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Emergency Medicine and Trauma Services Policy

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Medical Development Division, Ministry of Health Malaysia

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Foreword

by

Dato' Sri Dr Hasan bin Abdul Rahman
Director-General of Health Malaysia

The Emergency Medicine and Trauma Services are the frontline medical providers in the Ministry of Health. The discipline demands a command of a broad spectrum of medical disciplines during the emergency phase and the practice itself transcends the confines of hospital walls. Emergency medical providers deal with any patients from the homes and streets to the hospital doors in pre-hospital care, from the non-critical to the most critical cases in the department, and for society from all strata of life. The providers manage patients who are fresh and undifferentiated, to establish differential diagnoses and initiate management within minutes of contact with them.

Often, the intervention provided at this phase makes a difference between life and death. Clinical emergencies are managed to the point of stability with a multitude of interventions during this phase. Apart from clinical emergencies, the orientation of quality aims includes soft skills, professionalism, respect and co-ordination of medical responses during major events. Having a fortified, standardized and up-to-date management of all these augur well for the subsequent chain of management beyond the emergency phase. Good outcome always starts with fast and timely intervention from the first patient encounter. Hence, the formulation of a policy for this service is timely, in order to establish a good foundation for ensuring quality, first-touch interventions for patients.

This discipline should forge ahead with a lot of passion, determination and vision for top quality emergency care. It is our fervent hope that this policy will lead the way to the expansion, standardization and fortification of Emergency Medical and Trauma services throughout the country to be on par-excellence with the best internationally.

Thank you.

Foreword

by

Dr Sabariah Faizah binti Jamaluddin
Head of National Emergency Medicine
and Trauma Services, Ministry of Health

The field of Emergency Medicine is not for the faint-hearted. It is for those with a heart of a lion but a soul of an angel. The providers must lend an evangelistic touch from the heart to all patients they encounter at the time when it matters most to them. In this discipline, frontlines would be in a constant battle to preserve life and ensuring fast intervention for good outcome. It is a critical and mostly challenging service, as it tackles with undifferentiated illnesses, at uncertain times, identifying all clinical problems, initiating immediate medical treatment and communicating with various definitive caregivers for people from all walks of life, wherever they are and whenever they are in need. Medical attentions are given when it matters most to patients.

The Emergency Medicine and Trauma Services had come a long way in a span of the last 15 years. This is where patients are seen when it matters most. At this time, there are specialists available in all major hospitals. The service is on track of growth and it is seeing rapid expansion in terms of structure, human resources, communication and quality clinical care. More than 100 specialists have been produced locally so far and more are coming soon. They have all been distributed throughout the country and more will be placed in coming times. Nowadays our specialists in this field have been beginning to play their role in establishing quality emergency care throughout the country. They are also organizing courses and seminars, producing papers, presenting scientific findings in international conferences and even contributing in producing articles and chapters in the International Emergency Medicine textbooks.

The road ahead is riddled with challenges but the reward should not be measured with materialistic returns. The best rewards would be in the form of satisfaction of seeing life, living and livelihoods restored and prospered. The foundation has been laid, the road has been carved but the journey is far from complete. This policy will be a beacon showing the light and direction of the service. The journey is far from over and emergency medical providers must continuously enrich, update and strengthen the system, skills, knowledge and ability with pure passion and evangelism.

Thank you.

LIST OF ABBREVATION

List of Abbrevation

ACLS - Advance Cardiac Life Support
ALS - Advance Life Support
ALSIC - Advance Life Support Instructor Course
APLS - Advanced Paediatric Life Support
BSA - Body Surface Area
COPD - Chronic Obstructive Pulmonary Disease
CPD - Continuous Professional Development
CPR - Cardiopulmonary Resuscitation
ECG - Electrocardiography
EP - Emergency Physician
EMTS - Emergency Medicine and Trauma Services
ETD - Emergency and Trauma Department
FRLS - First Responder Life Support
GCS - Glasgow Coma Scale
MECC - Medical Emergency Coordinating Centre
MOH - Ministry of Health
MTLS - Malaysian Trauma Life Support
OSCC - One Stop Crisis Centre
PALS - Paediatric Advance Life Support
POP - Plaster of Paris
SBP - Systolic Blood Pressure

THE POLICY

The Policy

1.1 INTRODUCTION

1.2 Emergency Medicine and Trauma Service (EMTS) is seen as the frontline and a critical service of Ministry of Health (MOH).

1.3 It is a specialty domain that offers clinical care to a wide range of acute medical infirmities, illness or injury. This involves the provision of emergency critical medical care that includes diagnostic, resuscitation and stabilization components and life saving interventions.

1.4 The EMTS general scope includes pre-hospital and hospital-based medical care.

1.5 It advocates client focus care, which is holistic and total in nature which inculcates a corporate culture value of caring, teamwork and professionalism.

1.6 The clientele and functional register assumed by the national EMTS do not differ much from its contemporaries in most parts of the world. Therefore the construct and function of the Malaysian Emergency and Trauma Department shall be expected to enable it to discharge roles for the management of:

1.6.1 Major trauma patients.

1.6.2 Pediatrics patients.

1.6.3 Mental health patients.

1.6.4 Survivors of victim of domestic violence and sexual assault.

1.6.5 Contagious patients.

1.6.6 Victims of chemical, biological or radiological incidents.

1.6.7 Individuals brought for medical care while under detention.

1.6.8 Extended observational medicine.

1.6.9 Pre-hospital care, transport and retrieval services.

1.7 It is also expected that the Emergency and Trauma Department be in a state of readiness for the management of mass casualty or disaster victims.

2.0 POLICY DOCUMENT STATEMENT

2.1 This policy document covers key areas of EMTS such as organization, scope and service system, resources including components of human, physical, structural and hardware, and the human capital training and planning.

2.2 This document underscores all issues related to policies on patient management, clinical governance, administration and ethics.

