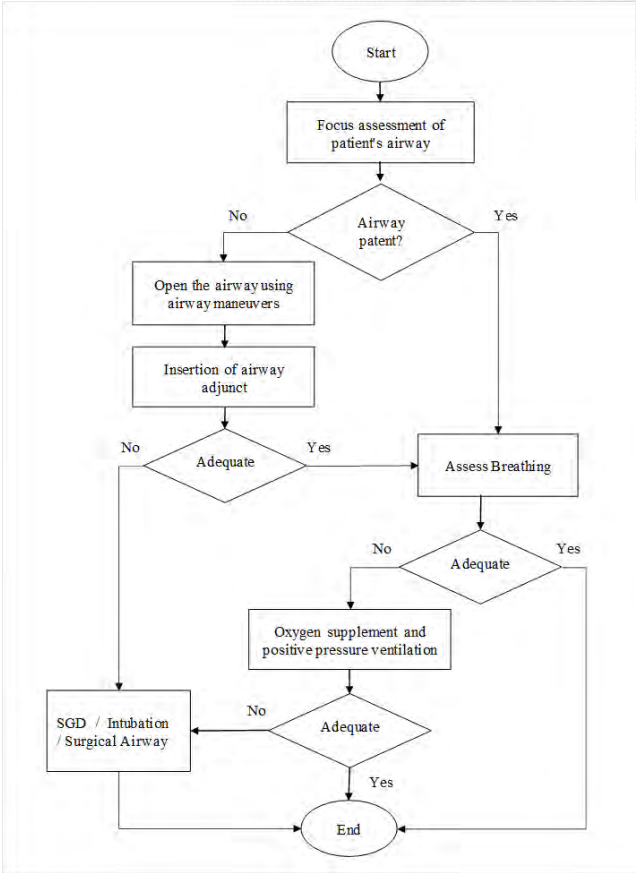
Activity	Work Process	Standard	Requirement
Receive Patient from Primary Triage	Approach to patient.	• MOH EMTS Police 2011 • KPI (MSQH/ MOH) • Pain management in ETD 2nd edition 2020 • Pain as The 5th Vital Sign Guideline: 3rd Edition • MOH Policies & Procedures On Infection Prevention and Control 2019	• PPE
Focused Assessment	1. Assess Mental status 2. Focused history -AMPLE 3. Obtain & analyze Vital Signs 4. Perform Physical Examination (IPPA) 5. Perform simple investigation E.g. – ECG, Blood Glucose Test 6. Provide or Initiate Treatment e.g. Give medication, dressing, etc. 7. Provide appropriate immobilization and bandaging if required.		• Stethoscope • Gauze and bandage • Immobilization set • Vital signs monitor • Glucometer • ECG machine Appropriate medication
Categorize the patient into appropriate zone	1. Refer to EMTS Policies 2. Triage patient accordingly.		• Bell or alarm system • Wheelchair • Transport trolley
Documentation	The triage form shall be completed accordingly.		• Triage form • *Kad Rawatan Pesakit / Sistem IT*

CHAPTER 4 : GENERAL APPROACH TO POTENTIALLY INFECTIOUS PATIENT

Component	Description
Objective	1. To identify potentially infectious patient. 2. To initiate triage according to the triage category.
Scope	All patients presented to ETD / EU
Flow chart	

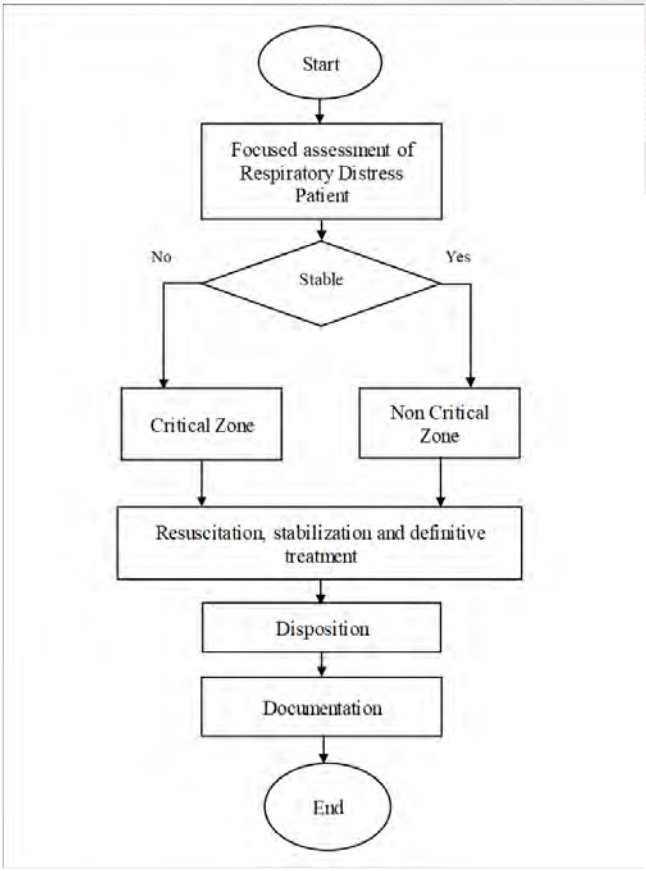
Activity	Work Process	Standard	Requirement
Focused Assessment	• Identify potentially infectious patients. • Isolate the patient to the designated area. • Assess patient severity.	• MOH EMTS Policy 2011 • MOH Policies and Procedures on Infection Prevention and Control Third Edition. 2019 • Annex 8 Guidelines on infection prevention and control (IPC) measures in managing person under surveillance (PUS), suspected, probable or confirmed coronavirus disease 2021	• Appropriate PPE • Facemask • Oxygen supplement • Stretcher • Wheelchair
Disposition	Send patient to the designated area of treatment.		
Documentation	Document all interventions and patient's progress		• Patient progress note. • Observation charting/ Input & output charting/ drugs charting

CHAPTER 5 : APPROACH TO AIRWAY MANAGEMENT

Component	Description
Objectives	1. To ensure patient airway patency. 2. To ensure the adequacy of ventilation.
Scope	All patients come to ETD / EU
Flow Chart	

Activity	Work Process	Standard	Requirement
Airway assessment	Identify signs of airway obstruction such as a. Stridor b. Gurgling sound c. Cyanosis	• BLS NCORT 2020 / AHA 2020 • ALS NCORT 2020 / AHA 2020 • ATLS 10th Edition	• PPE
Initiate management	1. Evidence of airway compromise: a) Open and maintain the airway by Head till chin lift, or b) Jaw thrust method (in trauma patient) 2. Insert airway adjunct if indicated.		• Airway management set • Immobilization set • Suction Device
Reassessment	Unable to maintain airway proceed to SGA / Intubation / Surgical Airway If airway patent and adequate ventilation assess for breathing. For inadequate ventilation, proceed to oxygen supplement / PPV. If unsuccessful proceed to SGA/ Intubation / Surgical Airway		• SGA • Airway management set • Surgical airway set
Definitive airway procedure	Endotracheal intubation can be done to establish airway management a) Crash intubation (only for C&P AMO) -Arrested patient b) Elective intubation (AMO shall assist Medical Officer)	• Refer Procedure 2: Crash intubation • Refer Procedure 3: Endotracheal Intubation	
Surgical airway	Assist Medical Officer in procedure Cricothyroidotomy	Appendix 1: Procedure Cricothyroidotomy	

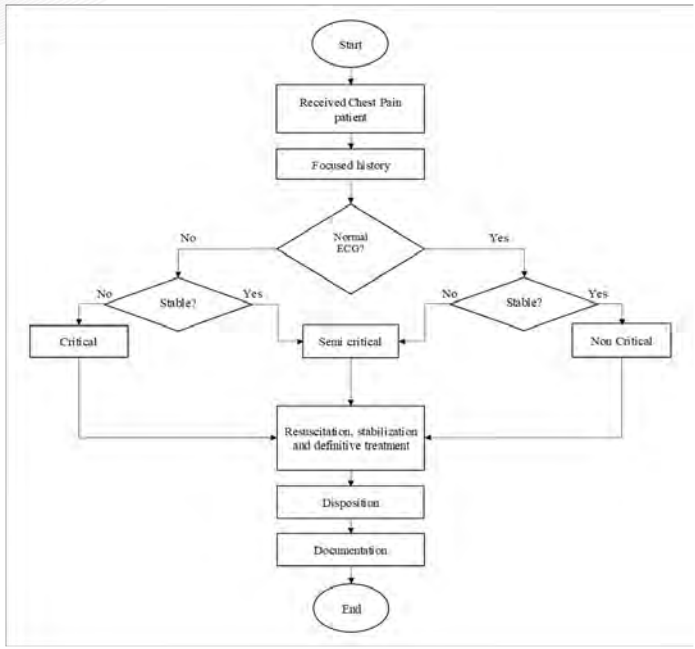
CHAPTER 6 : APPROACH TO RESPIRATORY DISTRESS SYNDROME

Component	Description
Objective	1.To identify evidence of respiratory distress 2. To initiate treatment for respiratory distress.
Scope	Apply to all patient in respiratory distress presented to ETD / EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Focused assessment	1.Approach and attend to patient's need accordingly. 2.Initial assessment of signs and symptoms in respiratory distress as stated: a. Mental status b. Speech c. Appearance 3.Identify patient with life threatening conditions such as drowsy, confused, exhausted, poor respiratory effort and cyanosis	• Clinical Guidelines – Management of Asthma in Adult • MOH Policies & Procedures On Infection Prevention and Control 2019 • Global Initiative for Asthma (GINA) 2021 • MSQH Standard 25	• PPE • Stethoscope
Respiratory Distress Zone	1.Further assessment a)Perform pre-PEFR b)Calculated % of PEFR based on measured pre-PEFR and predicted personal PEFR (PEFR c)Vital sign patient 2. Initial management a. Mild b. Moderate c. Severe		• Peak Expiratory flow meter • Mouth piece • Patient Vital sign monitor • MDI & Aero-chamber • Nebulizer • Stethoscope • Medication trolley
Treatment and care plan	Initiate treatment as ordered: a. Oxygen b. Nebulizer c. MDI d. Hydrocortisone e. Prednisolone		

Activity	Work Process	Standard	Requirement
Reassessment	1. Vital signs monitoring. 2. Perform Post PEFR a. Perform the second line of treatment if no improvement. b. Inform Medical Officer immediately: • If persistent symptom, or • worsening of symptoms, or • those with % of PEFR <75% after one hour initial treatment. c) Deliver health education		
Disposition	Prepare for admission or inter-facility transfer	• Refer to chapter 19 : Transporting Critically Ill Patient	
Documentation	Document all interventions and patient's progress in formatted form in patient note / card		• Patient progress note • Observation chart • Input & output chart • Drugs chart

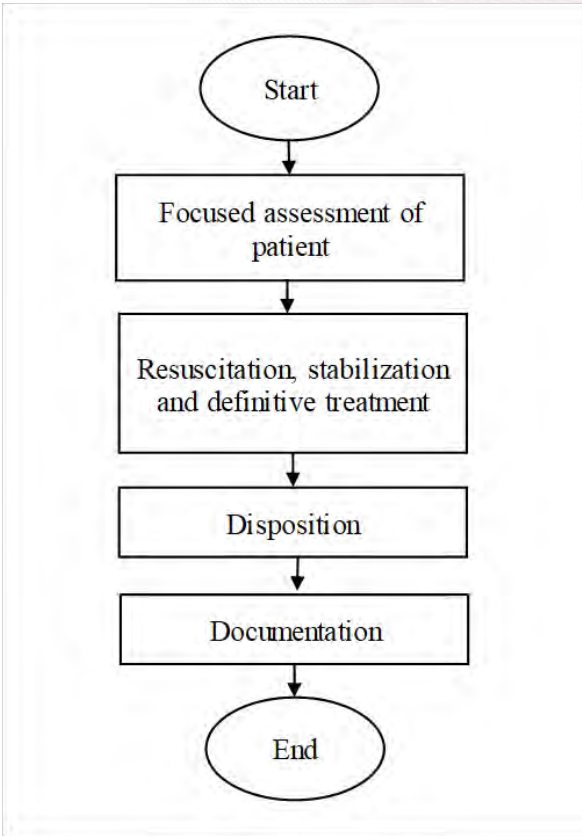
CHAPTER 7 : APPROACH TO CHEST PAIN

Component	Description
Objectives	1. To identify classical chest pain related to ACS. 2. To identify abnormal ECG. 3. To initiate treatment accordingly.
Scope	All patient presented with chest pain at ETD / EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Focused history	1. Approach and attend to the patient accordingly 2. Considered pain origin either cardiac or non-cardiac. 3. Perform, Review and analysis of patient ECG 4. Considered typical or atypical presentation. 5. In Pre- Hospital Care & Ambulance Services, AMO'S shall: a. Administer 1st line medication as ordered eg; T. Aspirin b. Medical direction for thrombolytic therapy	• Management of Acute STEMI 4th Edition 2019 • KPI (MSQH/ MOH)	• PPE • ECG Machine
Patient management	Inform medical officer 1. Maintain A, B, C, D 2. Monitor all vital signs 3. Establish 2 large-bore IV line 4. Serial ECG 5. Glucometer test 6. Ensure the following order is carried out: a. Chest x-ray b. Blood / Urine for investigation c. Cardiac marker d. Medication	• BLS NCORT 2020 • ALS NCORT 2020 • AHA 2020	• Emergency trolley • Airway management set • Circulation set • Defibrillator machine • ECG machine • Infusion Pump • Glucometer • Pericardiocentesis or Chest tube set • Medication trolley

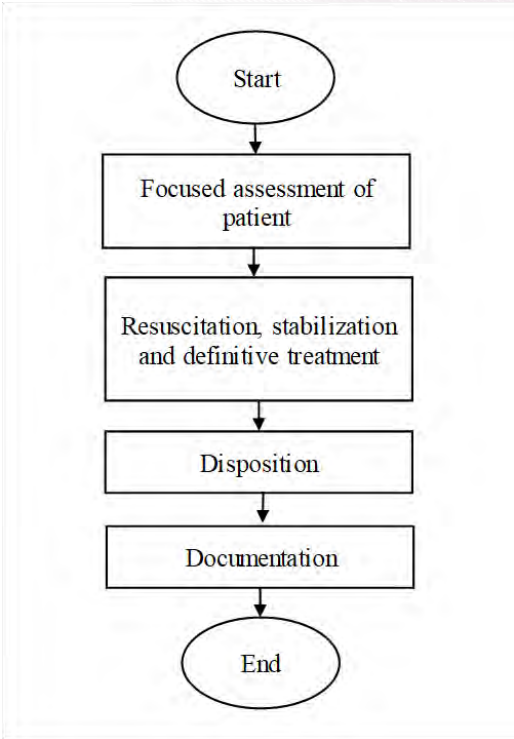
Activity	Work Process	Standard	Requirement
Reassessment	1. Vital signs monitoring. 2. Document all intervention and progress 3. Perform ECG as ordered / as indicated case: • Right-sided ECG Leads • Posterior ECG leads with appropriate label	• Refer to Appendix 4 • Refer to Appendix 5	• Patient Vital Signs Monitor • ECG machine
Disposition	Prepare for admission or inter facility transfer	Refer to chapter No. 19: Transporting Critically Ill Patient	
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation chart • Input & output chart • Drugs chart • Electrocardiogram

CHAPTER 8 : APPROACH TO BRADYARRHYTHMIAS

Component	Description
Objective	To identify Bradyarrhythmia
Scope	All patient presented with bradyarrhythmia in ETD / EU
Flow chart	

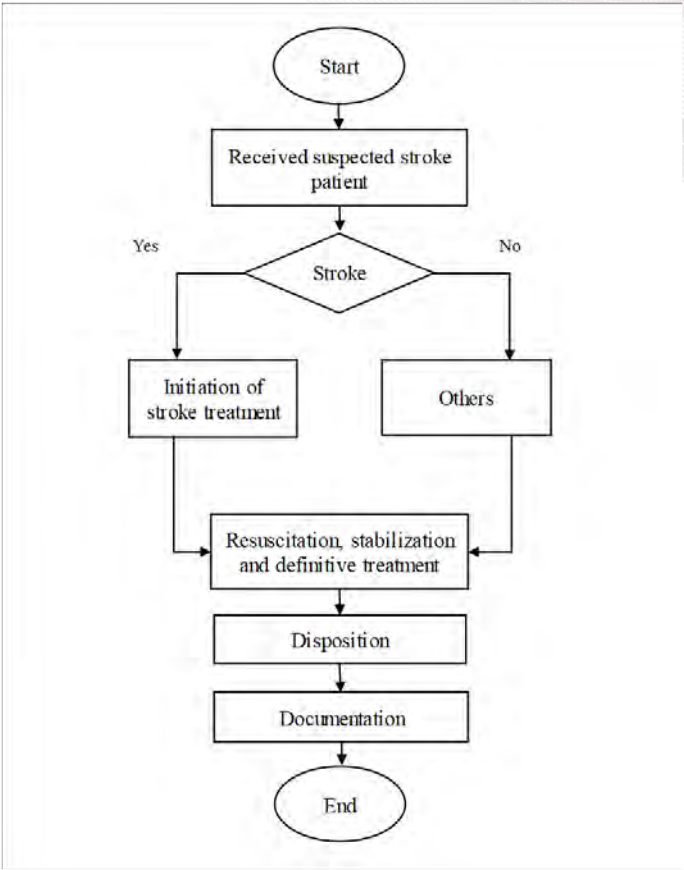
Activity	Work Process	Standard	Requirement
Focused assessment	1. Perform focused assessment 2. Maintain A, B, C, D 3. Attached cardiac monitor to the patient, review and analyses the ECG rhythm 4. Perform 12-Leads ECG		• Patient Vital sign monitor skills • Stethoscope • ECG machine • Cardiac monitor
Resuscitation, stabilization and definitive treatment	1. Alert medical officer if abnormality detected 2. Perform as a member of the resuscitation team 3. To ensure investigations done as ordered a. Cardiac Marker b. Blood Investigation 4. Specific treatment as ordered by Medical Officer: a. Medication b. TCP – (as perconsultation)	• ALS NCORT / AHA 2020 • Refer to Appendix 6: Bradycardia algorithm • Refer to Procedure 7: TCP	• Emergency trolley • Airway management set • ECG machine • Glucometer • Medication Trolley • AED / Defibrillator
Disposition	Prepare for admission or inter facility transfer	Refer to chapter No.19: Transporting critically ill patient	
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation charting/ Input & output charting/ drugs charting

CHAPTER 9 : APPROACH TO TACHYARRHYTHMIAS

Component	Description
Objective	To identify Tachyarrhythmia
Scope	All patients presented with tachyarrhythmias in ETD / EU
Flow chart	