2.3 This document shall serve to provide guidance to health care providers, hospital administrators, policy makers and stake-holders on the concept and philosophy of the EMTS organization with reference to its development, requirements, operational policies and direction.

2.4 This policy document shall outline the quality standards of the various components of the organization including service, professional practice, structural and hardware.

2.5 This policy shall be used by all level of hospitals and every effort should be made to achieve the goals of this document with respect to the individual hospital's structural and human resource capability.

2.6 The policy document shall be reviewed in part or in whole every 5 years or earlier.

3.0 OBJECTIVE OF SERVICE

3.1 To provide a prompt, accurate and definitive emergency medicine and trauma care service.

3.2 To provide an integrated and comprehensive care which is seamless and continuous from the pre hospital care setting through to the hospital service.

3.3 To provide "total quality management" in all the critical management inters phases from pre hospital care to the triage service and sorting out to the various dedicated management zone namely; critical (**red**) zone, semi critical (**yellow**) zone and non critical (**green**) zone.

3.4 To provide an efficient and effective resuscitation and stabilization together with an accurate diagnostic service and critical life saving interventions.

3.5 The management of the critical patient shall be conducted by an efficient team of skillful personnel which include specialists, medical officers, assistant medical officers, staff nurses and other healthcare personnel.

4.0 SCOPE OF SERVICE

4.1 The EMTS provides pre-hospital services that includes:

4.1.1 Ambulance service: first responder, emergency response and inter-facility.

4.1.2 Medical Emergency Coordinating Centre (MECC) and 999 Emergency Call Management Systems.

4.1.3 Major medical incident and disaster management.[1]

4.1.4 Mass gathering and major event medical coverage.[2]

4.2 The EMTS also provides hospital based services that includes:

4.2.1 Triage services.

4.2.2 Emergency clinical care.

4.2.3 Observational medicine.

4.3 In designated departments, the EMTS shall also offer sub-specialty emergency medicine and trauma services.

4.4 Other ancillary services offered:

4.4.1 Medical emergency and code blue team.[3]

4.4.2 Emergency medicine and trauma limited follow-up clinic.

4.4.3 After office hour's outpatient services.[4]

4.4.4 Point of Care Testing

1 Directives 20 of the National Security Council
2 Pekeliling KPK: Bil 2/2007. Liputan Perlindungan Perubatan dan Kesihatan, KKM
3 Code Blue Policy and Protocol, Hospital Kuala Lumpur 2006
4 Pekeliling KPK: Bil 7/2007. Perlaksanaan Perkhidmatan Klinik Rawatan Pesakit Selepas Waktu Pejabat (KRPSWP) di Jabatan Kecemasan

5.0 COMPONENTS OF SERVICE

5.1 Pre-hospital care:

5.1.1 Primary responder services to scene of emergency.

5.1.2 Emergency and inter-facility patient transportation services including land, water and air ambulance services.

5.1.3 Medical Emergency Coordinating Centre (MECC) and 999 Emergency Call Management System.

5.1.4 Major medical incident and disaster management.

5.1.5 Mass gathering and major event medical coverage.

5.2 Hospital based care:

5.2.1 Triage service system.

5.2.2 Emergency clinical care.

5.2.3 Observational medicine.

5.2.4 One Stop Crisis Centre.

5.2.5 Minor emergency medicine and trauma limited follow-up clinic.

5.3 A compendium of sub-specialty emergency services when available.

5.4 The components of the emergency and trauma service shall be determined by several factors, including needs, the category of hospital in which it is located, its geographical location, the position of the hospital within the community and health system network; and availability of expertise.

6.0 ORGANIZATION

6.1 The Emergency Physician (EP) shall head the department:

6.1.1 EP is defined as one who possess a postgraduate degree of either Masters, Fellowship or its equivalent which is recognized by MOH and National Specialist Register (NSR), and has completed the mandatory 'gazzetement' period/ supervised training period as an EP. (Appendix 2)

6.1.2 Manages and implements all the components of the emergency medicine and trauma service.

6.1.3 Works closely or interacts with other professionals in the hospitals such as hospital director, heads of other clinical and non-clinical services including nursing managers on matters pertaining to the operational, technical and developmental aspect of the EMTS.

6.1.4 Formulate strategies for service development, policies and procedures in collaboration with the National Advisor of EMTS.

6.2 The Head of EMTS shall serve as the National Advisor to the Ministry of Health on all matters pertaining to the service.

6.3 The senior EP upon appointment by the health state director shall assume the role of state EMTS head. The state head shall work closely with the state director and be an advisor on the following matters:

6.3.1 Deployment of medical officers and appropriate human resource.

6.3.2 Budgeting and financial planning and appropriation.

6.3.3 Procurement, resource matrix of equipments and consumables.

6.3.4 Development and implementation of local clinical policies and guidelines.

6.3.5 Training and human capital development of EMTS personnel.

6.4 For non-specialist hospitals, a senior medical officer with appropriate experience in EMTS shall head the Emergency and Trauma Department, or as appointed by the hospital director.

6.5 The organization of the Emergency and Trauma Department shall be determined by the hospital category and show relevancy to the local service and functional needs.

6.6 The head of department shall continue to develop and establish further the local emergency services. Such pursuit shall be dictated by need or workload, and shall take into consideration the availability of expertise and resources. The overall operations shall effectively conform to, and complement the local and national emergency and trauma service design and aspirations.

6.7 The department shall establish and put into function, a committee(s) to oversee the following minimum areas of service:

6.7.1 Quality improvement including clinical audit and performance.

6.7.2 Customer feedback, complaints management and patient safety.

6.7.3 Training, continuous medical education and professional development.

6.7.4 Finance and procurement.

6.7.5 Pre-hospital services.

6.7.6 Personnel safety and occupational health.

6.7.7 Disciplinary committee.

6.8 The organizational charts in appendix 3 & 4 describe the service components, staff hierarchy and functional portfolios of the various categories of personnel.