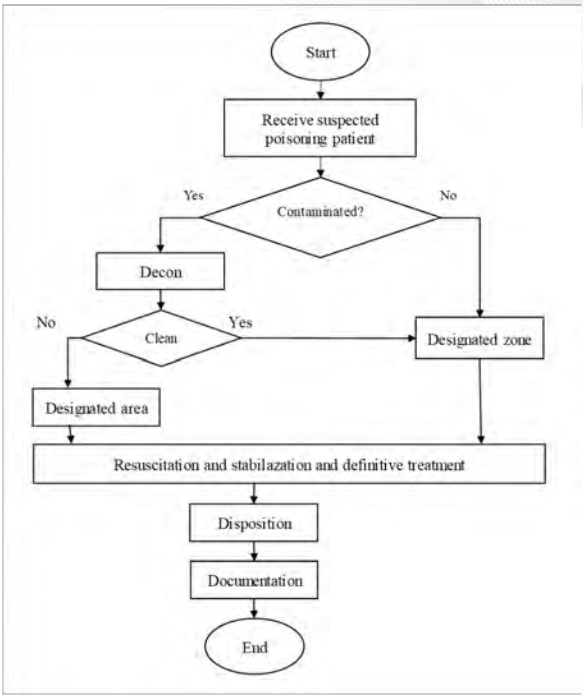
Activity	Work Process	Standard	Requirement
Patient Assessment	1. Perform focused assessment 2. Maintain A, B, C, D 3. Attached cardiac monitor to the patient, review and analyses the ECG rhythm 4. Perform 12-Leads ECG	• ALS NCORT / AHA 2020 • Appendix 8 Tachycardia algorithm • Refer to Procedure 6: Synchronized Cardioversion	• Patient Vital sign monitor • Stethoscope • ECG machine • Cardiac monitor
Resuscitation, stabilization and definitive treatment	1. Alert medical officer if abnormality detected 2. Perform as a member of the resuscitation team 3. To ensure investigation done as ordered a. Cardiac Marker b. Blood Investigation 4. Specific treatment as ordered by Medical Officer: a. Medication b. Synchronize cardioversion (as per consultation)		• Emergency trolley • Airway management set • ECG machine • Glucometer • Medication Trolley • Defibrillator
Disposition	Prepare for admission or inter-facility transfer	• Refer to chapter 19 : Transporting critically ill patient	
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation charting/Input & output charting / drugs charting

CHAPTER 10 : APPROACH TO SUSPECTED STROKE PATIENT

Component	Description
Objectives	1. To identify and initiate treatment for the suspected acute stroke patient. 2. To prioritized in order to expedite the diagnosis of stroke and to determine the appropriate acute stroke interventions.
	All patient presented with suspected stroke patient at the ETD / EU
Flow chart	

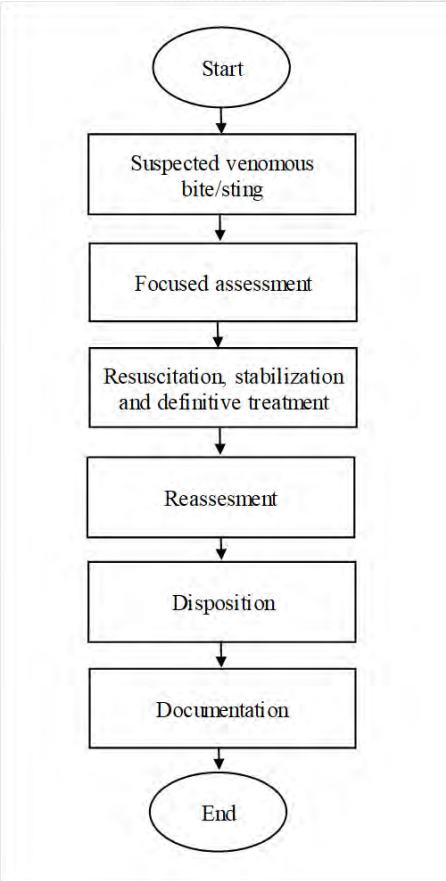
Activity	Work Process	Standard	Requirement
Assessment of neurological disorder (Stroke)	1. Manage suspected acute stroke patient accordingly. (Refer appendix 10) 2. Check blood glucose concentration upon arrival at the ETD/ EU. 3. Use a standardized stroke severity scale to assess stroke severity in the ETD/EU.	• Clinical Practice Guideline Management of Ischemic Stroke 3rd edition, 2020	• Patient's vital sign monitor • Glucometer • Oxygen supplement • Stretcher • Wheelchair • ECG
Disposition	1. Send patient to critical / semi critical zone for treatment. 2. Expedite the initiation of stroke treatment protocol based on local setting.		• Oxygen supplement • Stretcher • Wheelchair
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation charting/ Input & output charting/ drugs charting

CHAPTER 11 : GENERAL APPROACH TO POISONING

Component	Description
Objectives	1. To identify potentially poisoned patients. 2. To initiate treatment based on patient need.
Scope	All patients presented with the complaint/ suspected of poisoning at the ETD/EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Suspected poisoning	1. Contaminated patient, send to **decontamination area.** 2. Not contaminated patient, send to **designated zone.**	• *Akta Racun Makhluk Perosak1974 (Akta 149)* • Food Act 1983 (Act 281) • Clinical Guideline on Covid-19 Vaccination in Malaysia 4th Edition, 2021 • OSHA Act 1994 (Act 514)	• PPE
Decontamination process	Clean patient sends to **designated zone** otherwise remain in **designated area**.		• Emergency trolley • Patient vital sign monitor • Notification form • Vital sign monitor • Toxicology form • Borang Kimia 15a
Resuscitation, stabilization and definitive treatment	1. Assist medical officer including treatment care plan and investigation as required. 2. Provide the necessary monitoring / intervention, If patient developed signs and symptom of anaphylaxis, (refer to guideline)		
Disposition	Prepare for admission or inter facility transfer	Refer to Chapter 19: Transporting Critically Ill Patient	
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation charting / Input & output charting / drugs charting

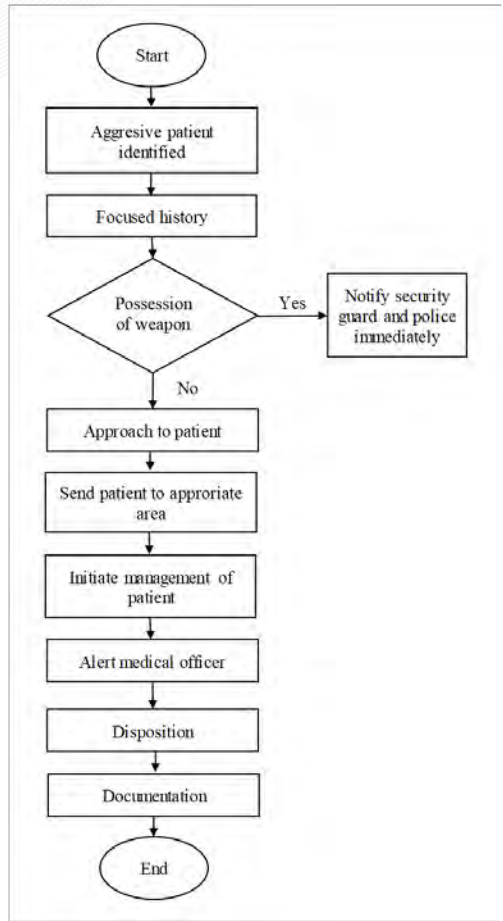
CHAPTER 12 : GENERAL APPROACH TO VENOMOUS BITE AND STING

Component	Description
Objective	1. To identify signs and symptoms of venomous bite and sting. 2. To initiates the appropriate treatment to venomous bite and sting.
Scope	All patients suspected venomous bite and sting presented at ETD / EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Obtain focused history	Refer to Appendix 11- Obtain Targeted History of Snake Bite		
Resuscitation, stabilization and definitive treatment	1. Remove embedded sting 2. If patient developed signs and symptom of anaphylaxis refer to guideline 3. For snake bite, follow the current guideline such as: a. Marking affected area b. Immobilize affected limb 4. Assist medical officer regarding treatment care plan and investigation as required 5. Consider anti-venom – evidence of systemic toxicities (nausea, vomiting, abdominal pain, dizziness, bleeding from bite site, paralysis of facial muscles) **<u>Caution</u>** Do not use a proximal tourniquet as it can jeopardize limb circulation.	• Guideline: MOH Management of Snakebite 2017 • World Allergy Organization Anaphylaxis Guidance 2020	• Resuscitation equipment • Immobilization set • Toxicology form

Activity	Work Process	Standard	Requirement
Reassessment	Continuous vital signs and chart monitoring.		• Patient Vital sign monitor • Thermoscan • Charting form • Snake Bite Chart
Disposition	Prepare for admission or inter facility transfer	Refer to Chapter 19: Transporting of Critically Ill Patient	
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation chart • Input & output chart • drugs chart

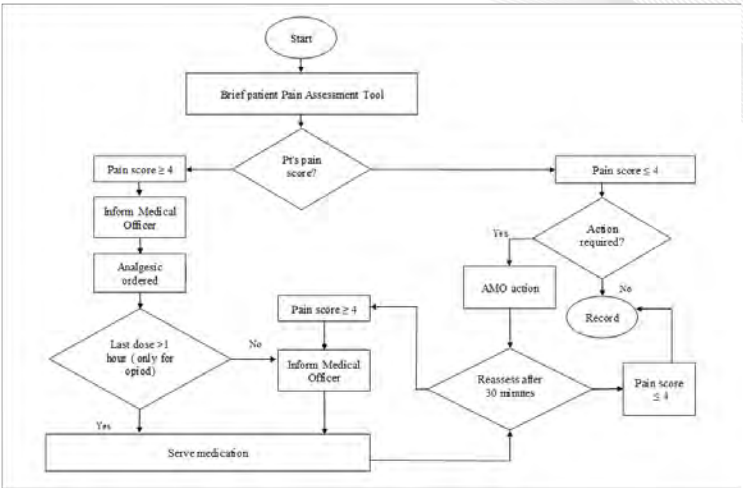
CHAPTER 13 : APPROACH TO VIOLENT AND AGGRESSIVE PATIENTS

Component	Description
Objective	To handle aggressive and violence patient appropriately in order to ensure patient and staff safety.
Scope	All violance and aggresive patient presented to ED / EU
Flow chart	

Activity	Work Process	Standard	Requirement
Aggressive patient identified	1. Focused history taking: a. abnormal behavior b. under the influence of drugs or alcohol c. known to have indulged in violent behavior in the past d. Quick Assessment - Perform rapid visual assessment - Check for danger: • Aggressive • Violent • Weapons - Check any influence of drugs / alcohol or any high risk factors / Organic. 2. Alert Police / security / Superior immediately if the patient: a. Makes any threats, verbal or physical. b. Acts destructively Eg: hits the wall / someone or destroy properties. c. Is armed (Eg: gun, knife or broken bottle). 3. Approach to patient. 4. Immediately inform Medical Officer.	• Guideline on Management of aggressive patients in MOH Facilities • Mental Health act 2001	• PPE • Police report • Restrain equipment • Medication trolley • Restrain form • Form A, B, C • Patient progress note • Observation chart

Activity	Work Process	Standard	Requirement
Initiate management of patient	1. Manage patient as ordered by Medical officer such as: a. Persuasion technique b. Physical restrain (Eg: manual holding, restrain equipment) c. Chemical restrain (medication) 2. Assist medical officer regarding treatment care plan and investigation as required		
Disposition	Prepare for admission or inter facility transfer	Refer to Chapter 19: Transporting of Critically Ill Patient	• Input & output chart • Drugs chart
Documentation	Document all interventions and patient's progress		

CHAPTER 14 : GENERAL APPROACH TO PAIN MANAGEMENT

Component	Description
Objective	1. To identify, grading and appropriate triage patient presented with pain. 2. To initiate treatment of the pain.
Scope	All patients presented at the ETD / EU.
Flow chart	

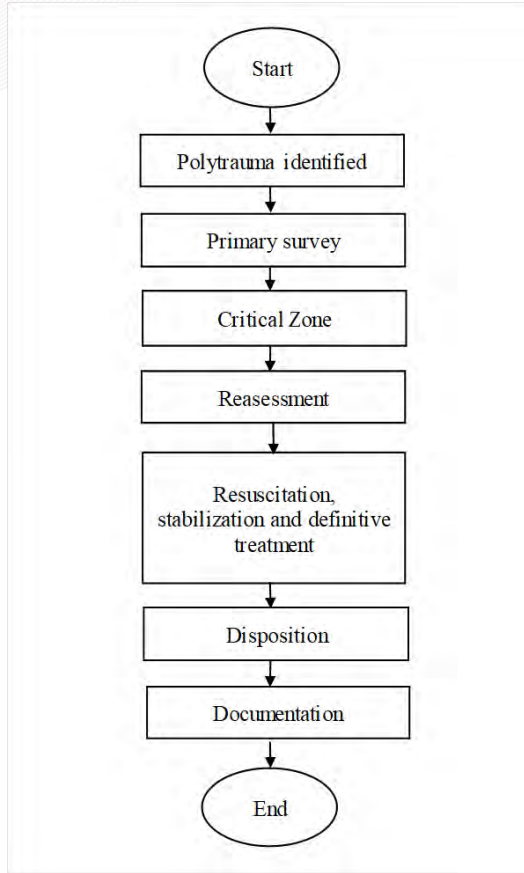
Flow Chart for Pain Management in Adult Patient in Hospital

Adapted from Pain as the 5th Vital Sign Guideline: 3rd Edition

Activity	Work Process	Standard	Requirement
Focus Assessment at Primary Triage	1. Perform pain assessment via first look once the patient arrived at ETD/ EU and seek brief targeted history regarding the pain. 2. Manage the pain via: a. Non-pharmacological b. Pharmacological 3. Patient reassured accordingly before proceeding to secondary triage. 4. Provide an appropriate mode of transportation to the designated zone.	• Pain Management in Emergency & Trauma Department 2nd Edition 2020 • Pain as the 5th Vital Sign Guideline: 3rd Edition • Patient Safety Goal No.7: 7r's principle	• Wheelchairs • Stretcher. • Bandage, • Ice pack, • Arm sling, • Immobilization device
Secondary Triage	1. Assess the vital signs including pain score and assessment should be performed objectively. 2. Document the pain score in the pain observation chart. The emotional and cognitive aspects of pain must be recognized & treated. 3. Manage the pain as per pain score and the stereotyping using pharmacological or/and non-pharmacological. 4. Patient disposition is according to triage categorization		• Patient Vital sign monitor • Visual Analogue Score (VAS) – - Wong -Baker, or - Numerical Rating Scale (NRS), and - FLACC scores for infants • The pain observation chart.

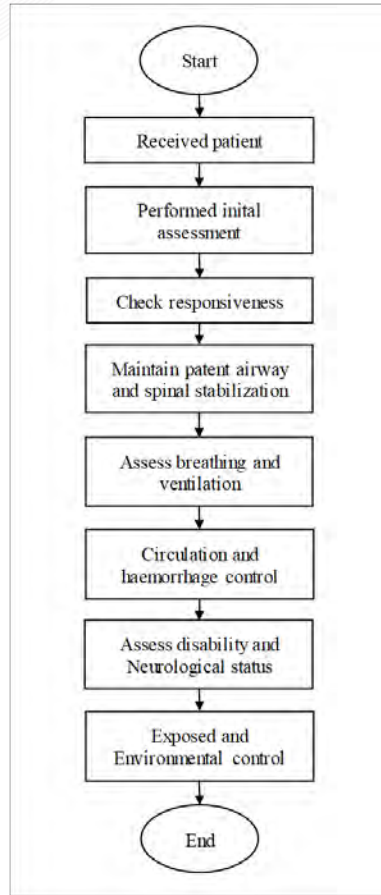
Activity	Work Process	Standard	Requirement
Treatment and care plan – as ordered	1. Administer the analgesia based on the patient's pain score; a. Mild (Score:1-3) b. Moderate (Score:4-6) c. Severe (Score:7-10) d. Uncontrolled 2. Consult the medical officer shall be obtained before the administration of certain medications.		• Analgesic Ladder for Acute Pain Management. • Patient progress note • Observation charting
Documentation	Document all interventions and patient's progress.		• Patient progress note • Observation charting

CHAPTER 15 : APPROACH TO POLYTRAUMA PATIENTS

Component	Description
Objective	1. To identify polytrauma patients. 2. To initiate appropriate treatment for polytrauma patients.
Scope	All polytrauma patients presented at ETD / EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Primary survey	Refer to Chapter 16: Primary Survey		
Identified polytrauma patient	Focused assessment		• PPE • Immobilization set
Resuscitation procedures	1. Alert Medical Officer 2. Maintain A,B,C,D,E: a. Airway + Cervical Protection b. Breathing + Ventilation c. Circulation & Haemorrhage Control d. Disability & Neurological Status e. Exposed and Environmental Control 3. Other investigations as ordered 4. Monitoring all vital signs and interventions 5. Document all interventions and progress 6. Perform as a member of the resuscitation team	• ATLS 10th Edition 2018 • Refer Appendix 13 Mechanism of injury and suspected injury pattern • Refer Appendix 14 Glasgow Coma Scale	• Airway management set • Immobilization set • Patient vital sign monitor • Defibrillator/ AED • Emergency trolley • Fluid therapy • Medication trolley • Thoracotomy set • Blanket
Disposition	Prepare for admission or inter-facility transfer	Refer to Chapter 19 : Transporting a critically ill patient	
Documentation	Document all interventions and patient's progress notes.		• Patient progress note • Observation chart • Input & Output chart • Drugs chart

CHAPTER 16 : PRIMARY SURVEY

Component	Description
Objective	1. To rapidly identify the life-threatening condition. 2. To treat the life-threatening condition simultaneously.
Scope	Applies to all trauma patients.
Flow chart	

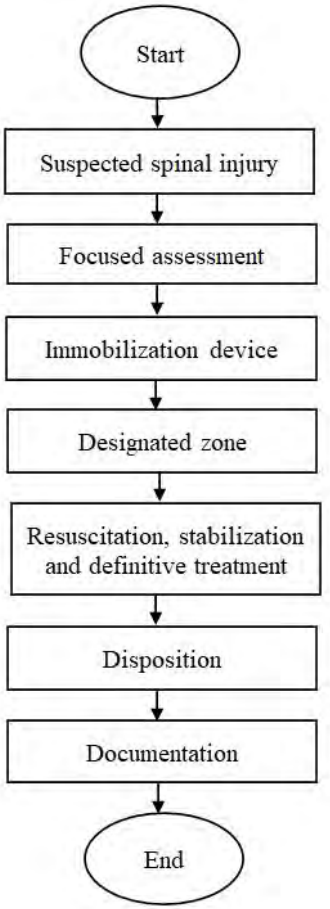
Activity	Work Process	Standard	Requirement
Received patient	Performed initial assessment	• MOH Policies & Procedure On Infection Prevention & Control, 2019 • BLS/ ALS NCORT / AHA • ATLS 10th Edition 2018	• PPE
Responsive-ness	Response to; A - Alert V- Verbal P- Pain U- Unresponsive		
Airway (with cervical spine protection)	1. Assess the airway and determine its patency 2. Maintain a patent airway by opening the mouth and clearing any obstruction; a. Suction b. Jaw thrust maneuver c. Nasopharyngeal / oropharyngeal airway d. Supraglottic device e. Orotracheal intubation 3. Suspect cervical spine injury and immobilize the cervical spine until clinical and radiological findings exclude such injuries		• Airway management set • Immobilization set • Suction device • Emergency trolley