7.0 GENERAL STATEMENT

7.1 The Emergency and Trauma Department shall be accessible and operational 24 hours a day.

7.2 Any individual presenting with perceived or real emergencies arising from any injury or illness has the right to attend an ETD.

7.3 The ETD shall extend and not refuse care that is deemed clinically necessary to any patient presenting with genuine emergencies to the emergency department.

7.4 Health choices made by patients in the ETD shall be respected at all times.

7.5 There shall be an integrated, comprehensive and seamless continuum of emergency care beginning from the pre-hospital to the hospital environment and eventual return of the patient to the community.

7.6 The ETD shall be contained in a well-designated area, having a structure exhibiting a purpose-designed philosophy and equipped with facilities that allow the delivery of appropriate emergency care.

7.6.1 The main care areas shall conform and reflect the triage categories of EMTS including Critical, Semi-critical and Non-critical.

7.6.2 The triage system shall use dedicated color conventions namely **red** (critical), **yellow** (semi-critical) and **green** (non-critical) respectively.

7.7 There shall be sufficient space and facilities in the department for functions, which are administrative and non-clinical in nature including:

7.7.1 Office area

7.7.2 Research and resource area

7.7.3 Staff amenities

7.7.4 Discussion rooms

7.7.5 Skill laboratory and training areas

7.7.6 Seminar room/hall

7.8 There shall be effortless communication, rapid access to consultation with principal clinical specialties, from within or outside of the department during the delivery of emergency care.

7.9 The ETD shall play a lead advocator and effective communicator of patient's clinical needs to ensure provision of care, which is most advantageous to the patient. In pursuance of these goals, the department shall retain an autonomous control of its patient's disposition or right of entry.

7.10 The ETD shall have appropriate access to all necessary support services throughout its operational hours including operation theatres, intensive care services, and point of care testing and radiological services.

7.11 The ETD shall be responsible for the management of patients within its premises and undergoing the process of care.

7.11.1 This responsibility shall extend and be concluded at the end of the care process or when the care of a patient is entrusted to another apt care provider(s) or personnel(s).

7.11.2 A similar conclusion shall be deemed to have also taken place when a suitable patient care referral is made or physical transfer of the patient and their clinical documents out of the ETD premises into another.

7.12 Evidence Based Medicine and Clinical Practice Guidelines shall form the foundation of the management and clinical care in emergency medicine and trauma service.

7.13 Trained and competent personnel, who are capable of extending appropriate medical care, shall manage all patients in the clinical care areas of the department.

7.14 All category of staff should be credentialed to perform specific tasks which commensurate with their level of skills and competency.

7.15 There shall be a flexibility reflected in the human resource deployment or working schedule of the emergency and trauma personnel so as to meet operational requirements during normalcy and allowing swift recall of crucial staff during select circumstances, or situations of extreme volume surge or disaster.

7.16 Universal precautions and infection control measures shall be observed during provision of patient care.

7.17 The department shall ensure the safety of its patient and personnel at all times.

7.18 The department shall also ensure communication that is timely, accurate, complete and correctly understood by the patient and family members.

7.19 Accepted standards of medical ethics including confidentiality and appropriate disclosure shall be observed.

7.20 The EMTS shall support and participate in organ donation activities with a particular emphasis towards identifying potential donors.

7.21 The department shall be an active participant and advocator of preventive measures where appropriate to reduce the burden of illness or incidence of injuries in the community.

7.22 The department in collaboration with the hospital administrators, shall attain, nurture and retain a reasonable portion of key personnel such as to enable the provision of emergency services that are of good standard and sustainable; and with a capacity to provide continuous formal and in-service training.

7.23 The ETD personnel shall involve in hospital planning which include patient and staff safety, personnel development, risk management and internal disaster response.

7.24 The ETD designated to offer services for major trauma, shall play a leading role in its network of hospitals, including providing advice and continuous stabilization processes for complicated cases referred from other subsidiary hospitals.

7.25 Continuous Professional Development of all emergency personnel shall be actively pursued.

7.26 The department shall profess and be an active participant in quality improvement programs.

7.27 The EMTS shall seek to achieve quality standards in health that is endorsed by Ministry of Health Malaysia and any other body of respectable standing, locally and internationally.

8.0 PRE HOSPITAL CARE

8.1 Overview Statement

8.1.1 The scope of pre-hospital service in the Emergency and Trauma Department shall encompass the following:

8.1.1.1 Ambulance services including:

a. Primary responder services
b. Ambulance response services
c. Inter-facility Transfer

8.1.1.2 Medical Emergency Coordinating Centre (MECC) and 999 Emergency Call Management System.

8.1.1.3 Major medical incident and disaster management.

8.1.1.4 Mass gathering and major event medical coverage.

8.1.2 The components of this service shall be needs-driven, and determined by several factors including the category of hospital in which it is located, its geographical location, the position of the hospital within the community and health system network; and availability of resource and expertise.

8.1.3 An Emergency Physician shall involve in all tenets of the pre hospital service.

8.2 Medical Emergency Coordinating Centre (MECC)

8.2.1 The MECC shall act as a command, control, coordination and communication centre for pre-hospital services of the Emergency and Trauma Department.

8.2.1.1 It shall exhibit a purpose-designed concept and equipped with facilities that allow it to meet the above roles.

8.2.1.2 The MECC shall have an organizational structure, professionally staffed and adequately provisioned.

8.2.2 This centre shall be operational 24 hours daily, in normalcy or crisis, and provide:

8.2.2.1 999 emergency call management systems

8.2.2.2 Ambulance dispatching

8.2.2.3 Control and coordination of ambulance resources

8.2.2.4 Intra and inter-agency communication

8.2.2.5 Operational support and management for disaster and major event

8.2.2.6 Pre-hospital data archiving and banking

8.2.3 The MECC personnel shall manage 999 emergency calls expediently. This shall include:

8.2.3.1 Structured caller interrogation and needs prioritization.

8.2.3.2 Acquirement of mandatory information that can successfully guide the ambulance team to the scene of emergency; and other medical information deemed necessary for provision of emergency care.