Activity	Work Process	Standard	Requirement
B. Breathing and Ventilation	1. Breathing Assessment 2. Performing physical assessment by: a. Subjective - Breathing effort - Color b. Objective - Respiration rate - SpO2 2. Administer Oxygen Supplementation 3. Identified or consider the presence of the following conditions and perform lifesaving intervention (for credential/privilege AMO) a. Tension Pneumothorax b. Open Chest Wound c. Massive Haemothorax d. Tracheo-bronchial injury e. Cardiac Tamponade		• Stethoscope

Activity	Work Process	Standard	Requirement
C. Circulation and Hemorrhage Control	**1. Assess circulation by:** a. Looking for external hemorrhage and stopping the hemorrhage b. Considered source of internal hemorrhage c. Assess i. Periphery (skin color, warm/cold) ii. Capillary refill time iii. Pulse (Rate, Volume & Rhythm) iv. Blood pressure v. Palpate abdomen vi. Examine pelvic bone and Perform Pelvic Assessment vii. Assess of limbs injury viii. Insert 2 large bore I/V cannula and Run I/V therapy – if indicated		• Pressure bandage / Haemostatic agent • Immobilization set • Patient Vital sign monitor • I/V Fluids set
D. Disability and Neurological Status	1. Glasgow Coma Scale a. Eye opening response b. Best verbal response c. Best motor response 2. Assess Pupil Equal and Round, Reactive to Light (PEARL) 3. Glucose level	• Appendix 14 : Glasgow Coma Scale	• Torchlight • Glucometer
E. Exposure and Environmental Control	1. Adequate exposure for a complete examination 2. Prevent hypothermia.		• Blanket/ warmer • thermometer

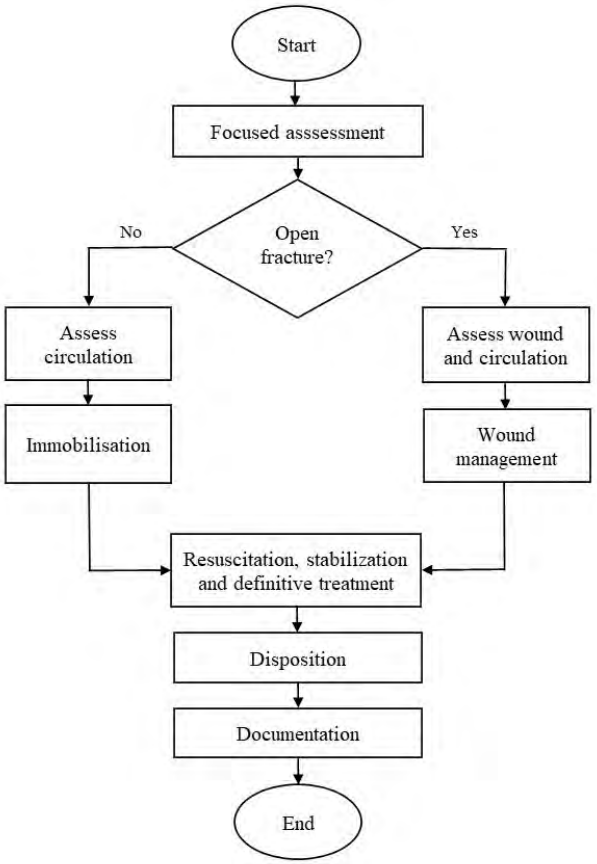
Activity	Work Process	Standard	Requirement
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation chart • Input & output chart • drugs chart

CHAPTER 17 : APPROACH TO SUSPECTED SPINAL INJURY

Component	Description
Objective	1. To identify patients with suspected spinal injury. 2. To initiate treatment for patients with suspected spinal injury.
Scope	All patients with suspected spinal injury presented at the ETD / EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Focused assessment	1. Perform Primary Survey 2. Establish and maintain in-line stabilization		
Resuscitation, stabilization and definitive treatment	1. Inform medical officer if any abnormalities detected. 2. Maintain A,B,C,D,E accordingly. a) Airway + Cervical protection b) Breathing + ventilation c) Circulation & Haemorrhage Control d) Disability & Neurological status e) Exposed and environmental control 3. Other investigations as ordered 4. Monitoring all vital signs and interventions 5. Document all interventions and progress	• Refer to Chapter 15 Primary survey • ATLS 10th edition • Appendix 14 - Glasgow Coma Scale	• Immobilization set • Patient slider / roller • Emergency trolley • Airway set • Circulation set • ECG machine • Glucometer Machine • Specimen bottles • Cardiac Monitor • Medication Trolley • Vital sign monitor • Observation chart • Pain Chart • Patient progress note • Observation chart • Input & Output chart • Drugs chart
Disposition	Prepare for admission or inter-facility transfer	Refer to Chapter 19: Transporting Critically Ill Patient	
Documentation	Document all interventions and patient's progress		

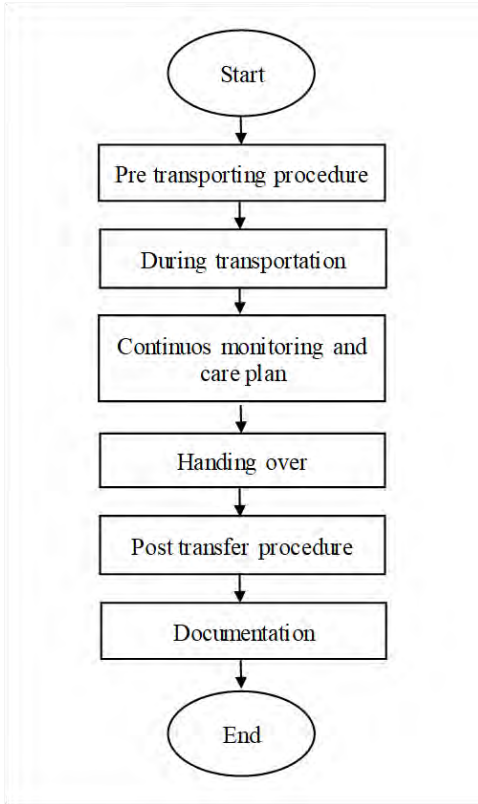
CHAPTER 18 : APPROACH TO LIMBS INJURY

Component	Description
Objective	1. To identify patients with limbs injury. 2. To initiate treatment for patients with a limbs injury.
Scope	All trauma patients with limbs injury presented at ETD/EU
Flow chart	

Activity	Work Process	Standard	Requirement
Focused Assessment	Perform initial assessment		
Resuscitation, stabilization and definitive treatment	Assess circulation and immobilize the closed fracture. To assess wound and circulation for an open fracture. Manage wound accordingly, for the amputated part. 1. Determine limbs threatening such as: a. Open fracture and joints injury b. compartment syndrome c. Ischemic vascular injury d. Neurologic injury due to fracture or dislocation. And managed accordingly 3. Immobilize the injured limbs 4. Limbs assessment using 7P's mnemonic: • Pain • Pulse • Paresthesia • Pallor • Paralysis • Pinkies (Cap.refill) • Poikilothermia	• ATLS 10th Edition • Refer to Appendix 15 – Acute Wound management • Refer to Appendix 16 – Splint application • Refer to Appendix 17 – Handling Amputated part	• Circulation chart • Immobilization device

Activity	Work Process	Standard	Requirement
Disposition	Prepare for admission or inter facility transfer	Refer to Chapter 19 : Transporting critically ill patient	
Documentation	Document all interventions and patient's progress notes.		• Patient progress note • Observation chart • Input & Output chart • Drugs chart

CHAPTER 19 : TRANSPORTING CRITICALLY ILL PATIENT

Component	Description
Objective	1. To ensure the safety of the patient during transport procedures. 2. To provide continuity of care to the patient from the Emergency Department to the designated destination. 3. To avoid preventable complications during the transport procedure. 4. To provide the guide and knowledge to the medical personnel on the procedure of transport of critically ill patients.
Scope	All critically ill patient presented at ETD / EU needs to be transported out.
Flow chart	

Activity	Work Process	Standard	Requirement
Pre transporting procedure	1. To ensure staff and all equipment and / or ambulance are ready. 2. A communication loop must be established among the referring facility, the transport team, receiving facility and the patient / relative.	• *Pekeliling KPK Bil 2/2009 Garis Panduan Rujukan & Perpindahan Pesakit di antara Hospital KKM* • Recommendation of Minimal standard for inter-facility transport of the critically ill patient. • (Academy Of Medicine Malaysia	• PPE • Transport ventilator • Oxygen management set • Patient vital sign monitor • Resuscitation bag • Suction • Infusion Pump • Defibrillator / AED • Immobilization set • Referral record
During transportation process	1. Continuous monitoring shall be carried out during transport. 2. Handing over to the receiving team.		
Post-transfer process	To provide arrangements for the return of staff, equipment's and medication		
Documentation	Document all interventions and patient's progress during the transfer process		• Observation chart

CHAPTER 20 : APPROACH TO MASS CASUALTY INCIDENT (MCI)

Component	Description
Objective	1. To identify Mass Casualty Incidents. 2. To initiate appropriate management plan for Mass Casualty Incident
Scope	Mass Casualty Incident.

Activity	Work Process	Standard	Requirement
Receiving information	Gather all Information required by using mnemonics such as M – Major or minor E – Exact location T – Type of incident H – Hazard present of suspected A – Access/route that is safe to use N – Number/type/ severity of casualty E – Emergency services presence and those required	• *ATLS 10th Edition 2018* • *MKN Arahan 20 Dasar Dan Mekanisme Pengurusan Bencana Negara (Semakan Semula)2012* • Brady: Prehospital Emergency Care,11th Edition. Pearson.	• PPE • Triage Card • Communication set • Immobilization set • Trauma / Medical bag
Dispatch	Send Emergency Response Team (ERT) and prepare for the backup team		
Incident Site Management	1. Scene assessment 2. Set up medical base 3. Field Triage 4. On-site victim management 5. Transporting		
Hospital Activation Phase	Activation of hospital disaster plan according to local setting	• Refer to Appendix 23 : Hospital Activation Phase	

20.1 : Incident Site Management

Component	Description
Objective	To initiate the incident site management or MCI plan. To involve in the coordination of the rescue activity with other agencies
Scope	Incident site management involving mass casualties

Activity	Work Process	Standard	Requirement
Scene safety	First Responder to make sure the environment is safe to approach Reqest clearance from JBPM Team if necessary	• *ATLS 10th Edition 2018* • *MKN Arahan 20 Dasar Dan Mekanisme Pengurusan Bencana Negara (Semakan Semula), 2012* • Brady: Prehospital Emergency Care,11th Edition	• PPE
Scene size up	First Responder to get information 1. Total victims 2. CBRNE involvement 3. Size of area affected		
Send Information	Send information to base after scene size up		

Activity	Work Process	Standard	Requirement
Set up Medical Base	Preparation site to set up Medical Base for disaster operation: 1. Set up in Yellow Zone 2. Victim treatment area 3. Medical supplies 4. Victim injured record 5. Standardize multi-agency operation 6. Forensic service for white tag victim	• Appendix 24: Incident Site Management • Appendix 25 – • Zoning concept at The Incident Site	• PPE • Triage Card • Trauma bag • Medical bag • Patient Monitor • Communication set • White board • Canopy • Camp Bed • Electric tool
Field Triage	1. Tagging victims based on the severity 2. Evacuate victim from Hot Zone to treatment area/ collecting point	• Appendix 21: START Triage for Adult • Appendix 22: JumpSTART Triage for Paediatric	• PPE • Triage Card • Trauma bag • Medical bag • Communication set
On-site victim management	Medical Base preparedness to receive victim for treatment - Human resource coordination		• PPE • Triage Card • Medical bag • Communication set
Transporting	Manage transportation for victim treated, based on severity of medical condition.		• PPE • Medical Bag • Ambulance • Communication Set
Documentation	Appropriate documentation for victim evacuated/ received/ treated/ transported/ referred		• Victim Registration Log Book • Documentation Sheet

20.2 : FIELD TRIAGE

Component	Description
Objective	To perform triaging of victims at the incident site in mass casualty incidents.
Scope	An Incident involving mass casualty victims

Activity	Work Process	Standard	Requirement
Tagging	Perform triage by using: 1. START (Adult) 2. JumpSTART(Paed) A technique that depends on a quick assessment of respiration, perfusion, and mental status **Triage Tag or Card** Usually colour-coded and large enough for visualization. Colour codes are as follows:- 1. **RED**- First Priority Victims. 2. **YELLOW**- Second Priority Victims. 3. **GREEN**- Third Priority Victims. 4. **WHITE / BLACK**- Dead Victims.	• ATLS 10th Edition 2018 • MKN Arahan 20 Dasar Dan Mekanisme Pengurusan Bencana Negara (Semakan Semula)2012 • Brady: Prehospital Emergency Care,11th Edition • Appendix 21: START Triage for Adult • Appendix 22: JumpSTART Triage for Paediatric • Appendix 26: Triage Tag / Triage Card	• PPE • Triage Card • Bandage for control bleeding • Medical Evacuation Devices • Medical Bag • Trauma Bag • Immobilization set • Communication set

Activity	Work Process	Standard	Requirement
Casualty collecting area	The point after victim evacuated from Red Zone to Yellow Zone: -Triage sieve -Triage sort	Appendix 24: Incident Site Management	
Medical Base Area	Victim zoning and patient care management area	Appendix 25 – Zoning concept at The Incident Site	
Documentation	Appropriate documentation for victim evacuated/ received/ treated		• Documentation Sheet

PROCEDURE 1: THE SUPRAGLOTTIC AIRWAY DEVICES (SGAs)

Component	Description
Objective	To correctly performed the insertion technique of SGAs
Scope	All patients with compromised airway

Activity	Work Process	Standard	Requirement
Indication	1. Identify patients who require an advanced airway adjunct. 2. Patient who has failed intubation / unlikely to succeed / comatose patient 3. The patient with a thoracic injury that compromised the ventilatory effort	• ALS NCORT 2017 / AHA • ATLS 10th Edition 2018	
Contra-indication	1. Severe maxillofacial injury 2. Profuse bleeding from upper airway 3. Patients with traumatic airway injuries are more likely to develop complications related to SGAs placement.		

Activity	Work Process	Standard	Requirement
Procedure	1. Insertion of supraglottic devices 2. Steps necessary for successful insertion of SGAs 3. Placement of SGAs	• Appendix 27: Diagrams Showing the Insertion of Supraglottic Airway Devices • Appendix 28: Recommended Size Guidelines for SGAs • Appendix 29: Steps Necessary for Successful Insertion of SGAs	• PPE • SGAs • Syringe • Ventilation equipment • Water soluble lubricant • Tape • Stethoscope
Documentation	Document all interventions and progress.		• Patient progress note • Observation charting • Input & output charting

PROCEDURE 2 : CRASH INTUBATION

Component	Description
Objective	To correctly performed the Crash Intubation
Scope	All patients with compromised airway

Activity	Work Process	Standard	Requirement
Intubation Procedure	**Indications: -** 1. Cardiorespiratory arrest	ALS NCORT 2017 / AHA 2020	
Preparation	Prepare of equipment		• Airway management set • Intubation set
Pre-oxygenation	A ventilation bag & mask is placed over the patient's mouth and nose.		
Protection & Positioning	1. Prevent passive regurgitation and gastric dilatation.		

Activity	Work Process	Standard	Requirement
Placement and positioning of ETT	1. Observation of the ETT passing through the cords 2. The cuff of the ETT is then inflated with air using a 10cc syringe until an airtight seal is secured. a. Measure the ETT Cuff pressure, if available. 3. Equal bilateral air entry on auscultation of the apex and base of the chest 4. Absence of air sound on auscultation over the epigastrium 5. Observation of the symmetrical rising and falling of the chest during the ventilatory cycle 6. Observation of condensation within the ETT concordant within the ventilatory cycle		• Stethoscope • Color metric end-tidal CO2 detection (if available) – the use of device that is placed between the bag and the ETT. • End-tidal CO_2 monitor

Activity	Work Process	Standard	Requirement
Post- intubation care	1. Check connection to ventilator and ventilator settings 2. Placement of nasogastric tube 3. Suctioning of ETT if required 4. Reassess if required		• Vital signs monitor • Ventilator
Disposition	1. Prepare patient for admission. 2. Prepare for inter facility transfer	Refer Chapter 19: Transportation of Critical Ill Patient	
Documentation	Document all interventions and progress.		

PROCEDURE 3: ENDOTRACHEAL INTUBATION

Component	Description
Objectives	1. To assist in Endotracheal Intubation or Rapid Sequence Intubation procedure 2. To correctly performed the Endotracheal Intubation (C&P AMOs Only)
Scope	All patients with compromised airway

Activity	Work Process	Standard	Requirement
Intubation Procedure	**<u>Indications: -</u>** • Head injury patient (GCS <8) • The patient with thoracic injury that compromised the ventilatory effort • Severe maxillofacial injury that compromised the airway patency • Cardiorespiratory arrest	ALS NCORT 2020	
Preparation	Prepare of equipment		• Airway management set • Intubation set
Pre oxygenation	• A ventilation bag & mask is placed over the patient's mouth and nose.	Formulari Ubat Kementerian Kesihatan Malaysia Bil 3/2021	
Pre-medicatio	• Medication is given as ordered		
Paralysis with induction as ordered	• Induction agent is given in a dose to produce prompt loss of consciousness		

Activity	Work Process	Standard	Requirement
Protection & Positioning	• immediately after the administration of IV Midazolam before the IV Suxamethonium to prevent passive regurgitation and gastric dilatation.		
Placement and positioning of ETT	• Observation of the ETT passing through the cords • The cuff of the ETT is then inflated with air using a 10cc syringe until an airtight seal is secured. • Equal bilateral air entry on auscultation of the apex and base of the chest • Absence of air sound on auscultation over the epigastrium • Observation of the symmetrical rising and falling of the chest during the ventilatory cycle • Observation of condensation within the ETT concordant within the ventilatory cycle		• Stethoscope • Colormetric end-tidal CO2 detection (if available) – the use of device that is placed between the bag and the ETT. • End-tidal CO2 monitor – if available

Activity	Work Process	Standard	Requirement
Post intubation care	• Check connection to ventilator and ventilator settings • Placement of nasogastric tube • Suctioning of ETT if required • Reassess if required		
Disposition	• Prepare patient for admission. • Prepare for inter facility transfer	Refer to Chapter 19: Transportation of Critically Ill Patient	• Vital signs monitor • Ventilator
Documentation	Document all interventions and progress.		

PROCEDURE 4: THORACOSTOMY TUBE INSERTION

Component	Description
Objective	To evacuate an abnormal air or fluid in the pleural space to improve oxygenation and ventilation
Scope	Assisting Thoracostomy Tube insertion procedure

Activity	Work Process	Standard	Requirement
Indication	• Pneumothorax, either traumatic or spontaneous • Haemothorax • Haemo-pneumothorax • Pleural Effusion	• ATLS 10th edition 2017 • Appendix 30: • Technique For Chest Tube Insertion	
Contra Indication	• Blunt Injury without witnesses cardiac activity • Penetrating abdominal without cardiac activity • Non-traumatic arrest • Severe head injury • Severe multi-system injury • Improperly trained team • Insufficient equipment		
Preparation	1. Obtain consent by a medical officer ** Consent is not applicable in life-threatening condition 2. Preparation equipment a. Patient preparation b. Patient position 3. Vital sign monitoring 4. Medication		• PPE • Patient Vital sign monitor • Cardiac monitor • Consent form for the procedure • Chest tube / pneumothorax set • Trocar (appropriate size) • Under water seal apparatus. • suture material • Local Anaesthetic • Scalpel blade

Activity	Work Process	Standard	Requirement
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation charting • Input & output charting • Drugs charting

PROCEDURE 5: DEFIBRILLATION

Component	Description
Objectives	1. To identified shockable rhythm. 2. To perform defibrillation.
Scope	All patients with a shockable rhythm

Activity	Work Process	Standard	Requirement
Indication	• Shockable rhythm 1. Pulseless Ventricular Tachycardia (VT) 2. Ventricular Fibrillation (VF)	• BLS NCORT / AHA 2020 • ALS NCORT / ACLS AHA 2020 • Appendix 31: The Shockable Rhythm	
Contra Indication	• Non-shockable rhythm (Any rhythm accepts above)		
Perform procedure	Refer to Appendix 31- AED Procedure and Appendix 32 – Defibrillation Procedure		• Defibrillator / Automated External Defibrillator (AED) • Conductive medium (gel) / defibrillator pads • Emergency trolley
Documentation	Document all interventions and patient's progress		• Patient progress note • Observation /Input & output / drugs charting

PROCEDURE 6: SYNCHRONIZED CARDIOVERSION

Component	Description
Objective	To assist synchronize cardioversion procedure.
Scope	All patients with unstable tachyarrhythmias.

Activity	Work Process	Standard	Requirement
Focus Assessment.	Perform rapid assessment: 1. Assess using the ABCDE approach 2. Ensure Oxygen give and obtain IV access 3. Monitor ECG, BP, SPO2, record 12 lead ECG 4. Identify and treat reversible causes 5. Assess for evidence of adverse signs (shock, myocardial ischaemia, syncope, heart failure)	• ACLS AHA 2020 • ALS NCORT 2017	• PPE • Defibrillator • Emergency Trolley • ECG machine • Patient vital sign monitor • Glucometer • Administer oxygen supplementation

Activity	Work Process	Standard	Requirement
Indication	Used of Synchronized Cardioversion: 1. Indicated in a hemodynamically unstable patient (low blood pressure) with perfusion rhythm (pulse present) 2. Recommended in supraventricular tachycardia due to re-entry, atrial fibrillation, atrial flutter and atrial tachycardia 3. Recommended in monomorphic VT with pulse 4. Not effective for treatment of Junctional Tachycardia, or Multifocal atrial tachycardia		
Assist procedure	Procedure: 1. Inform Medical Officer patient condition 2. Assess to determine tachycardia with a pulse 3. Preparing medication as ordered 4. Prepare for Synchronized Cardioversion	• Appendix 34: Synchronized cardioversion • Refer to Chapter 9: Tachyarrhythmia	
Documentation	Document all interventions and progress.		• Patient progress note • Observation charting • Input & output charting

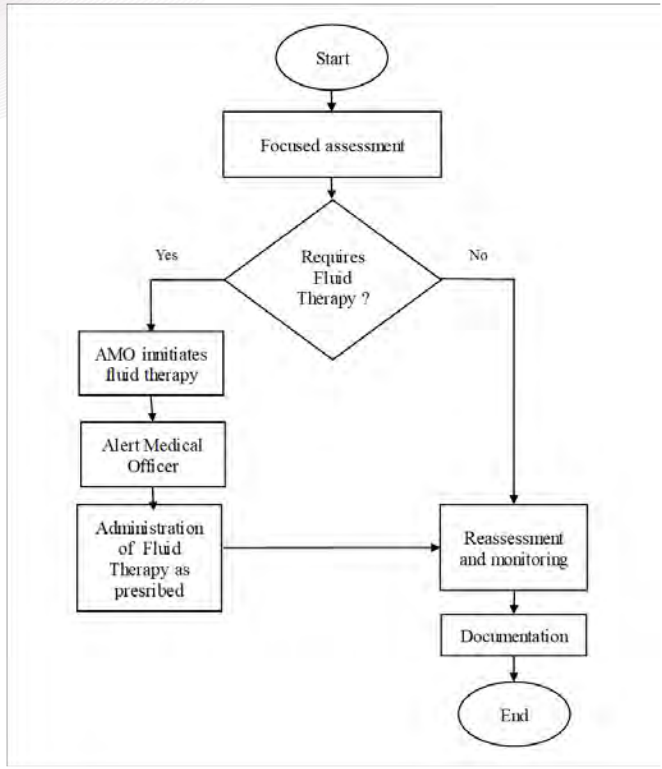
PROCEDURE 7: TRANSCUTANEOUS CARDIAC PACING (TCP)

Component	Description
Objective	To assist in the TCP procedure.
Scope	All patients with bradycardia required TCP.

Activity	Work Process	Standard	Requirement
Focus Assessment	Perform focus assessment: 1. Assess using the ABCDE approach 2. Ensure Oxygen give and obtain IV access 3. Monitor ECG, BP, SPO2, record 12-lead ECG 4. Identify and treat reversible causes 5.Assess for evidence of adverse signs (shock, myocardial ischaemia, syncope, heart failure)	• ACLS AHA 2020 • ALS NCORT 2017	• PPE • Defibrillator • Emergency Trolley • ECG machine • Patient vital sign monitor • Glucometer • Administer oxygen supplementation
Indication	Used of transcutaneous pacing 1. Hemodynamically unstable bradycardias that are unresponsive to atropine. 2. Bradycardia with symptomatic escape rhythms that don't respond to medication. 3.Cardiac arrest with profound bradycardia (if used early) 4. Pulseless electrical activity due to drug overdose, acidosis, or electrolyte abnormalities 5.Overdrive pacing for refractory tachyarrhythmias after failure of electrical cardioversion and drug therapy.		

Activity	Work Process	Standard	Requirement
Contraindication	1. Severe hypothermia 2. Prolonged brady-asystolic cardiac arrest		
Assisting Medical Officer to initiate patient management	**Procedure:** 1. Inform Medical Practitioner 2. Assess to determine of bradycardia 3. Preparing medication as ordered 4. Prepare for transcutaneous pacing	• Appendix 35: TCP Procedure • Refer to Chapter 8: Bradyarrhythmia	
Documentation	Document all interventions and progress		• Patient progress note • Observation charting • Input & output charting

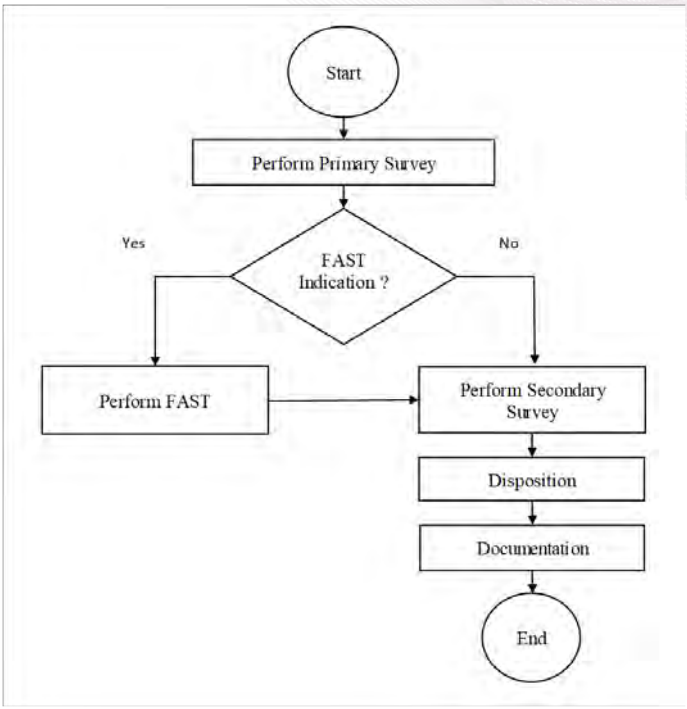
PROCEDURE 8: FLUID THERAPY

Component	Description
Objectives	1. To identify a patient that requires fluid administration. 2. To initiate fluid therapy based on patient needs.
Scope	All patients require fluid therapy presented at the ETD/EU.
Flow chart	

Activity	Work Process	Standard	Requirement
Focused assessment	Assess for hydration status that warrants fluid therapy.		
Fluid therapy	1. AMO initiates the fluid therapy. 2. Alert the medical officer. 3. Administer fluid therapy as prescribed: a. Burn injury b. Dengue fluid regime, c. Hemorrhagic/ hypovolemic shock. d. DKA	• Paediatric Protocols for Malaysian Hospital 4th Edition 2018 • All the CPG • (Burn, Dengue, Hemorrhagic / Hypovolemic shock DKA) • Patient Safety Goal No.7: 7r's principle . • Transfusion Practice Guidelines 2016. • ATLS 10th edition	• Patient's vital sign monitor • Patient progress note. • Observation charting • Input & output charting • Blood transfusion protocol. • Circulation chart. • Type of fluid - Balance Fluid - Crystalloid, - Colloid - Blood and Blood product
Reassess the patient and monitor vital signs	1. Perform patient's vital sign monitoring as follow; a. Blood pressure b. Heart rate c. Respiratory rate d. Temperature e. Pain score		• Vital sign monitor • Input/Output Chart
Investigation as ordered	Performing serial assessment as indicated and measurement of blood gas as ordered.		

Activity	Work Process	Standard	Requirement
Documentation	Document all interventions and patient's progress. Document; a. all interventions, b. patient's responses on the fluid therapy.		• Patient progress note • Observation charting • Input & output charting • Blood transfusion protocol

PROCEDURE 9: FOCUSED ASSESSMENT WITH SONOGRAPHY IN TRAUMA (FAST)

Component	Description
Objectives	1. To perform the FAST procedure 2. To identify the presence of free fluid in a trauma patients.
Scope	Trauma patients as indicated presented to ETD / EU (Done by credentialed or privileged AMO'S)
Flow chart	

Activity	Work Process	Standard	Requirement
Indication	1. Blunt thoracoabdominal trauma 2. Penetrating thoracoabdominal trauma 3. Suspected Pericardial Tamponade 4. Trauma with hypotension on unknown etiology 5. Trauma in Pregnancy		
Focused Assessment	Perform Primary Survey	• Refer to Chapter 15 : Primary Survey	• PPE
Perform procedure	1. Perform FAST Scan as indicated. 2. Repeat FAST as required. 3. FAST assessment should not delay other life-saving interventions.	• Appendix 37: FAST Scan Procedure	• Ultrasound machine
Documentation	Document all interventions and patient's progress notes.		• Patient progress note • Observation chart • Input & Output chart • Drugs chart

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3. *Ministry of Health Malaysia. (2016). Guidelines for Resuscitation Training for Ministry of Health (Vol. 1). Medical Development Division, Ministry of Health Malaysia. www.moh.gov.my*

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5. *Ismail, H. I. H. M., Ibrahim, H. M., Phak, N. H., & Thomas, T. (2018). Paediatric Protocols For Malaysian Hospital 4th Edition (M. P. Association (ed.); 4th Editio). Kementerian Kesihatan Malaysia.*

Procedure 9 : Focused Assessment With Sonography In Trauma (FAST)

1. *Habrat, D. (2021). How To Do E-FAST Examination. University of New Mexico School of Medicine. https://www.msdmanuals.com/professional/critical-care-medicine/how-to-do-other-emergency-medicine-procedures/how-to-do-e-fast-examination.*

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APPENDICES

APPENDIX 1 : Surgical Airway (Cricothyroidotomy)

1.1 Anatomy and Landmarks

The cricothyroid membrane is the anatomical site of access in the emergent surgical airway, regardless of the technique used. It has several advantages over the trachea in the emergent setting. The cricothyroid membrane is more anterior than the lower trachea, and there is the less soft tissue between the membrane and the skin. There is less vascularity and therefore less chance of significant bleeding.

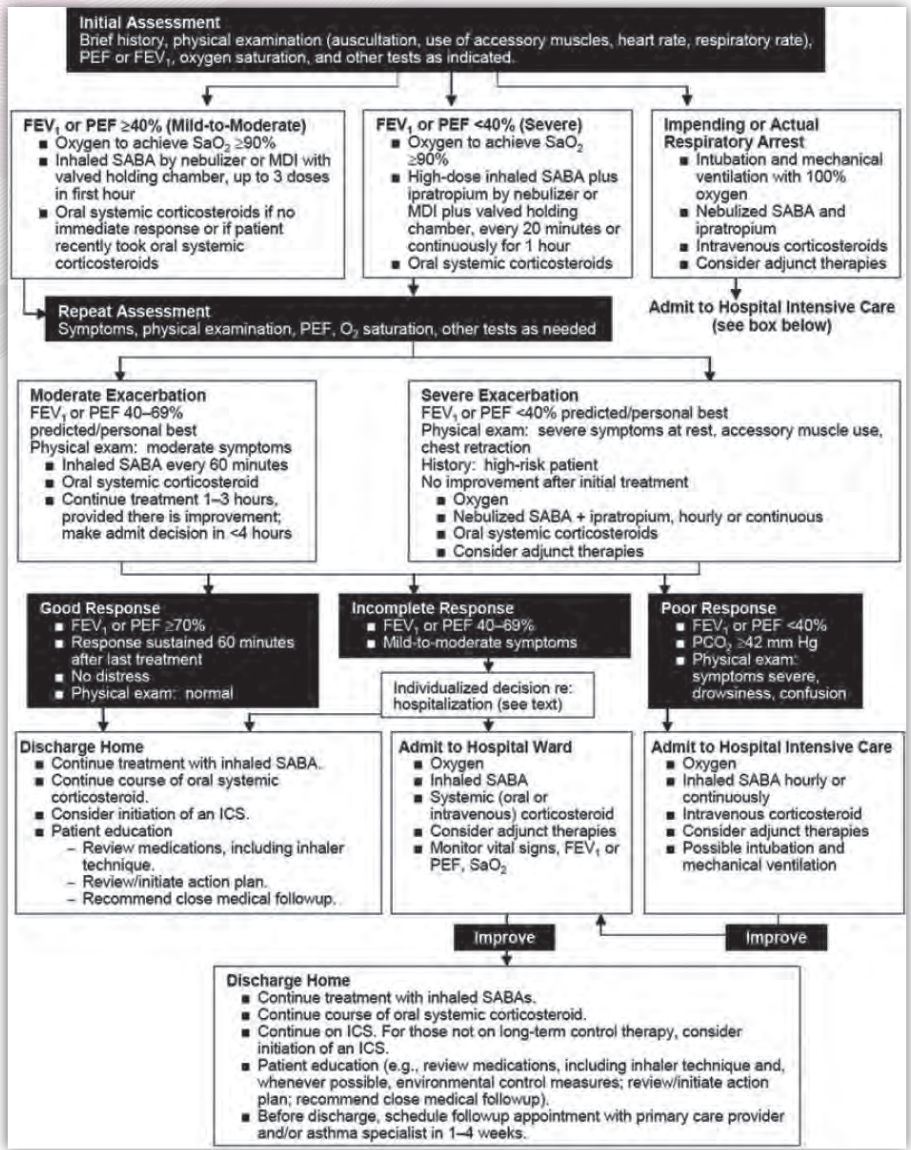
The cricothyroid membrane is identified by first locating the laryngeal prominence (notch) of the thyroid cartilage. Approximately one fingerbreadth below the laryngeal prominence, the membrane may be palpated in the midline of the anterior neck, as a soft depression between the inferior aspect of the thyroid cartilage above and the hard cricoid ring below. The relevant anatomy may be easier to appreciate in males because of the more prominent thyroid notch.

FIGURE 4.1 Anatomy of the Larynx. The cricothyroid membrane (arrow) is bordered superiorly by the thyroid cartilage and the cricoid cartilage inferiorly.

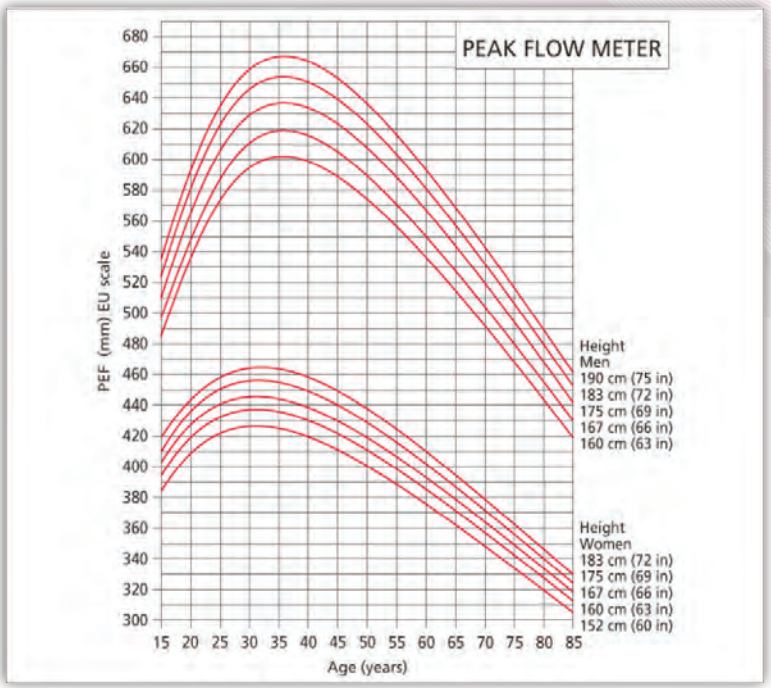
1.2 The Cricothyrotomy Procedure

STEP 1	Place the patient in a supine position with the neck in a neutral position. Have an assistant restrict the patient's cervical movement.
STEP 2	Identify the cricothyroid membrane by palpating the thyroid notch, cricothyroid cartilage, and sternal notch for orientation.
STEP 3	Assemble the necessary equipment.
STEP 4	Surgically Clean, draped and anesthetize the area locally.
STEP 5	Stabilize the thyroid cartilage with the non-dominant hand, and maintain stabilization until the trachea is intubated.
STEP 6	Make a 2- to 3-cm vertical skin incision over the cricothyroid membrane and, using the non-dominant hand from a cranial direction, spread the skin edges to reduce bleeding. Identify the cricothyroid membrane and then incise through the base of the membrane transversely. Caution: To avoid unnecessary injury, do not cut or remove the cricoid and/or thyroid cartilages.
STEP 7	Insert hemostat or tracheal spreader or back handle of scalpel into the incision, and rotate it 90 degrees to open the airway.
STEP 8	Insert a properly sized, cuffed endotracheal tube or tracheostomy tube (usually a size 5–6) through the cricothyroid membrane incision, directing the tube distally into the trachea. If an endotracheal tube is used, advance only until the cuff is no longer visible to avoid main stem intubation.
STEP 9	Inflate the cuff and ventilate.
STEP 10	Observe lung inflation and auscultate the chest for adequate ventilation. Confirm the presence of C02 and obtain a chest x-ray.
STEP 11	Secure the endotracheal or tracheostomy tube to the patient, to prevent dislodgement.