8.2.3.3 Perform accurate dispatch of ambulance resource(s) at the earliest possible opportunity.

8.2.3.4 Carry out post dispatch activities.

8.2.3.5 Recommendation of appropriate pre-arrival instructions for the victim or caller such as to help reduce injury potential or negative health outcomes ahead of the arrival of the ambulance responder to the scene.

8.3 Ambulance Service

8.3.1 The ambulance/vehicles utilized for this service shall conform to the type and specifications produced by Ministry of Health Malaysia.

8.3.2 The number and distribution of the vehicles shall also be in accordance to the accepted norms and policies of Ministry of Health, Malaysia.

8.3.3 The ambulance shall be professionally staffed and provisioned, consistent with its role in pre hospital services.

8.3.4 The ambulance shall be equipped with standard list of medical equipments, devices and supplies endorsed by the technical committee of MOH for its desired function.

8.3.5 The ambulance team shall consist of trained personnel able to perform and provide medical care coherent with clinical needs of the patient.

8.3.6 The ambulance team shall respond in a timely manner and follow standard operating procedures during the provision of care.

8.3.7 This service shall also be guided by key performance indicators and quality performance indicators in accordance to the internationally accepted standards.

8.3.8 The MECC shall exercise care when prioritizing any ambulance response, there shall be:

8.3.8.1 A significant consideration or preference is given to any time-sensitive emergency situation.

8.3.8.2 A networking and mutual aid contingency mechanism put into operation.

8.3.8.3 Other alternative avenue or outsourcing arrangement appropriately sought, and shall be guided by the urgency of patient's clinical condition.

8.3.9 There shall always be constant communication between the ambulances with its respective MECC.

8.3.9.1 It shall notify the MECC following minimum elements:

a. Readiness for activation
b. Departure time to scene
c. Arrival time at scene
d. Departure time to destination hospital/health facility
e. Arrival time at destination hospital/health facility

8.3.9.2 The ambulance team shall:

a. Provide information on victim assessment and outcome of care provided at scene so as to guide transport destination decision,
b. Request online medical direction in select extreme, unique emergency situations or encounter from MECC.

8.3.10 There shall be adequate documentation of any medical encounter or case managed by the ambulance personnel. This shall constitute a component of patient's clinical records and shall be handled following standard MOH guidelines.

8.3.11 Primary Responder Services

8.3.11.1 This shall refer to the strategic deployment of swift moving vehicular unit or team that is able to arrive successfully and retrieve the victim(s) at the vicinity of the emergency.

8.3.11.2 This response shall take the form of motorcycle or bicycle unit, water or air ambulances, or an all-hazards ready team.

8.3.11.3 In the presence of clear impediments to a conventional response including natural barriers or hazards, geographically challenging locations and traffic flow obstruction, a tiered response shall be provided.

8.3.12 Ambulance Response Services

8.3.12.1 Ambulance response service scope shall include the provision of medical assistance to an emergency that conforms to:

a. Routine operational service scope, and
b. Occur within a usual designated service area; such activity shall be referred to as primary response.

8.3.12.2 The ambulance service can be instructed to act beyond the scope of its primary response while operating under policies of mutual aid agreement enumerated by the central, regional or state committee for pre hospital services. These alternative activities shall be referred to as secondary response, and shall also include provision of emergency aid during:

a. Support of the operations of other adjoining MOH ambulance service provider, and
b. Mass casualty incidents or disaster relief.

8.3.13 Inter-facility Transfer.

8.3.13.1 This service involve the transfer of patients from one medical facility to another medical facility, either for step up or step down care, and shall consist of:

a. Inter-facility transfer for emergency or non-emergency situations, and
b. Service-on-request by internal or external clients recognized by MOH.

8.3.13.3 This request shall be processed and acted upon following standard protocols and local guidelines on a case-to-case basis, by an appropriate emergency and trauma department personnel.

8.3.13.4 The eventual conduct of patient movement shall ensure the continuity of standard patient care and follow guidelines set by MOH for case referral and inter-facility transfer.

8.4 Major Medical Incident and Disaster Management

8.4.1 The organization of EMTS shall play a fundamental role in major medical incident and disaster management including response and recovery for the community they serve.

8.4.1.1 This shall follow the Directives 20 of the National Security Council, or emergency response plans authorized by the state health office.

8.4.1.2 For emergencies or disaster occurring out of the country, the EMTS shall participate in the response or humanitarian team under clear authorization by MOH.

8.4.2 The EMTS shall also participate in pre-disaster phases including development, risk management, prevention, mitigation and preparedness; and shall provide necessary input to the community such as to reduce the medical impact or injury burden.

8.4.3 When appropriate, trained personnel of the emergency and trauma department shall provide, participate or can be deployed for:

8.4.3.1 Patient retrieval services including aero medical service.

8.4.3.2 Emergency or disaster management at site.

8.5 Mass Gathering and Major Event Medical Coverage

8.5.1 The Emergency and Trauma Department shall provide medical coverage services for select circumstances[1]. These shall include:

8.5.1.1 Mass gathering or major event with an elevated possibility for an emergency incidence or encounter.

8.5.1.2 Public figure carrying a higher risk for an adverse medical event.

8.5.2 The department shall conduct risk assessment and use discretion ahead of assigning an appropriate coverage team(s) or response planning.

9.0 EMERGENCY CLINICAL CARE SERVICE

9.1 Triage Service System

9.1.1 Overview Statement

9.1.1.1 The triaging services counter shall be the first point of contact for all patients accessing the Emergency and Trauma Department care.

9.1.1.2 All patients presenting to the Emergency and Trauma Department shall be triaged on arrival by a trained and experienced triageur(s).