APPENDIX 2 : Management of Asthma in Emergency Department / Unit
Source: Adopted from Clinical Guidelines –
Management of Asthma *(MOH/P/PAK/354,17(GU)*



APPENDIX 3 : Peak Expiratory Flow rate - Normal Values



Source: Adopted from Clinical Guidelines – Management of Asthma *(MOH/P/PAK/354,17(GU*

Appendix 4 : Right-sided ECG

Right Ventricular Infarction

Diagnosis is confirmed by the presence of ST segment elevation in the right-sided leads (V3R-V6R).

Important to have the right-sided ECG in the management of all patients with inferior STEMI or suspected to have right ventricular infarction

Diagnostic criteria

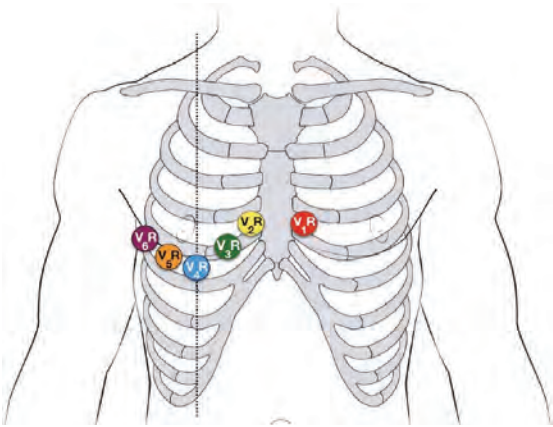
In patients with inferior STEMI, right ventricular infarction is suggested by:

- ST elevation in V1
- ST elevation in V1 and ST depression in V2 (highly specific for RV infarction)
- Isoelectric ST segment in V1 with marked ST depression in V2
- ST elevation in III > II

Diagnosis is confirmed by the presence of ST elevation in the right-sided leads (V3R-V6R)

There are several approaches to recording a right-sided ECG:

- A complete set of right-sided leads is obtained by placing leads V1-6 in a mirror-image position on the right side of the chest (see diagram below)
- It may be simpler to leave V1 and V2 in their usual positions and just transfer leads V3-6 to the right side of the chest (i.e. V3R to V6R)
- The most useful lead is V4R, which is obtained by placing the V4 electrode in the 5th right intercostal space in the mid-clavicular line



Source : Adopted from Right Ventricular Infarction. Life in the Fastlane 2021

APPENDIX 5 : Posterior ECG

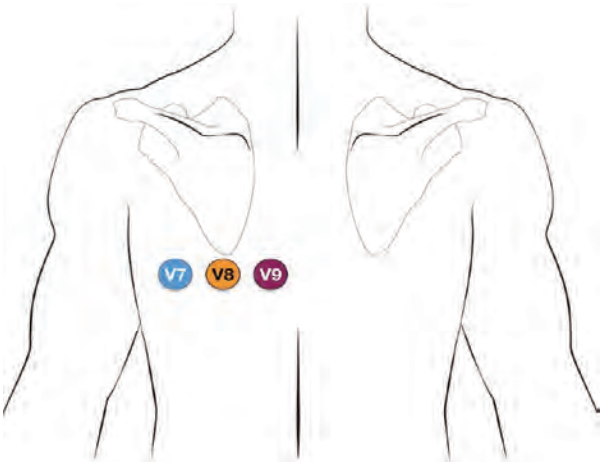
Clinical Significance of Posterior MI
Posterior infarction accompanies 15-20% of STEMIs, usually occurring in the context of an inferior or lateral infarction.

Isolated posterior MI is less common (3-11% of infarcts).
Posterior extension of an inferior or lateral infarct implies a much larger area of myocardial damage, with an increased risk of left ventricular dysfunction and death.
Isolated posterior infarction is an indication for emergent coronary reperfusion. However, the lack of obvious ST elevation in this condition means that the diagnosis is often missed.
Be vigilant for evidence of posterior MI in any patient with an inferior or lateral STEMI.

Posterior leads

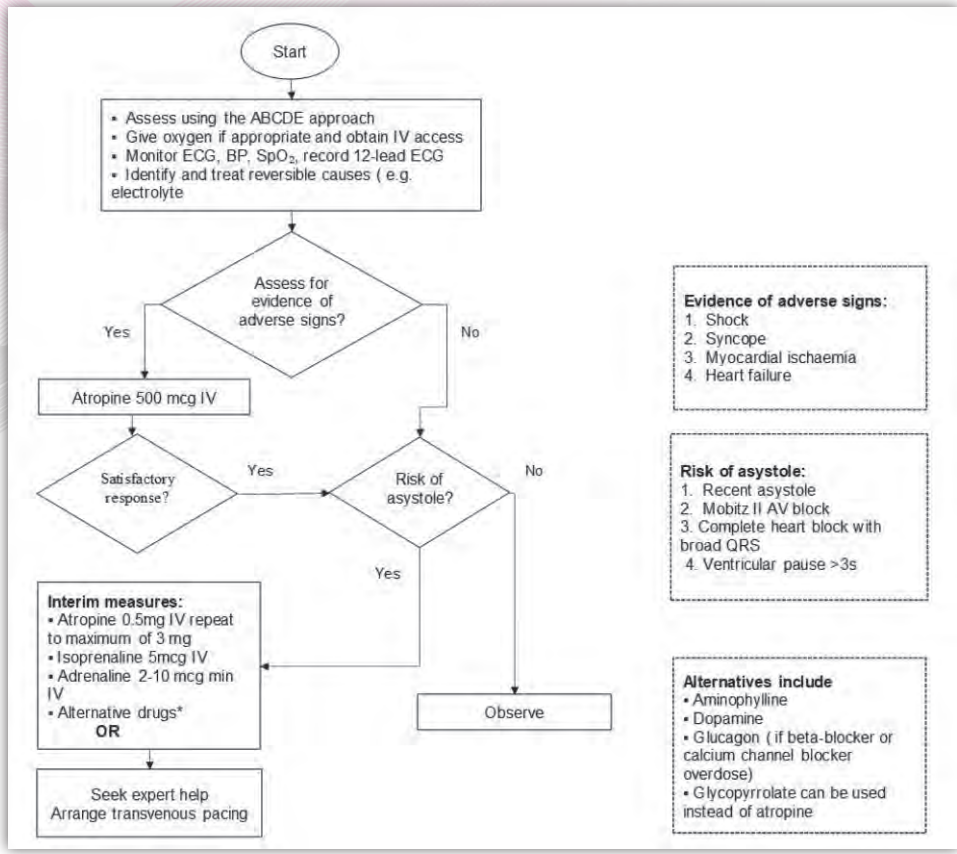
Leads V7-9 are placed on the posterior chest wall in the following positions (see diagram below):

- V7 – Left posterior axillary line, in the same horizontal plane as V6.
- V8 – Tip of the left scapula, in the same horizontal plane as V6.
- V9 – Left paraspinal region, in the same horizontal plane as V6.



Source : Adopted from Posterior Myocardial Infarction.
Life in the Fastlane 2021.

APPENDIX 6 : Bradycardia Algorithm



Source: Adopted from ALS NCORT MOH (2017)

APPENDIX 7 : ECG Rhythm

Figure 1: Sinus Bradycardia
(Sinus Rhythm, resting HR of <60bpm, Normal QRS Complex)

Figure 2: First Degree Heart Block
(PR Interval >0.2s, sinus rhythm, normal P wave followed by normal QRS Complex)

Figure 3: Second Degree Heart Block (Type 1 Wenckebach)
(Progressive PR Interval Prolongation culminating in a non-conducted P Wave)

Figure 4: Second Degree Heart Block (*Mobitz Type 2*)
(Intermitent non-conducted P waves without progressive prolongation of the PR Interval)

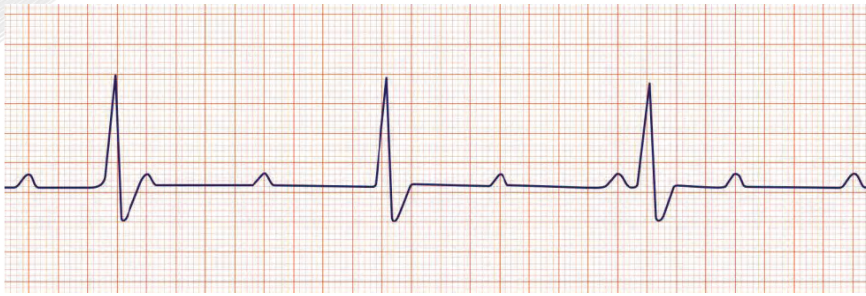
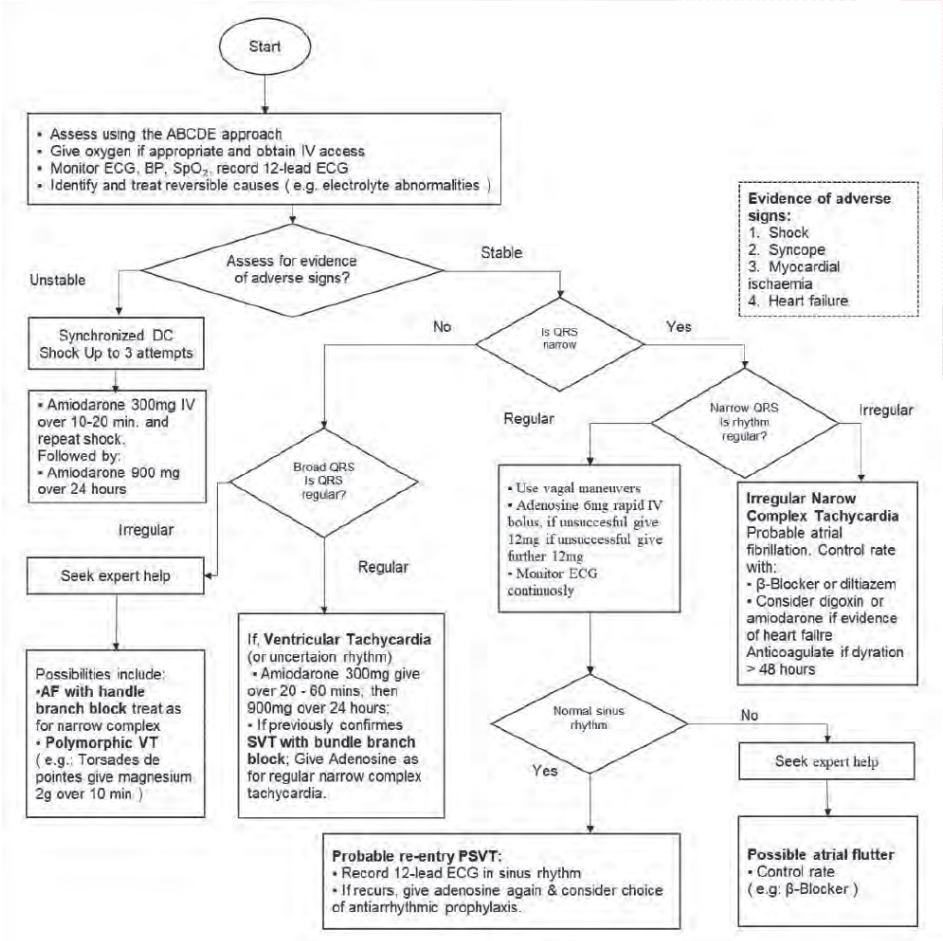


Figure 5: Third Degree Heart Block (Complete Heart Block)
(Complete absent of AV Conduction)

APPENDIX 8 : Tachycardia Algorithm



Source : Adopted from ALS NCORT Training Manual 2017 (MOH)

APPENDIX 9 : Types of Tachyarrhythmia

Types of Tachyarrhythmia
1. Supraventricular Tachycardia
2. Ventricular Tachycardia
3. Atrial fibrillation
4. Atrial Flutter

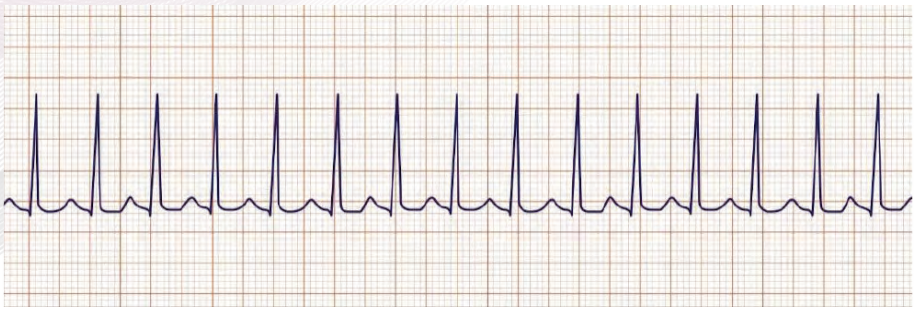


Figure 1: Supraventricular Tachycardia (SVT)
(a narrow complex QRS <0.12s, P wave nor seen, rate >150bpm, regular rhythm)

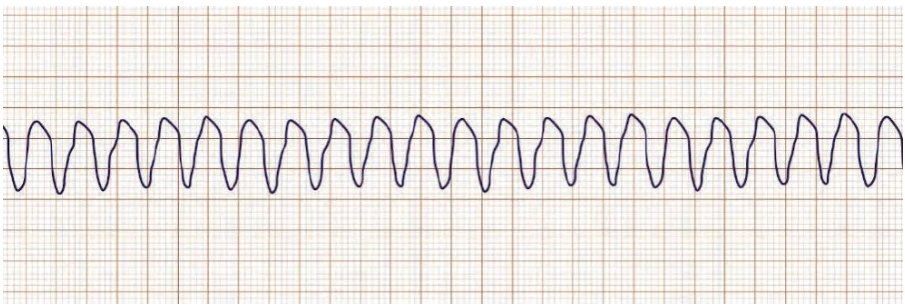


Figure 2: Ventricular Tachycardia (VT)
(a broad complex QRS, regular ventricular rate, possibly superimposed P waves)

Figure 3: Atrial Fibrillation (AF)
(Irriregularly irregular rhythm, no P waves, absence of an iso-electric baseline, variable ventricular rate, QRS Complexes usually <0.12s, fibrillatory wave may mimic P wave as leading to misdiagnosis)

Figure 4: Atrial Flutter
(Rhythm can be regular or variable, rapid identical undulating waves, no P wave, sawtooth appearance known as flutter waves)

APPENDIX 10 : Acute Stroke Diagnostic Screening Tools.

Assessment Tools	Items/ Scoring
Face Arm Speech Test (FAST)	1. Facial palsy, 2. Arm weakness 3. Speech disturbance Abnormally demonstrated on one or more items is indicative of suspected stroke
Balance, Eye, Face Arm Speech Test (BEFAST)	1. Balance 2. Eyesight chance 3. Facial weakness 4. Arm Weakness 5. Speech Difficulties Abnormally demonstrated on one or more items is indicative of suspected stroke
Cincinnati Prehospital Stroke Scale	1. Presence/ absence of facial pals 2. Unilateral arm weakness 3. Speech impairmet Abnormally demonstrated on one or more items is indicative of suspected stroke
Los Angeles Prehospital Stroke Screen (LAPSS)	1. Age > 45 2. History of seizures absent 3. Symptomduration <24 hours 4. At baseline, patient is not wheelchair bound or bedridden 5. Blood sugar between 3.33 - 22.22 mmol/L 6. Obvous asymmetry (right versus left) 7. Facial smile/ grimace 8. Grip 9. Arm strenght If 1-5 are yes with asymmetry on exam the LAPS criteria are met indicating suspected stroke.

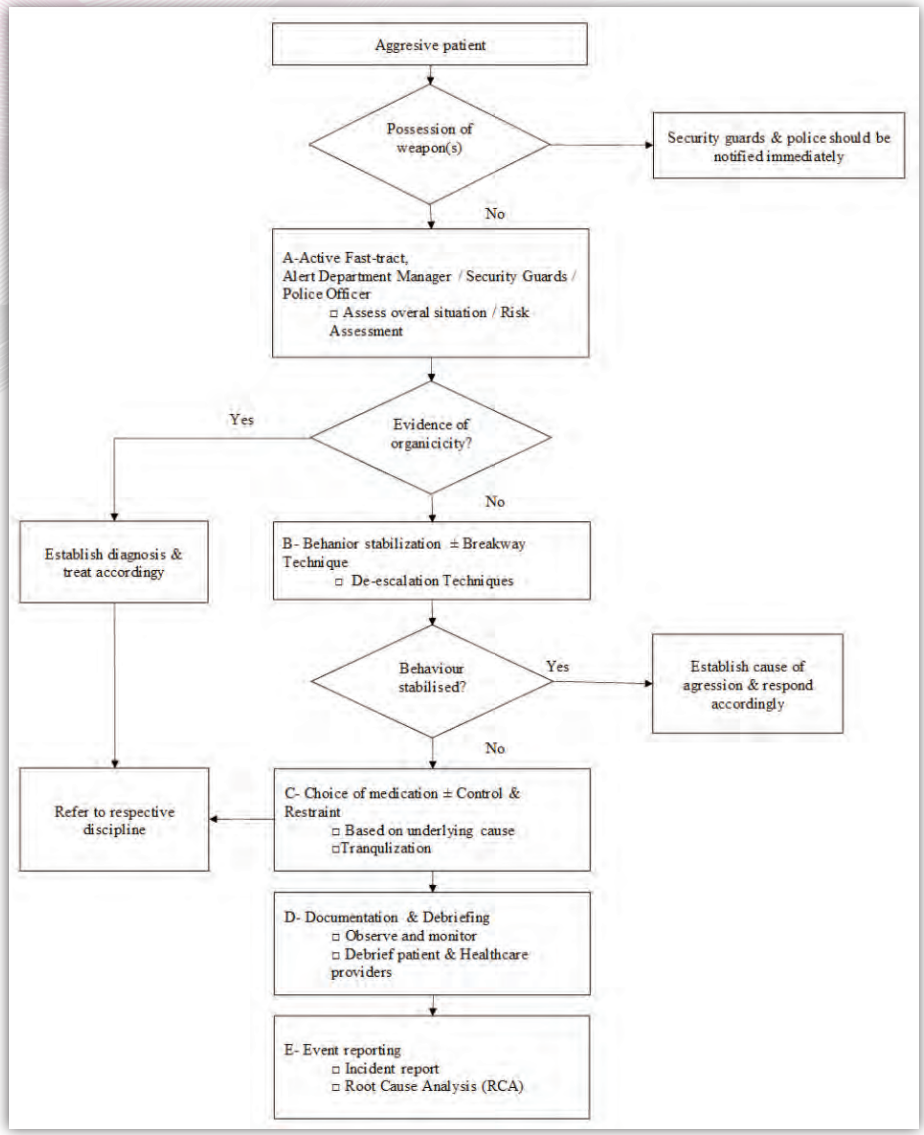
Source: Adapted from CPG Management of Ischaemic Stroke 3rd Edition.