1 Pekeliling KPK: Bil 2/2007. Liputan Perlindungan Perubatan dan Kesihatan, KKM

9.1.1.3 The triage area shall occupy the frontage area of the Emergency and Trauma Department, be immediately visible and accessible to all categories of patients and modes of arrival. It shall also have the following functionalities and abilities:

a. Cover the ambulance or vehicle drop zone, walk-in entrance and main patient waiting areas of the department.
   It shall be accessible via one-way traffic flow that is separated from the public flow/main hospital entrance.
b. Carry a purpose-design structure and ample space.
c. Form a strategic gateway or corridor to the major patient clinical care zones namely Red Zone (critical), Yellow Zone (semi-critical) and Green Zone (non-critical), specialty areas of the department, registration and wait areas.
d. Have clear signage.
e. Allow area for patient assessment, brief examination, initiation of treatment and simple procedures.
f. Offer patient privacy and incorporate security measures for both the staff and department.
g. Provided with equipment and facilities allowing initiation or continuation of emergency care at the time of arrival and for personnel precautions.
h. Appropriate communication link and alerting devices (telephone, intercom, public announcement system, audio alert or bell) and amenities for documenting triage information.

9.1.1.4 Triage shall ensure brevity, include early clinical intervention or appropriate investigation, strategic utilization of resources and integrate efficient time management techniques.

9.1.1.5 A triage category shall be assigned following the primary and/ or secondary triage processes; a high degree of medical discretion shall be employed to ensure that the patients are treated in the order of their clinical urgency or need(s) and follow the Malaysian Triage Category categories.

9.1.1.6 Emergency and Trauma Department shall incorporate sound medical principles into the conduct and practice of triage.

9.1.1.7 The triage effectiveness, efficiency, accurateness, acceptability and system design shall be subjected to periodic review and benchmarking in a manner similar to other components of the emergency services.

9.1.2 Primary and Secondary Triage

9.1.2.1 The primary triage shall include the process of acquiring the main presenting complaint and rapid identification of patients with 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.

9.1.2.2 All other patients shall be subjected to a secondary triage process which includes:

- Objective vital signs, point-of-care testing and brief clinical assessment.
- Critical analysis of the above findings and integration before assigning or concluding a definitive triage category.

- Initiation of management including pain management, wound dressing, immobilization and relevant biochemical or imaging investigations.

9.1.2.3 Care processes can occur concomitantly to any of the above process.

9.1.2.4 The secondary triage is a dynamic and continuous process that allows detection of changing illness or injury progression while waiting for the delivery of care in lesser acuity areas of the department such as the waiting area of non critical zone.

9.1.3 Reception, Registration and Wait Services

9.1.3.1 Registration and Reception Counter

- This counter shall function for out-patient emergency registration and collection of out-patient fees.

9.1.3.2 General Waiting Area

- There shall be an ideal waiting environment that is designed to manage wait with all supporting facilities in order to make wait tolerable which includes; disabled waiting lane, surveillance triage counter, digital numbering system, speaker system, chair, television, water dispenser, toilet, children playing area and breast feeding room.

9.1.3.3 Public Relations Officer

- Shall work together with the triageur
- Managing wait

9.1.3.4 Surveillance Triaguer

- Detecting any dynamic/physical changes among patients in the waiting area.

9.2 Emergency clinical care

9.2.1 Overview Statement

The Emergency and Trauma Department shall have dedicated clinical and non clinical areas which include resuscitation and stabilization as well as definitive care services in a dedicated and specific environment. It shall also serve as the intensive and critical care zones that shall provide all appropriate acute life saving intervention which will include; diagnostic, investigative and therapeutic interventions.

These categories of patients who are in need of immediate treatment for preservation of life. Patient shall be seen immediately upon arrival. Resuscitation shall be carried out on the critically ill patients with serious medical conditions or injuries in the red zone. The management of critically ill and injured patients covers the aspects of:

a. Resuscitation and stabilization
b. Diagnosis and management of life threatening conditions
c. Early definitive care management
d. Patient disposition

A multidisciplinary team approach shall be emphasized in provision of care for this category of patients.

Critical zone shall have a dedicated modular resuscitation zone with ergonomic layout and specific design pattern and can manage all categories and all types of emergency cases for all ages, with an efficient and dedicated trauma and emergency management team that shall conduct patient resuscitation and stabilization which will conduct diagnostic, therapeutic and life-saving intervention. Preferably a lead protected X-ray room equipped with a ceiling mounted X-ray machine is available for urgent radiographic imaging in critically ill patients.

9.2.2 Resuscitation and Critical Care Service

9.2.2.1 Critical care services for patient who is haemodynamically unstable based on Malaysian Triage Scale Category of critical patient. Appropriate care shall be provided immediately at time of arrival.

9.2.2.2 Services that includes resuscitation and stabilization, diagnostic and therapeutic intervention, life saving procedural and therapeutic intervention, definitive care and appropriate disposition for the critically ill patients.

9.2.2.3 Patient shall be managed in a dedicated resuscitation environment and bays equipped with standard list of equipments as outlined in the Emergency Department Standard Structure and Hardware *(Appendix 13)*

9.2.2.4 Patient shall be managed by a dedicated team based on multidisciplinary approach and teamwork concept.

9.2.3 Semi-Critical Care Services

9.2.3.1 Care of the Semi-critical patient.

9.2.3.2 A diagnostic, stabilization and therapeutic services for patient on trolley who is haemodynamically stable but unable to walk.

9.2.3.3 These are semi-critically ill or injured patients whose lives are not in immediate danger and in haemodynamically stable condition appropriate meaningful care is required to be given within 15-20 minutes of arrival. All diagnostic and therapeutic procedures shall be carried out in this zone unless limited by facilities.

9.2.3.4 Semi critical zone shall have sufficient immediate care beds for trauma and non-trauma patient with basic non-invasive monitoring.

9.2.3.5 Both the Semi-critical and Non-critical zones shall be equipped with all the necessary resuscitative, diagnostic and investigative equipments and to anticipate for any emergency medical and trauma situations.

9.2.4 Non-Critical Care Services

9.2.4.1 Care of Non-critically ill

9.2.4.2 A diagnostic, stabilization and therapeutic service for patient who are walking to the department.

9.2.4.3 These patients are without immediate danger or distress. Their conditions do not require immediate care or resuscitation. The patients shall be seen within 90 minutes.

9.2.4.4 There shall be sufficient treatment cubicles or room for patient management in full privacy in dedicated zone.

9.2.4.5 Within this zone apart from the clinical examination room, there shall be a room dedicated for patient of extreme ages normally for children of less than 2 years old and geriatric above 65 years old.

9.2.5 Specialty and Procedural Areas

9.2.5.1 Emergency Operation Theatre

The department shall be accessed to Operation Theatre that allow the performance of emergency surgery, live-saving Interventions, Toilet and Suturing procedure as well a s relevant procedure in emergency situation.

9.2.5.2 Acute Interventional Suite

The department shall be accessed to Acute Interventional Suite to carry out specialized procedures such as interventional angiography, percutaneous coronary angiogram, intravenous pacing.

9.2.5.3 Cardiac Care Area (Chest Pain Unit)

Specialized area that allows the management of stable patients, with mild to moderate chest pain (visceral in type) and the conduct of rule-in cardiac assessment protocols. It shall have the capability to rapidly perform on-arrival and serial ECGs, intermediate-level dependency monitoring and observation with focused laboratory support.

9.2.5.4 Acute Respiratory Distress Zone (Asthma Bay)

Specialized area for the management of mild to moderate exacerbations of asthma/COPD that require immediate intervention and stabilization regimes for acute asthma/COPD. This area shall be equipped with comfortable reclining chairs or trolleys for the management of the asthma patient in acute exacerbation situations of mild to moderate severity. Well equipped asthma bay shall be manned by well trained personnel. This area shall be well ventilated, comfortable and spacious and is usually located in close proximity to the non critical zones.

9.2.5.5 Behavior Examination and Assessment Room

Specialized area or room conducive and suitable for management and evaluation of suspected psychiatric patients' especially violent and aggressive patients. This room shall be equipped with close circuit television monitoring.

9.2.5.6 Procedure Room

A room for minor surgery and procedural sedation to enable minor procedures to be conducted in a sterile or clean and safe environment. The minor procedure also include regional block with close monitoring.

9.2.5.7 Plaster Room

Shall be dedicated for application of Plaster of Paris (POP), splints and bandaging and equipped with equipment for procedural sedation.

9.2.5.8 Decontamination and Temporary Isolation Area

This area shall have a decontamination system in a well designed room and strategically located with separated entrance and exit door to prevent cross contamination. This room is well equipped with negative pressure system, patient showers, burn shower system and staff shower rooms. There shall also be an area for decontamination of vehicles equipped with decontamination showers and effluent water system.

9.2.5.9 Disaster Storage, Surge Beds and Stocked Provisions Area

This area shall be dedicated for storage of active and passive medical equipment and consumables to be used during disasters and major incident.

9.2.6 Clinical Support, Auxiliary and Security Services

9.2.6.1 Laboratory Services

Provision of emergency laboratory services within the department (point of care testing) or mini-lab for management of emergency medical and trauma patients for example arterial blood gaseous, full blood count, blood urea and serum electrolytes, cardiac biomarkers and many others, is very crucial for the comprehensive and holistic management critically ill patients as well as in assisting an accurate diagnostic service. This service shall be under the oversight of Pathology Department as well.

9.2.6.2 Satellite Pharmacy/Dispensary

Emergency and Trauma Department patients shall obtain their pharmaceutical supplies from this counter on discharge. This service shall be under the oversight of the Hospital Pharmacist as well.

9.2.6.3 Medical Record Services

Provision of record keeping for all patients of emergency medical and trauma care services complying to approved standards of records keeping and storage of the Ministry of Health, Malaysia is crucial for the complete management of the patient especially at the follow up clinic as well as for medical report writing. Record Office - Preferably a record office shall manage the safekeeping of medical records of all cases managed in the emergency department.

9.2.6.4 Bereavement Room/'Good Hope Room'

This waiting room will cater for the next of kin of critically ill patients. It can also be utilized for consultation and communicating the status of illness of the patients.

9.2.6.5 Body Holding Bay

This area shall serve as a temporary morgue for Dead on Arrival and Dead in Department patients of Emergency and Trauma Department prior to being sent to the mortuary.

9.2.6.6 Medical Social Services, Counseling, Last Rites

Counseling service to the victim/survivor of violence against women and children and as well as for the bereaved family members of deceased patient, as a feature of a caring organization.

9.2.6.7 Police and Security

Police and security service as risk management strategies hindering any untoward incidents to be occurring within the vicinity of the emergency and trauma department.

10.0 OBSERVATIONAL MEDICINE

10.1 A diagnostic, stabilization, observation and therapeutic centre for patients who require further observation, investigation as well as intervention within a stipulated time frame up to 8 hours or prerogative of specialist in charge and where the co management concept with relevant department/discipline is carried out. This centre also acts as a satellite admission centre.

10.2 This service shall be provided for the observation of a select group of patients presenting to the emergency department and subjected to a predefined care plan. This area shall accommodate patients who have been provided with emergency care and having clinical and/or physiological conditions that are expected to ameliorate or resolve before long and/or when immediate admission is not seen as to be in the best interest of the patient.

10.3 The designated area for the purpose of observation shall be located either within or adjacent to the department.

10.4 The period of care includes the close observation of patient's clinical progress supported by laboratory results and imaging studies when required until a safe disposition decision can be made at the end of the observation period.

10.5 This period of observation shall not usually exceed 8 hours unless clinically appropriate.

10.6 There shall be sufficient observation space with adequate beds dedicated for both adult and pediatric patients. All patients observed in this area are managed by well trained staff nurses and surveillance using complete monitoring equipment system and a well equipped resuscitation trolley to anticipate for any emergency medical situation.