APPENDIX 11 : Obtain Targeted History from the snake bite injury patients

HISTORY		INFORMATION
When	Date and time of bite	Precise time of incident to monitor the progression of the signs and symptoms.
Where	Geolocation of the incident	Knowledge on geolocation of Malaysia indigenous snake in the region may give clue to possible of snake species involved and the most appropriate antivenom to use if indicated.
How	Detailed event of the bite	What the patient is doing before the bite. Was the snake situated on the ground/ floor or on the tree. Any particular behaviour of the snake (e.g. hooding, spitting). Number of bites/ strikes & duration of the bite. What happen to the snake- escaped, captured or killed. Description of the snake . Picture(s) of snake if avaiable.
Where	Part of body bitten	Bite at the hand may indicate the patient was bitten while trying to hold the snake.
What	What was done to the bitten limb/ area	Manipulation or treatment given for example tourniquet, cutting the wound and suction or application of traditional medicine.
What	Treatment givent at rimary Health Facility	Medication given or procedure done
What	Anaphylaxis risk	Determine allergies, and any history of snake bite or antivenom administration and history of anyphylaxis. History of exposure to snake (e.g. snake handlerss, snake catchers)

Source : Guideline: Management of Snake Bite, Ministry of Health Malaysia (2017)

APPENDIX 12 : Flow Chart on Management of the Aggressive Patient in the Emergency Department



Source: Adopted from Guidelines on Management of Aggressive Patients in MOH Facilities, 2016

APPENDIX 13 : Mechanism of Injury and Suspected Injury Pattern

MECHNISM OF INJURY AND SUSPECTED INJURY PATTERNS			
MECHANISM OF INJURY	**SUSPECTED INJURY PATTERNS**	**MECHANISM OF INJURY**	**SUSPECTED INJURY PATTERN**
BLUNT INJURY			
Frontal impact, automobile collision • Bent steering wheel • Knee imprint dashboard • Bull's-eye fracture windscreen	• Cervical spine fracture • Anterior flail chest • Myocardial contusion • Pneumothorax • Traumatic aortic disruption • Fractured spleen or liver • Posterior fracture/ dislocation or hip and/ or knee • Head injury • Facial fracture	**Rear Impact,** automobile collision	• Cervical spine fracture • Head injury • Soft tissue injury to neck
		Ejection from vehicle	• Ejection from the vehicle precludes meaningful prediction of injury patterns but places patient at greater risk for virtually all injury mechanisms.
Side impact, automobile collision	• Contralateral neck sprain • Head injury • Cervicle spine fracture • Lateral flail chest • Pneumothorax • Traumatic aortic disruption • Diaphragmatic rupture • Traumatic aortic disruption • Fractured spleen/ liver and/ or kidney depending on side of impact • Fractured pelvis or acetabulum	**Motor vehicle impact with pedestrian**	• Head injury • Traumatic aortic disruption • Abdominal visceral injuries • Fractured lower extremities/ pelvis
		Fall from height	• Head injury • Axial spien injury • Abdominal visceral injuries • Fractured pelvis or acetabulum • Bilateral lower extremity fractures (Including calcaneal fractures)
PENETRATING INJURY		**THERMAL INJURY**	
Stab wound • Anterior chest	• Cardiac tamponade if within 'box' • Hemothorax • Pneumothorax • Hemopneumothorax	**Thermal burns**	• Circumferential eschar on extremity or chest • Occult trauma (mechanism of burn/ means of escape
• Left thoracoabdominal • Abdomen	• Left diaphragm injury/ spleen injury/ hemopneumothorax • Abdominal vissceral injury possible If peritoneal penetration	**Electrical burns**	• Cardiac arrhythmias • Myonecrosis/ compartment syndrome
Gunshot wounds (GSW) • Truncal	• High likelihood of injury • Trajectory from GSW/retained projectiles help predict injury	**Injalation burns**	• Carbon monoxide poisoning • Upper airway swelling • Pulmonary edema
• Extremity	• Neurovascular injury • Fractures • Compartment syndrome		

Source: Adopted from ATLS Student Course Manual,10th Edition

APPENDIX 14 : Glasgow Coma Scale

GLASGOW COMA SCALE		
Original Scale	**Revised Scale**	**Score**
Eye Opening (E)	**Eye Opening (E)**	
Spontaneous	Spontaneous	4
To Speech	To Speech	3
To pain	To pressure	2
None	None	1
	Non-testable	NT
Verbal Response (V)	**Verbal Response (V)**	
Oriented	Oriented	5
Confused conversation	Confused conversation	4
Inapropriate words	Words	3
Incomprehensible sounds	Sounds	2
None	None	1
	Non-testable	NT
Best Motor Response (M)	**Best Motor Response (M)**	
Obey commands	Obey commands	6
Localizes pain	Localizing	5
Flexion withdrawal to pian	Normal flexion	4
Abnormal flexion (decorticate)	Abnormal flexion	3
Extension (Decelebrate)	Extension	2
None (Flacid)	None	1
	Non-testable	NT
GCS Score = E(4) + V (5) + M(6) = Best possible score 15; worst possible score 3		

Source : ATLS Student Course Manual,10th Edition

APPENDIX 15 : Wound Management

1. Primary survey ABCDE
2. Detailed examination and vital signs
3. Remove of any gross contamination, application of sterile dressing, and splinting of fracture
4. Assess the wound site;
   - Type of wound (Internal bleeding / External bleeding)
   - Tendon cut
   - Artery cut
   - DCAPBTLS

5. Wound assessment and description
   - Size
   - Shape
   - Area affected
   - Tissue/skin loss

6. Identify appropriate interventions for wound management that are identified
   - Suture
   - Staples
   - Wound closure clips
   - Tissue adhesive

7. Identify the condition of the wound after treatment is given
   - Swelling
   - Type of dressing needed
   - Tetanus status
   - The condition of surrounding skin

8. All bleeding should be controlled by direct pressure on the wound, fracture or vessel. Do not use a tourniquet.
9. Dressing to prevent gross contamination and infection.
10. Bandages
11. I/V antibiotics to prevent infection
12. Tetanus for prophylaxis
13. Once the patient has been stabilized, the patient should be transported to the hospital / operating room where definitive treatment of the fracture can be promptly undertaken.
14. Continue monitoring and assessment of the patient

APPENDIX 16 : Splint Application

1. Primary survey ABCDE
2. Detailed examination and vital signs
3. Remove of any gross contamination, application of sterile dressing, and splinting of fracture
4. Evaluate 3 aspects of examination:
   a. LOOK – DCAPBTLS (Deformity, Contusion, Abrasion, Punctuation, Burn, Tenderness, Lacerations, Swelling),
   b. FEEL (Distal Pulse and detect loss of sensation)
   c. MOVE (the joint above and below the fracture)
5. Stop bleeding
6. Determined closed / open fracture

   Before the procedure
   i. Checking and verifying documents and controlling pain by providing medications to control pain
   ii. Examines injuries and provides early treatment to limbs in need of immobilization.
   iii. Before installing the splint should check the pulse, motor and sensors on the relevant parts.
   iv. Select and provide appropriate equipment for the procedure from size, function and indication based on the injury suffered
   v. Get help if you need help.

   After the procedure
   i. Provides proper alignment to the injured part
   ii. Install the immobilization equipment that has been provided using the correct technique.
   iii. Check Pulse, Motor and sensors after splint installation
   iv. Analgesia if indicated.
   v. Report any complications and intervention procedures if necessary.
   vi. Pack equipment when finished
   vii. Perform documentation

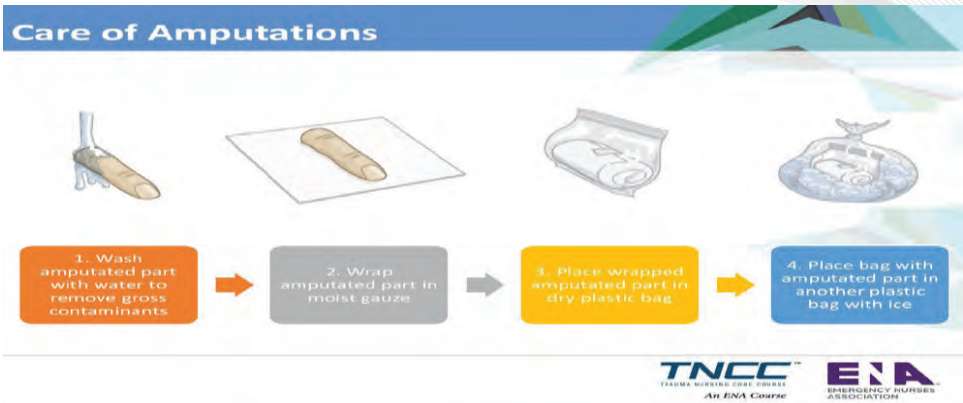
7. Once the patient has been stabilized, the patient should be transported to the hospital where definitive treatment of the fracture can be promptly undertaken.

8. Continue monitoring and assessment of the patient.

APPENDIX 17 : Handling Amputated Part

The prognosis for successful reattachment depends on several factors including;

a. Body part involved and extent of injury.
b. The severity of the associated trauma.
c. The time interval between amputation and surgical intervention
d. Age and health of the patient
e. Management and care of the amputated part
f. Tissue from amputated parts may be viable and can be used in surgery, even if reattachment is not possible, therefore, correct management of amputated parts is critical
g. Properly managed tissue or parts can be preserved for up to 18 hours with the highest chance of successful reattachment if done within 4 to 6 hours.



Procedure handling amputated part;

a. If contaminated, gently brush or wipe the part and rinse with saline if necessary.
b. Cover the part with saline moistened sterile dressing and place in air tight bag.
c. If available, prepare a :
   • 1-part ice to 3-part water slurry and immerse the air-tight bag.
d. If ice water or ice is unavailable attempt to keep the part cool and away from heat sources
e. Transport the part with the patient to the most appropriate health facility and notify as soon as possible to allow timely preparation of a receiving medical team
f. On arrival at the health facility, the amputated limb must be immediately handed over to the receiving staff.
g. Do not allow any surface of the amputated part to freeze, suffer a cold burns or become wet.
h. Whenever possible, all amputated parts, regardless of perceived damage of viability should be appropriately packaged and transported with the patient.
i. Do not raise false hope of reattachment with the patient

APPENDIX 18 : Transporting Critically Ill Patient

a. Appropriateness:
   - Patients on significant respiratory and/or significant inotropic support or are otherwise unstable should not be considered suitable for intra hospital transport; exceptions can be made if the reason for the transport is deemed absolutely necessary
   - Note: in the event of an emergency during transport, the patient should be taken to the nearest suitable area for stabilization

b. Review current patient stability;
   - Heart rate
   - Blood pressure
   - Respiratory rate
   - Temperature
   - Oxygen saturation
   - Central venous pressure if indicated
   - Input & output charting

c. Check cardiovascular support;
   - Current parameter
   - Need for inotropes
   - Neck line placement and security
   - Identify line for dedicated IV access during transport

d. All equipment should not be disconnected from the patients until a replacement is available
   - Check ventilation parameter if indicated
   - Check ETT for placement and security
   - Ensure recent suction has been carried ou

e. Check equipment;
   - Transport ventilator and power cord
   - Transport monitor and power cord and charger
   - Oxygen cylinders
   - Resuscitation bag
   - Infusion/syringe pumps/spare power cords
   - IV poles for bed
   - Other necessary equipment (eg: central venous line, chest tube)
   - Carry appropriate support drugs
     - Sedation
     - Intubation drugs
     - Vasoactive drugs
     - Intravenous fluids and blood/products
     - Any other drugs that may need to be given (if indicated)

f. Handing over patient safely to staff in charge of the receiving unit /department. Summarize all management done in Emergency Department
   - Ensure the patient is connected to the monitor of the designated area
   - Check the stability of the patient: vital signs
   - Document the patient's condition before, during, and after the transfer

g. On return to the Emergency Department, all transport equipment that was used in the transport and that will not remain with the patient needs to be cleaned.

   This includes:
   - Transport ventilator and power cord (NB circuit and filters are disposable)
   - Transport monitor, power cords, and cables
   - Oxygen cylinders
   - Resuscitation bag

h. Dispose all the the disposable items have been used during the transfer
   - Any used items need to be documented so that replacement can occur
   - Any dirty/used/ opened items NOT to be placed back in the bag but placed in a dirty utility room for processing

i. Perform proper doffing after handling patient.

APPENDIX 19 : *Senarai Semak Pelaksanaan Garis Panduan*

SENARAI SEMAK PERLAKSANAAN GARIS PANDUAN

NAMA PESAKIT & NO. PENDAFTARAN :

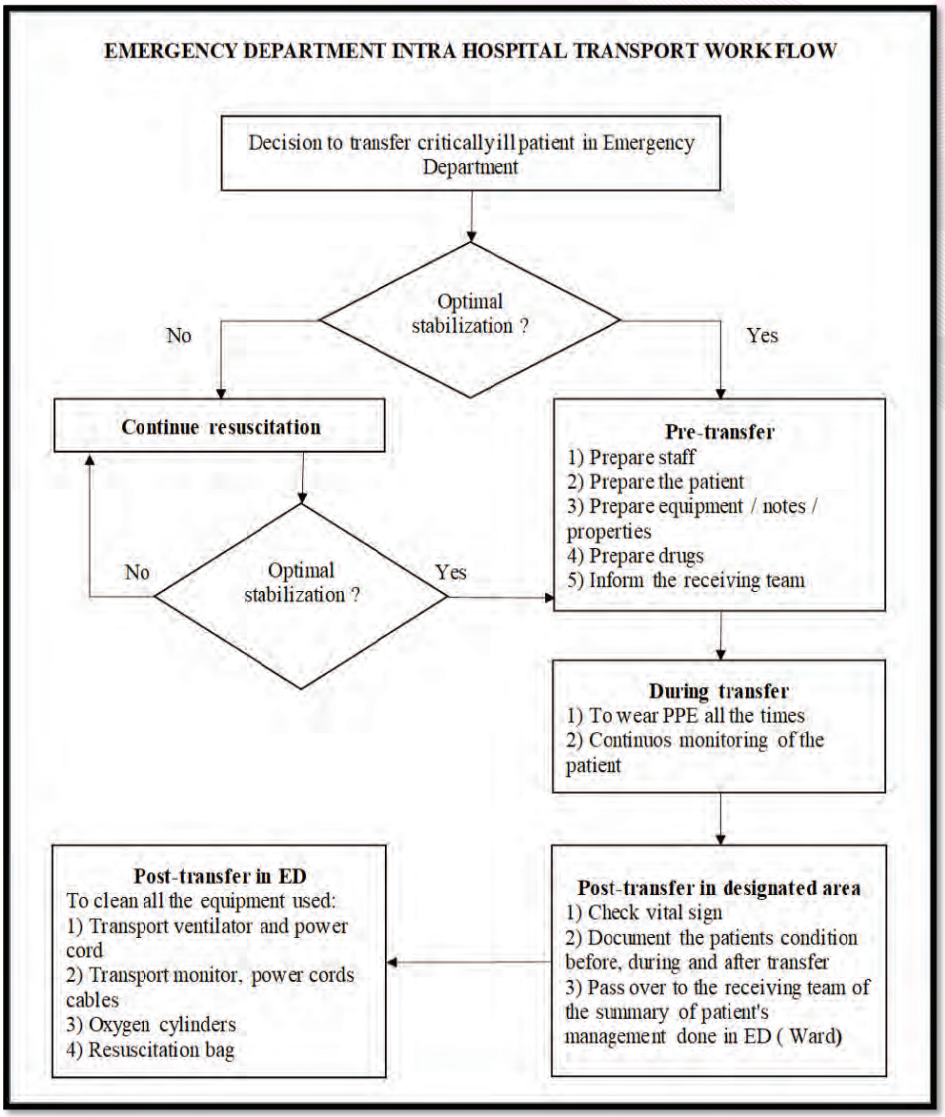
HOSPITAL :

DIAGNOSA :

	DIISI OLEH ANGGOTA PENGIRING DARI HOSPITAL YANG MERUJUK KES Catatkan Waktu: a) Tarikh & Waktu Memulakan Perjalanan: _____ b) Waktu sampai ke hospital rujukan: _____ c) Waktu kes diterima oleh unit/jabatan/anggota tertentu yang berkaitan: _____			
		YA	**TIDAK**	**CATATAN**
1.	Keadaan pesakit pada permulaan perjalanan: • Dalam keadaan stabil			
	• Tidak stabil tetapi telah distabilkan			
	• Tidak Stabil			
2.	Memaklumkan pesakit/waris keputusan merujuk kes			
3.	Hubungi/Komunikasi dengan hospital rujukan *Sila catat Pegawai yang di hubungi			***Nama:*** ***Jawatan:***
4.	Anggota/Pegawai Pengiring			***Nama:*** ***Jawatan:***
5.	Surat Rujukan			
6.	Destinasi pesakit di hospital rujuk telah di kenalpasti contoh: Jabatan Kecemasan/Klinik Pakar/Wad/ Dewan Bersalin/ICU			***Destinasi:***
7.	Kes diterima di destinasi yang ditetapkan *Sila catatkan sebab jika berlaku perubahan destinasi			***Perubahan destinasi:***

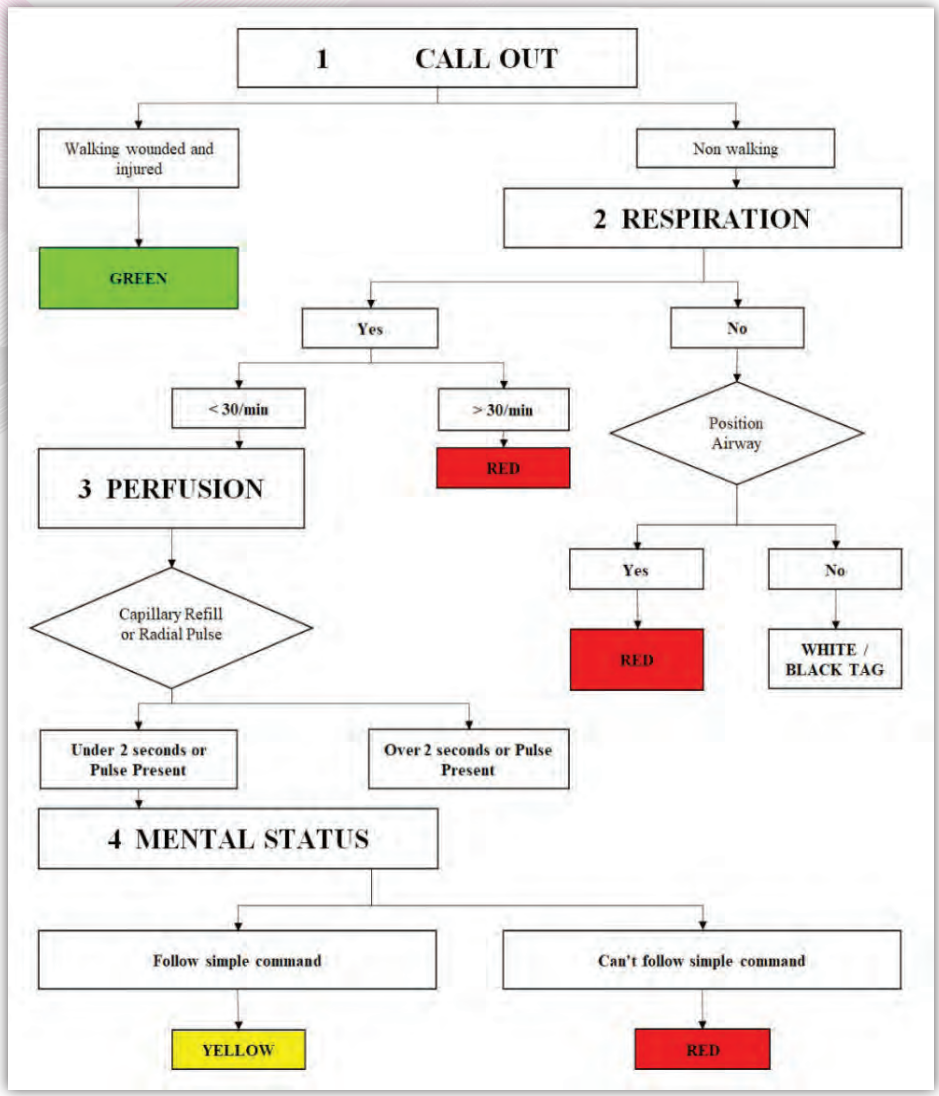
Source: *Garis Panduan Rujukan dan Perpidahan Pesakit di antara Hospital-Hospital, Kementerian Kesihatan Malaysia* 2009

APPENDIX 20 : Emergency Department Intra-Hospital Transport Work Flow



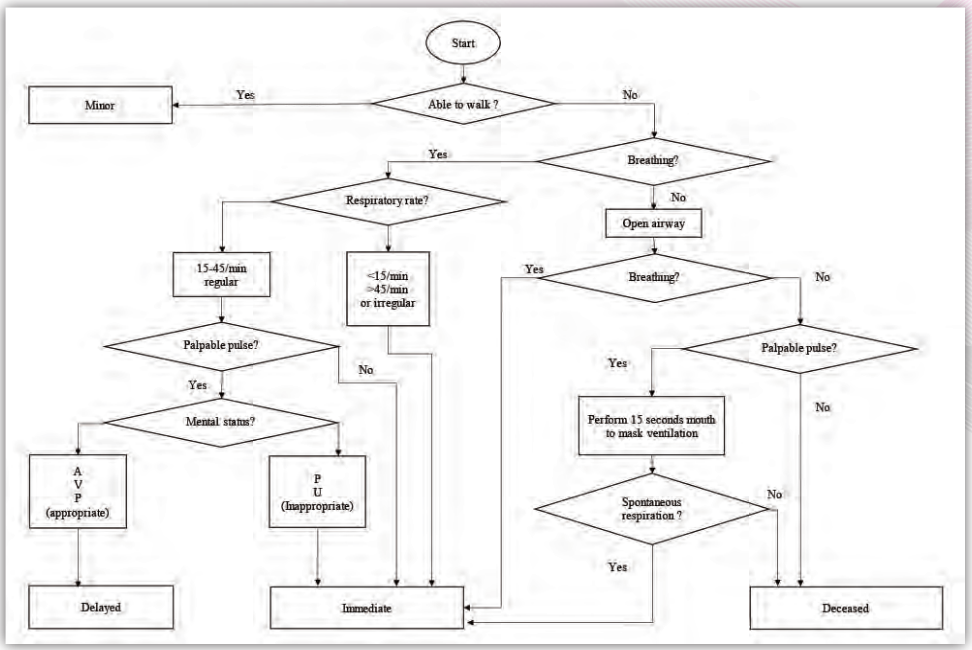
Source: Adopted from *Garis Panduan Rujukan dan Perpidahan Pesakit di antara Hospital-Hospital, Kementerian Kesihatan Malaysia* 2009

APPENDIX 21 : START Triage for Adult



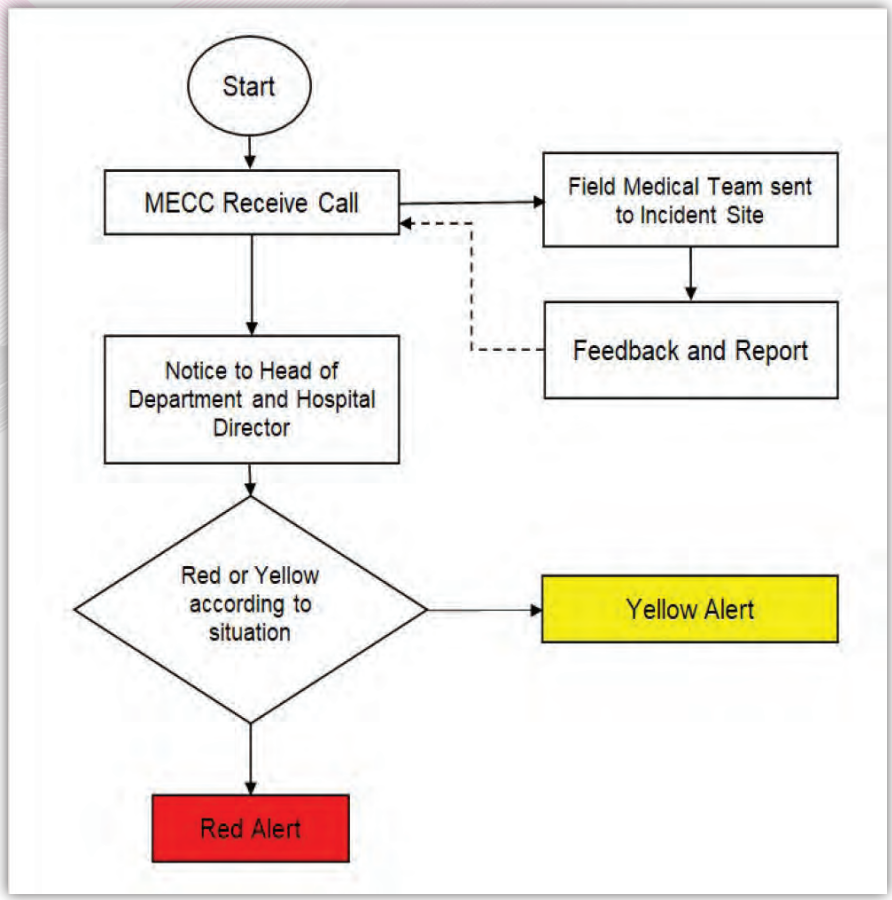
Source: Adapted from Brady Prehospital Emergency Care 11th Edition 2018.

APPENDIX 22 : JumpSTART Triage for Pediatric.



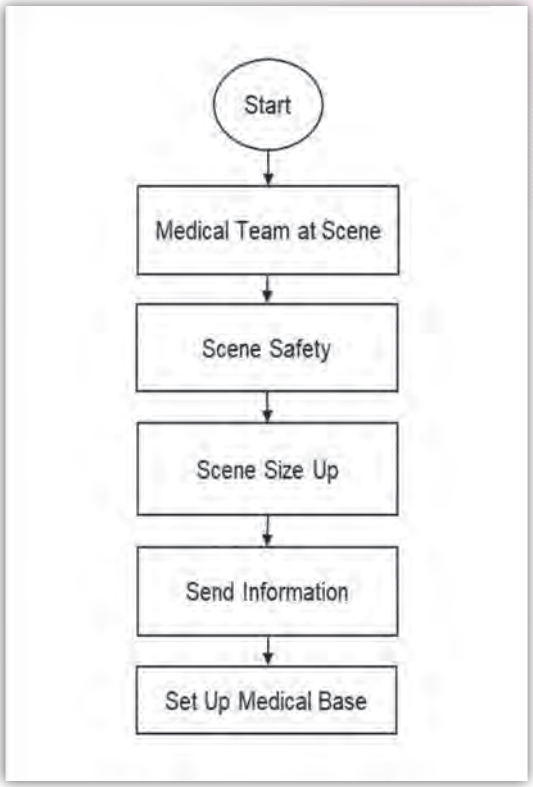
Source: Adapted from Brady Prehospital Emergency Care 11th Edition 2018.

APPENDIX 23 : Hospital Activation Phase



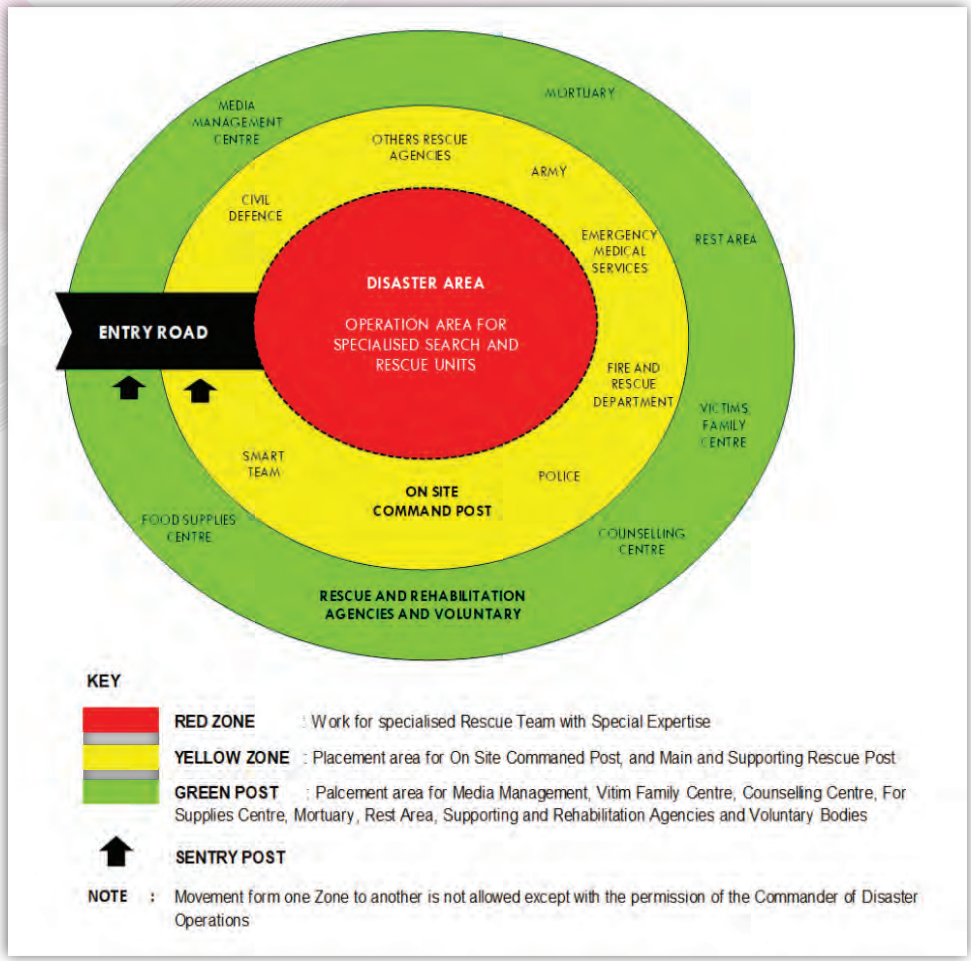
Source: Adapted from Hospital Kuala Lumpur Pelan Tindakan Bencana HKL (2011)

APPENDIX 24 : Incident Site Management



Source: Adapted from Hospital Kuala Lumpur Pelan Tindakan Bencana HKL (2011)

APPENDIX 25 : Zoning Concept at The Incident Site

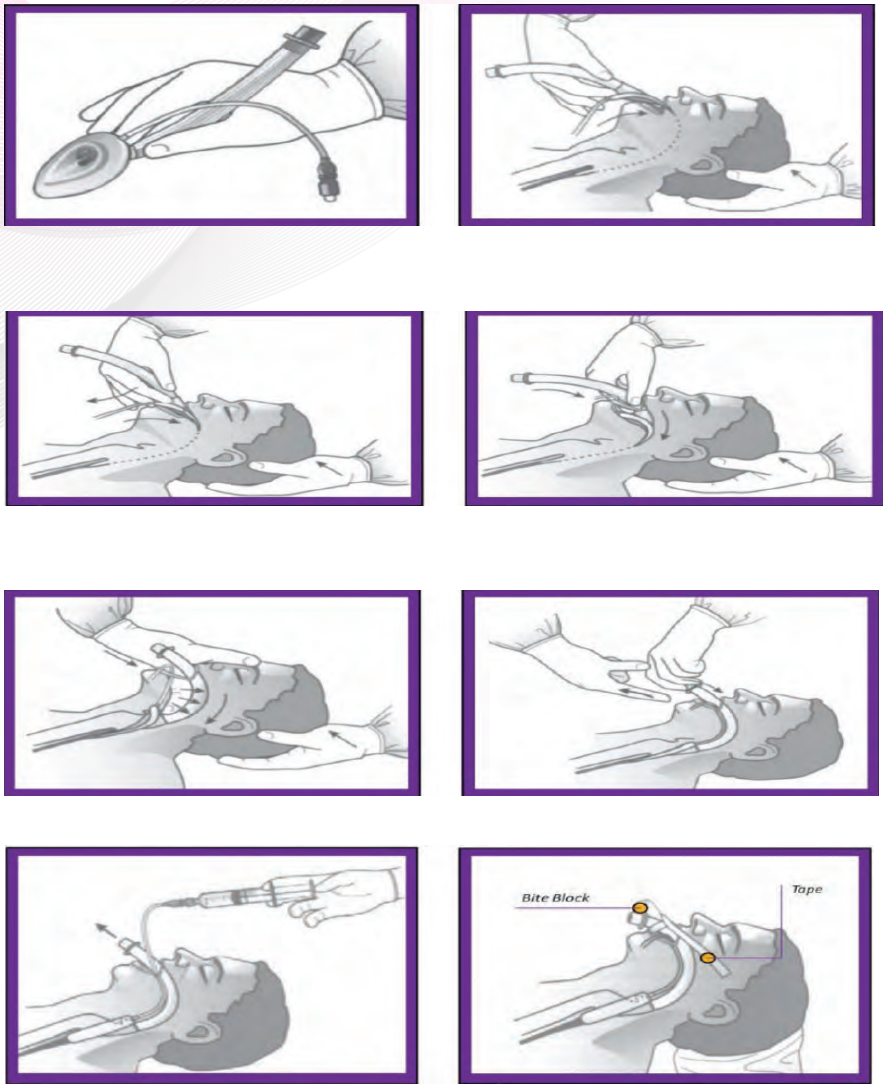


Source: Adapted from Dasar Dan Mekanisme Pengurusan Bencana Negara Arahan No.20 semakan semula, Majlis Keselamatan Negara Jabatan Perdana Menteri (2012)

APPENDIX 26 : Triage Tag / Card

Source: Adapted from Malaysia Society for Traumatology and Emergency Medicine (MASTEM)

APPENDIX 27 : Diagrams showing the insertion Supraglottic Airway Devices (SADs)



Source: Adapted from Advanced Life Support Training Manual 2017

APPENDIX 28 : Recommended Size Guidelines for SADs

Size of SADs	Weight of patient	Max Air in Cuff Not to Exceed
Size 1	<5 kg	4 ml
Size 1.5	5 to 10 kg	7 ml
Size 2	10 to 20 kg	10 ml
Size 2.5	20 to 30 kg	14 ml
Size 3	30 to 50 kg	20 ml
Size 4	50 to 70 kg	30 ml
Size 5	>70 kg	40 ml

Source: Adopted from Advanced Life Support Training Manual 2017

APPENDIX 29 : The Steps Necessary for Successful Insertion Of SADs.

Step 1	Size selection- as per Recommended Size Guidelines
Step 2	Examination of SADs • Inspect surface for damage, including cuts, tears, or scratches • Do not use the SADs if the airway tube is damaged in any way • Inspect the interior of SADs airway tube to ensure that it is free from blockage or lose particles • Any particles present in the airway tube should be removed as the patient may inhale them after insertion • Inflate cuff to ensure that it does not leak • Deflate cuff to ensure that it maintains a vacuum
Step 3	Check inflation and deflation of the cuff • Inflate cuff with the recommended volume of air • Slowly deflate cuff to form a smooth flat wedge shape which will pass easily around the back of the tongue and behind the epiglottis
Step 4	Lubrication of SADs Cuff/Mask • Use a water-soluble lubricant to lubricate • Only lubricate SADs cuff/mask just prior to insertion • Only lubricate back of SADs cuff/mask thoroughly • Avoid excessive lubricants on the anterior surface or in the bowl of cuff/mask as inhalation of the lubricant following placement may result in coughing or obstruction

Step 5	Position head for insertion • SADs can be inserted even if the head is in the neutral position as long as the mouth opening is adequate • Avoid SADs fold-over • Assistant pulls the lower jaw downwards • Visualize the posterior oral cavity • Ensure that SADs is not folding over in the cavity as it is inserted

Source: Adopted from Advanced Life Support Training Manual 2017

APPENDIX 30 : Technique for Chest Tube Insertion

1. **Technique for Chest Tube Insertion**
   This procedure involves inserting an appropriate trocar-sized on the affected side of the chest, under an aseptic technique.

2. **Work Process during chest tube insertion (AMO to assist in this procedure)**

   a. Landmark for insertion of the chest tube – 5th intercostal space, anterior to the midaxillary line, behind the lateral edge of the pectoralis major muscle.

   b. Bedside lung ultrasound can be used to evaluate for pleural fluid and pneumothorax prior to tube thoracostomy.

   c. Prior to insertion in selected patients, a chest radiograph can be done to confirm pneumothorax or haemothorax. (If time permits)

   d. Position the patient correctly – ipsilateral arm abducted and the forearm behind the head to expose the axillary area.

   e. An alternative is for the patient to sit upright, leaning over an adjacent table with a pillow or in the lateral decubitus position.

   f. Supplemental oxygen is administered.

   g. Established at least one large-bore intravenous line and infused resuscitation fluid if indicated.

   h. Ensure all the appropriate equipment are prepared

   i. Select appropriately sized tube. The tubes' size varies, but in adults, it is recommended that a size 28 F or 32 F tube be used. Bigger tubes are recommended for haemothorax.

   j. Cleaned the skin with an antiseptic solution and ensured adequate use of local anesthetic. Consider procedural sedation.

k. An open incision with blunt dissection of deep tissues with forceps or introducer-guided insertion of the chest tube is the preferred technique.

l. A 2cm- to 3-cm transverse (horizontal) incision is made at the predetermined site. A track is dissected bluntly through the subcutaneous tissues, staying above the rib.

m. The parietal pleura is punctured with the tip of a clamp, and a gloved finger is inserted into the incision to avoid injury to other organs and to clear any adhesions, clots, and so on.

n. The distal end of the chest tube is clamped after removal of the trocar.

o. The chest tube's tip is held with forceps and inserted through the pleura, after which the clamp is removed upon connected to the underwater seal.

p. Ensure that all the side holes on the tube are inside the pleural cavity to prevent air leaks. A measure of the correct amount of chest tube inserted can be gained by comparing the drain to the patient's chest size.

q. Look for fogging or blood within the tube to confirm placement or request the patient to cough and check for bubbles in the underwater seal.

r. Connect the chest tube to an under-water seal apparatus and look for bubbling or check the underwater seal oscillates during respiration. The under-water seal must remain below the level of the patient's chest at all times.

s. The chest tube is firmly sutured in place and the incision closed. The area is dressed.

t. Explain to patient and relative(s) regarding the care of the chest tube, e.g., keep below the patient's chest, not to clamp tube

Notes:
The procedure is done under the aseptic technique.