11.0 ONE STOP CRISIS CENTRE

11.1 An integrated and comprehensive service centre for the management of survivors of violence and sexual abuse against women, children and elderly. The management is conducted in a multidisciplinary and inter-sectoral manner, which include personnel from government and non-governmental agencies.

11.2 OSCC should be suitably located so as to provide full privacy and confidentiality. This centre shall be dedicated for the management, treatment and counseling of victims of rape, sexual assault, domestic violence, child abuse and sodomy. There shall be complete facilities for resting, cleaning, shower as well as changing rooms.

11.3 Emergency and Trauma Department shall provide a client-friendly One Stop Crisis Centre in the delivery of an integrated and comprehensive service for the survivor of gender violence.

11.4 One Stop Crisis Centre shall also be utilized for collection of specimens, documentation, labeling and sealing the specimens.

11.5 Emergency and Trauma Departments shall have internal referral processes or access to Non-Government Organization (NGO) to meet immediate accommodation and counseling needs of any victim of domestic violence.

11.6 Emergency and Trauma Department are encouraged to participate in collaborative interdisciplinary approaches for the recognition, assessment and intervention of victims of family violence. These approaches include the development of policies, protocols, and relationships with outside agencies that oversee the management and investigation of family violence.

12.0 SUB–SPECIALTY EMERGENCY SERVICE

12.1 The EMTS shall establish, develop and be in a position to offer sub-specialty services and care as a necessary complement to its main services [11] including:

12.1.1 Acute interventional skills

12.1.2 Trauma care and Traumatology

12.1.3 Resuscitation and intensive care medicine (Emergency and critical care medicine)

12.1.4 Pre-hospital Care

12.1.5 Disaster management

12.1.6 Observational medicine

12.1.7 Pediatric emergency care

12.1.8 Clinical Toxicology

12.1.9 Hyperbaric and environmental emergency medicine

12.1.10 Sports and extreme sports trauma emergency care

12.2 The formation of any individual service entity shall be dictated by community needs, workload, availability of expertise and manpower, and subject to approval by the MOH.

12.3 The overall conduct of the sub-specialty services shall effectively conform to, and complement the local and national emergency and trauma service design and aspirations.

11 Emergency medicine sub-specialty programs recognized by academic boards of America and UK – accessed August 2008 a) America: i) www.acep.org ii) www.abem.org; b) UK: www.collemergencymed.ac.uk

13.0 ANCILLARY SERVICE

13.1 Medical Emergency and Rapid Response Team

This include coordinating and managing intra facility medical emergency such as cardio respiratory arrest within the vicinity of hospital (code blue). This is a hospital based service and ETD will coordinate it.

13.2 Minor Emergency Medicine and Trauma Follow-Up Clinic

This service carry out short term follow up clinic for selected patient discharge from Emergency and Trauma Department (usually less than 6 weeks). This is to cater for cases such as minor trauma or non complicated fractures. This service is carried out in selected Emergency and Trauma department throughout the country.

13.3 After Office Hours Outpatient Services

This is an after office hour clinic coordinated by Emergency and Trauma Department to cater for non emergency cases or categorized by G4 in Malaysian Triage category (as in Pekeliling KPK:Bil 7/2007, Perlaksanaan Perkhidmatan Klinik Rawatan Pesakit Selepas Waktu Pejabat (KRPSWP) di Jabatan Kecemasan).

14.0 TRAINING, EDUCATION AND PERSONNEL DEVELOPMENT

14.1 A written orientation program shall be used to introduce new staff to the relevant aspects of the facilities.

14.2 The department shall define the level of knowledge, skills and training requirements for all its personnel.

14.3 The staff shall have access to appropriate educational programmed to maintain and augment their professional competency. Their participation shall be documented.

14.4 All staff is required to participate in the Ministry's e-CPD programmed.

14.5 The department shall facilitate staff to attend relevant educational programs conducted by professional groups, societies and educational institutes.

14.6 Human resource norms for the services shall be followed to accommodate the service requirements.

14.7 Equitable, just and nurturing system for recruitment, credentialing, performance management and staff retention are required in all emergency departments.

14.8 All clinical staff shall be trained and certified in Basic Life Support.

14.9 All medical officers shall be trained and certified in Advanced Life Support within 6 months of posting to ETD.

15.0 QUALITY AND RESEARCH

15.1 The Emergency and Trauma Department shall have a system that uses valid and meaningful indicators or threshold points for the continuous monitoring of quality, performance and achievements in all dimensions of its service and operations.

15.2 There shall be a continuous data collection, compilation, analysis and production of reports in a way that will be useful for the development and guide improvement strategies in the practice of emergency medicine and general medical practice.

15.3 To achieve the above objectives, the department shall participate in the following quality improvement initiatives endorsed by the MOH:

15.3.1 ISO and accreditation

15.3.2 National Indicator

15.3.3 Incident reporting and Root Cause Analysis

15.3.4 Clinical audits

15.3.5 Key Performance Indicators

15.4 The Emergency and Trauma Department shall conduct continuous risk management activities including analysis, exposure and effectual risk reduction.

15.5 The department shall also have a systematic approach to the management of any adverse event and ensure an effective solution. To such events, the emergency department shall adopt a learning organization attitude and will utilize the encounter to guide service improvements.

15.6 There shall be an effective client feedback and complaints management in the Emergency and Trauma Department. The department shall ensure a rapid response, maintain significant transparency and cooperate towards an acceptable resolution. These encounters shall guide the department towards providing a service that is equitable, relevant and encourages community participation.

15.7 The Emergency and Trauma Department shall regularly conduct case management review internally or with other care providers. The attitude shall be that which is constructive, non derogatory and focusing at finding solutions, improving or optimizing service systems.

15.8 Activities of the clinical network will be based on the following principles:

15.8.1 Collaboration: Undertake activities that require collaboration and participation across a range of stakeholders and health service organizations.

15.8.2 Governance: Demonstrate clear accountability and reporting arrangements for individual members and the network as a whole.