3. Post Procedure

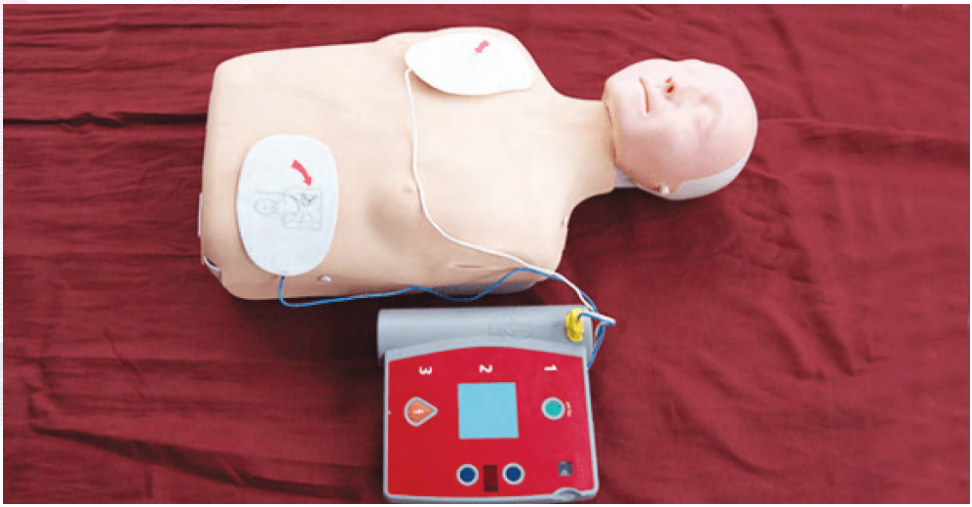
a. Complete documentation of procedure in the case note

b. Observed for immediate and late complications of chest tube insertion.

c. Clinical and radiological confirmation of chest tube placement is required.

d. Monitor during the procedure

APPENDIX 31 : Automated External Defibrillator (AED) Procedure



Procedure:

1. Turns AED on
2. Selects proper AED pads and places pads correctly.
3. Clears patient to analyze (must be visible and verbal check)
4. Clears patient to shock/presses shock button (must be visible and verbal check)

   Maximum time from AED arrival < 90 seconds

CPR before defibrillation

- For witnessed adult cardiac arrest when an AED is immediately available, it is reasonable that the defibrillator is used as soon as possible.
- For adults with unmonitored cardiac arrest or for whom an AED is not immediately available, it is reasonable that CPR is initiated while the defibrillator equipment is being retrieved and applied and that defibrillation if indicated, be attempted as soon as the device is ready for use.

APPENDIX 32 : Defibrillation Procedure

Procedure:

1. Assess to determine the absence of a pulse.
2. Call for help and perform CPR until the defibrillator and emergency trolley arrive.
3. Prepare for defibrillation;
   a. Turn power **"ON"**
   b. Select correct paddles- adult or pediatric
   c. Prepare patient and paddles with a proper conductive agent
   d. Check defibrillator is in asynchronous mode
   e. **Select energy** and choose desired amount biphasic (200J) OR monophasic (360J)
   f. Place one paddle at the heart's apex just left of the nipple in midaxiallary line.
   g. Place the other paddle just below the right clavicle to the right of the sternum
   h. Applying paddle force 8kg in adult and 5kg in paediatrics **(1-8 years old)** when using the adult paddle
4. Press charge "ON" defibrillator front panel or on the apex paddle. Wait until the indicator stops flushing to indicate fully charged
5. State **I CLEAR, YOU CLEAR, ALL CLEAR** and visually check that all the personnel is clear of contact with the bed, patient, and equipment.
6. Check the rhythm immediately before discharge
7. Press both buttons simultaneously and maintain pressure until electrical current is delivered (Maintain paddle force 8kg in adult and 5kg in paediatrics **1-8 years old** when using the adult paddle)
8. Immediately resume chest compression (CPR)

Post-Defibrillation Care:

Assess:

1. Neurologic status
   - Check patient Orientation

2. Respiratory status:
   a. Auscultate lung sounds,
   b. Monitor respiratory rate, depth, & quality of breathing.
   c. Oxygen as ordered

3. Cardiovascular status
   a. Get 12-lead ECG and continue to monitor rhythm and blood pressure, pulse and respirationsfrequently until stable
   b. Initiate I/V Anti-arrhythmic therapy as ordered

4. Monitor for burns. Treat if indicated

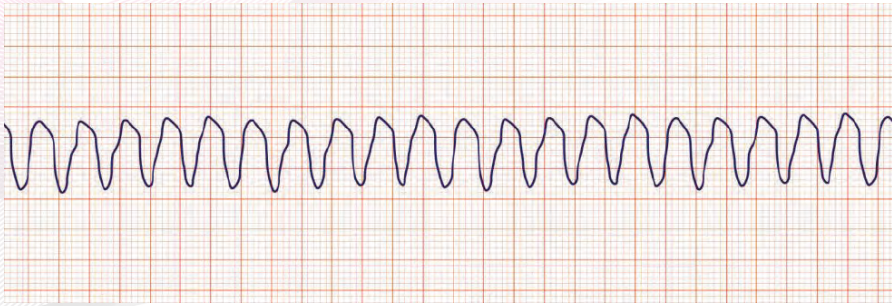


Figure: Pulseless Ventricular Tachycardia (VT)
(A Very broad complex, regular ventricular rate)

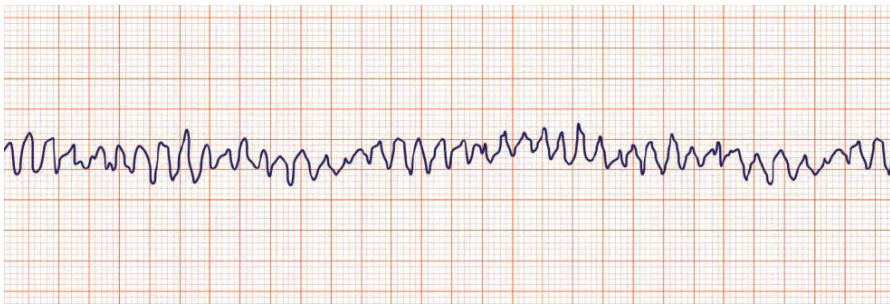


Figure: Ventricular Fibrillation (VF)
(Chaotic irregular deflections or varying amplitude,
no identifiable P waves, QRS Complexes or T waves, Rate 150-500/min)

APPENDIX 34 : Synchronized Cardioversion Procedure
These steps how to synchronized cardioversion

1. Prepare required equipment: Paddle pad and disposable defibrillator pads
2. Explain to the patient
3. Turn power **"ON"**. – select leads
4. Select correct paddles- adult or pediatric;
5. Prepare patient and/or paddles with a proper conductive agent
6. Checks that defibrillator is in synchronous mode
7. Analyze rhythm – shockable rhythm
8. **SELECT ENERGY** and choose the desired amount as below:

Waveform	Biphasic Energy	Monophasic energy
Narrow regular (SVT, Atrial flutter)	70-120J	100J
Narrow irregular (Atrial fibrillation)	120-150J	200J
Broad complex tachycardia (VT)	120-150J	200J
Monomorphic VT	120-150J	200J

9. Place one paddle at the heart's Apex just left of the nipple in the mid-axillary line. Place the other paddle just below the right clavicle to the right of the sternum, **(applying paddle force 8kg in adult and 5kg in paediatrics (1-8 years old) when using adult paddle)**
10. Press **"CHARGE"** on the defibrillator front panel or on the Apex paddle. Wait until the indicator stops flashing to indicate fully charged;
11. State: **'I CLEAR' 'YOU CLEAR'' ALL CLEAR'** and visually check that all personnel are clear of contact with the bed, patient and equipment;
12. Checks rhythm immediately before discharge.
13. Press both buttons simultaneously and maintain pressure until electrical current is delivered.
14. Print the test report
15. Documentation

APPENDIX 35 : TCP Procedure

These steps how to perform procedure TCP

1. Determine the indications for transcutaneous pacing
2. Gather Defibrillator with TCP capability & appropriate cable or equipment
3. Explain the procedure to the patient including pain and discomfort
4. Sedate if time & hemodynamic status permit
5. Obtain rhythm strip pre TCP
6. Assess and record baseline vitals
7. Apply the pacing pads
8. Turn on pacer mode
9. Assure that the monitor can sense all intrinsic QRS complexes
10. Select appropriate pacing rate 60 – 80 bpm
11. Select the initial current setting
12. Increase current of the pacer in 10 – 20 milliamps until capture & is tolerated by the patient
13. Observe electrical capture (pacer spike followed by wide QRS and discordant T wave)
14. Observe for mechanical capture (palpable regular pulse, ↑ in BP, improvement in perfusion status)
15. Obtain rhythm strip and record vital signs, reassess patient and record procedure

APPENDIX 36 : Burn Resuscitation Fluid Rates and Target Urine Output by Burn Type and Age

BURN RESUSCITATION FLUID RATES AND TARGET URINE OUTPUT BY BURN TYPE AND AGE			
CATEGORY OF BURN	AGE AND WEIGHT	ADJUSTED FLUID RATES	URINE OUTPUT
Flame or scald	Adult and older children (≥ 14 years old)	2 ml LR x kg x % TBSA	0.5 ml/kg/hr 30 - 50 ml/hr
	Children (≤ 14 years old)	3 ml LR x kg x % TBSA	1 ml/kg/hr
	Infants and young children (≤ 30 kilograms)	3 ml LR x kg x % TBSA Plus a sugar-containing-solution at maintenance rate	1ml/kg/hr
Electrical Injury	All ages	4 ml LR x kgx % TBSA untill urine clears	1 - 1.5ml/kg/hr until urine clears
LR, Lactated Ringer's solution; TBSA, total body surface area			

Source: Advanced Trauma Life Support (ATLS) 10th Edition

APPENDIX 37 : FAST Scan procedure

A. Pre procedure

1. Inform patient
2. Prepare patient in a supine position
3. Prepare Equipment's (Portable Ultrasound)
4. Pre Vital signs
5. Appropriate Ultrasound transducer

B. During procedure

Four regions must scan

1. Subxiphoid (Cardiac View)
a. Pericardium and heart chambers.

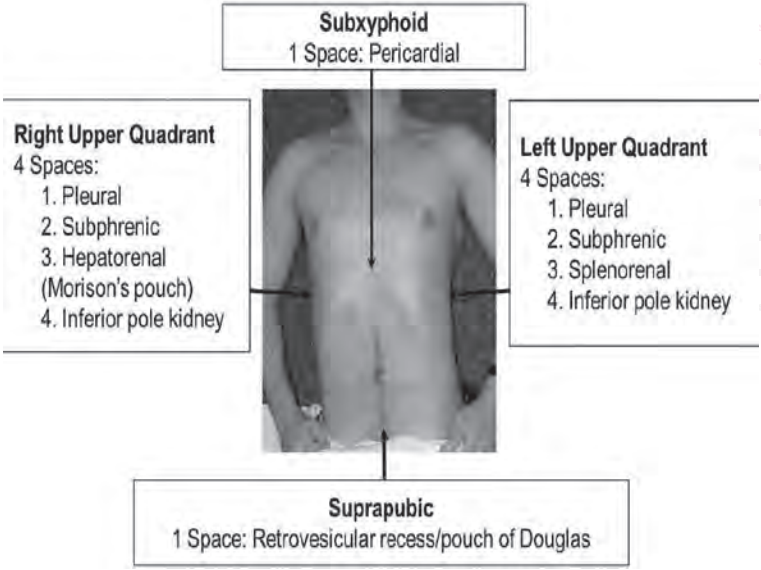
2. Right Upper Quadrant (RUQ)
a. Morrison's Pouch (hepatorenal recess),
b. liver tip (right paracolic gutter) and
c. lower right thorax

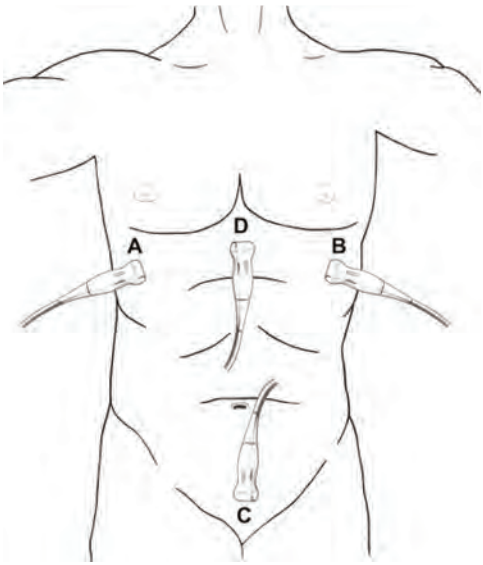
3. Left Upper Quadrant (LUQ)
a. subphrenic space,
b. splenorenal recess,
c. spleen tip (left paracolic gutter) and
d. Lower left thorax.

4. Pelvic View
a. Transverse and Longitudinal
b. Rectovesical pouch (male patients) or, in female patients, rectouterine / pouch of Douglas.

5. Post Procedure
a. Clean equipments
b. Post procedural Vital signs monitoring
c. Inform result to medical officer/Specialist
d. Do documentation and report.

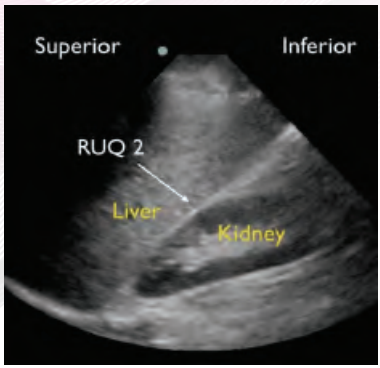
APPENDIX 38 : The Position of Probe and The Views





Source: Ultrasound for Trauma cindyh.hsu,md,phd, et.al

A. Right Upper Quadrant (RUQ)



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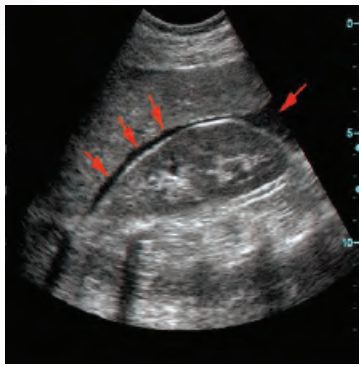
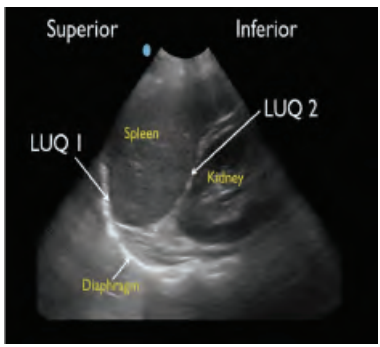


Positive : Free Fluids
(Morrison Pouch)

B. Left Upper Quadrant (LUQ)



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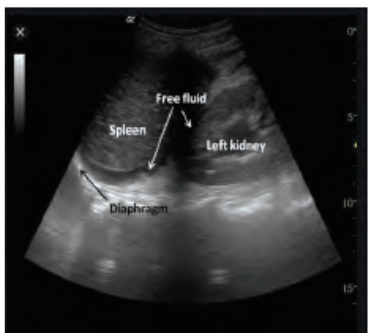
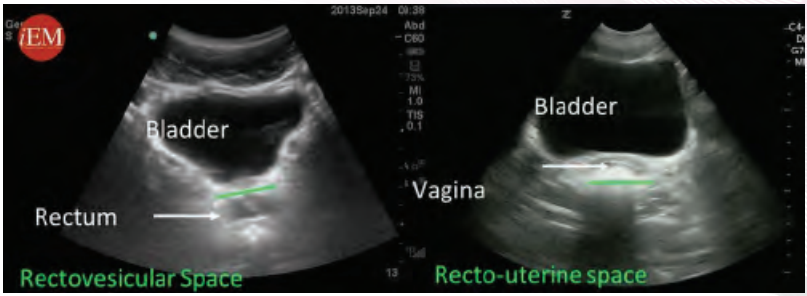


Positive : free fluid *(Spelenorenal)*

C. Pelvic View



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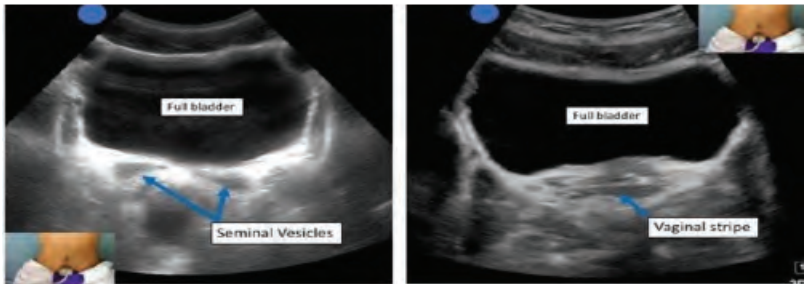
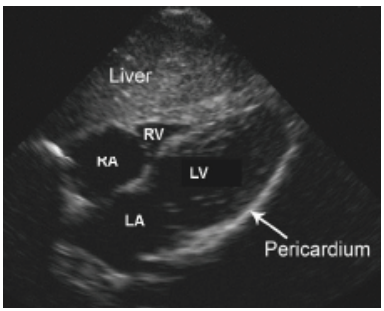


Positive : Free fluid *(Pouch of Doughlas/Retrovesical/Retrouterine)*

D. Subxiphoid (Cardiac)



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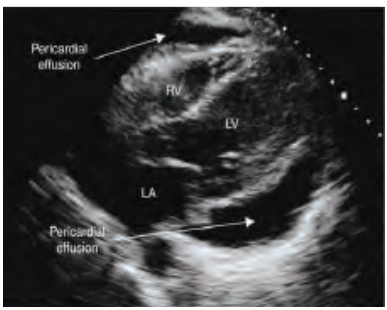

Positive : free fluid
(Pericardial Effusion)

Emergency Medicine and Trauma Services

Assistant Medical Officers Services Section
Ministry Of Health, Malaysia

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