15.8.3 **Business Planning:** Develop a work-plan that addresses key priority areas.

15.8.4 **Information Sharing:** Demonstrate a commitment to implementing clinical best practice and evidence-based research.

15.8.5 **Value for Money:** Focus on initiatives that will maximize efficiency and cost effectiveness of service delivery.

15.8.6 **Equity:** Implement activities that will be of maximum value to the majority of consumers.

15.8.7 **Sustainability:** Focus on activities that will achieve sustainable change within and between health services.

15.8.8 **Quality:** Undertake regular performance monitoring and quality improvement activities within the network to improve the efficiency and effectiveness of network operations.

15.8.9 **Consumer Focused:** Implement activities designed to enhance patient centre care and promote seamless provision of services across the care continuum.

APPENDIX

Appendix

APPENDIX 1

HOSPITALS WITH MEDICAL EMERGENCY COORDINATION CENTRE (MECC)

1. Hospital Tuanku Fauziah Kangar, Perlis
2. Hospital Sultanah Bahiyah Alor Star, Kedah
3. Hospital Seberang Jaya, Pulau Pinang
4. Hospital Raja Permaisuri Bainun Ipoh, Perak
5. Hospital Tengku Ampuan Rahimah Klang, Selangor
6. Hospital Sungai Buloh, Selangor
7. Hospital Selayang, Selangor
8. Hospital Ampang, Selangor
9. Hospital Serdang, Selangor
10. Hospital Putrajaya, Wilayah Persekutuan Putrajaya
11. Hospital Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur
12. Hospital Tuanku Jaafar Seremban, Negeri Sembilan
13. Hospital Melaka, Melaka
14. Hospital Sultanah Aminah Johor Bahru, Johor
15. Hospital Tengku Ampuan Afzan Kuantan, Pahang
16. Hospital Sultanah Nur Zahirah Kuala Terengganu, Terengganu
17. Hospital Raja Perempuan Zainab II Kota Bahru, Kelantan
18. Hospital Queen Elizabeth Kota Kinabalu, Sabah
19. Hospital Tawau, Sabah
20. Hospital Umum Sarawak Kuching, Sarawak
21. Hospital Miri, Sarawak

APPENDIX 2

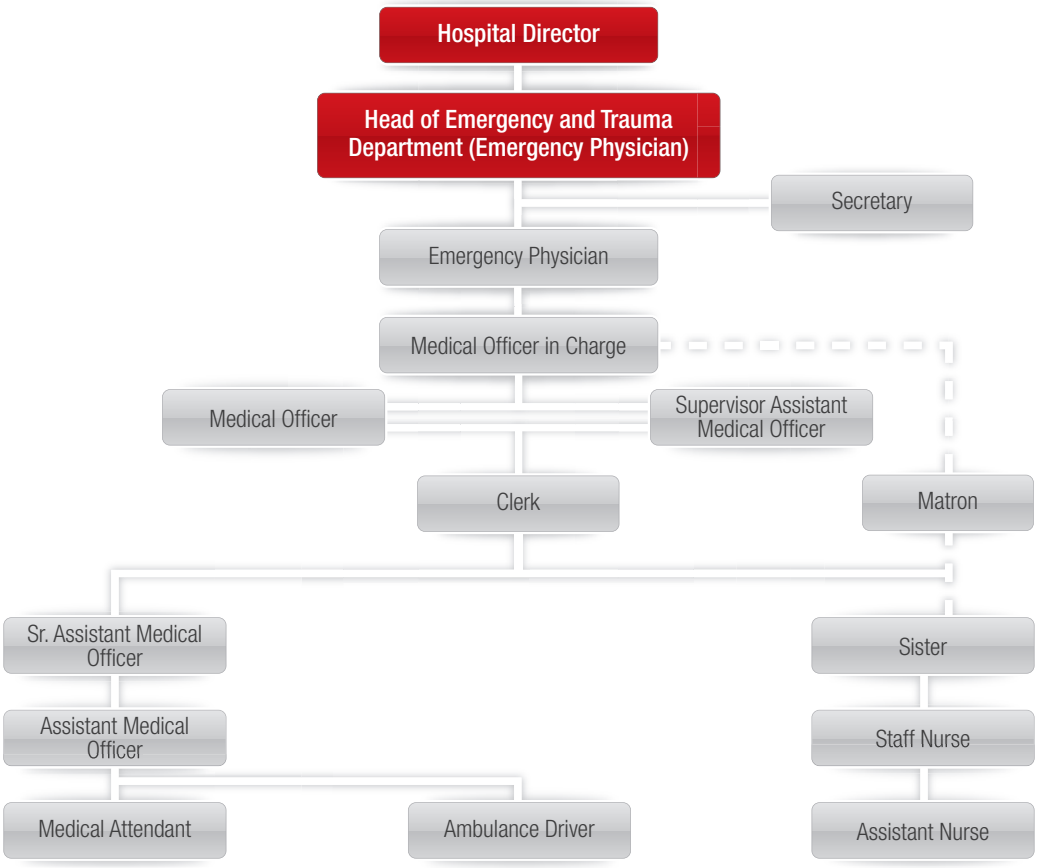
RECOGNITION AND QUALIFICATIONS OF EMERGENCY PHYCISIAN (EP)

- Masters of Medicine (Emergency Medicine) Universiti Sains Malaysia (USM)
- Masters of Emergency Medicine Universiti Kebangsaan Malaysia (UKM)
- Masters of Emergency Medicine Universiti Malaya (UM)
- Fellow of College of Emergency Medicine (FCEM, UK)
- Fellow of Royal College of Surgeon (Accident and Emergency Medicine) before 2004
- Specialist recognized by MOH having other post-graduate degree* and have special interest and training in emergency medicine and have spent a minimum of 2 years fulltime in Emergency Department with Consultant Emergency Physician
- Post Graduate Degree or Emergency Medicine Board Examinations recognized and accredited by Ministry of Health Malaysia

APPENDIX 3

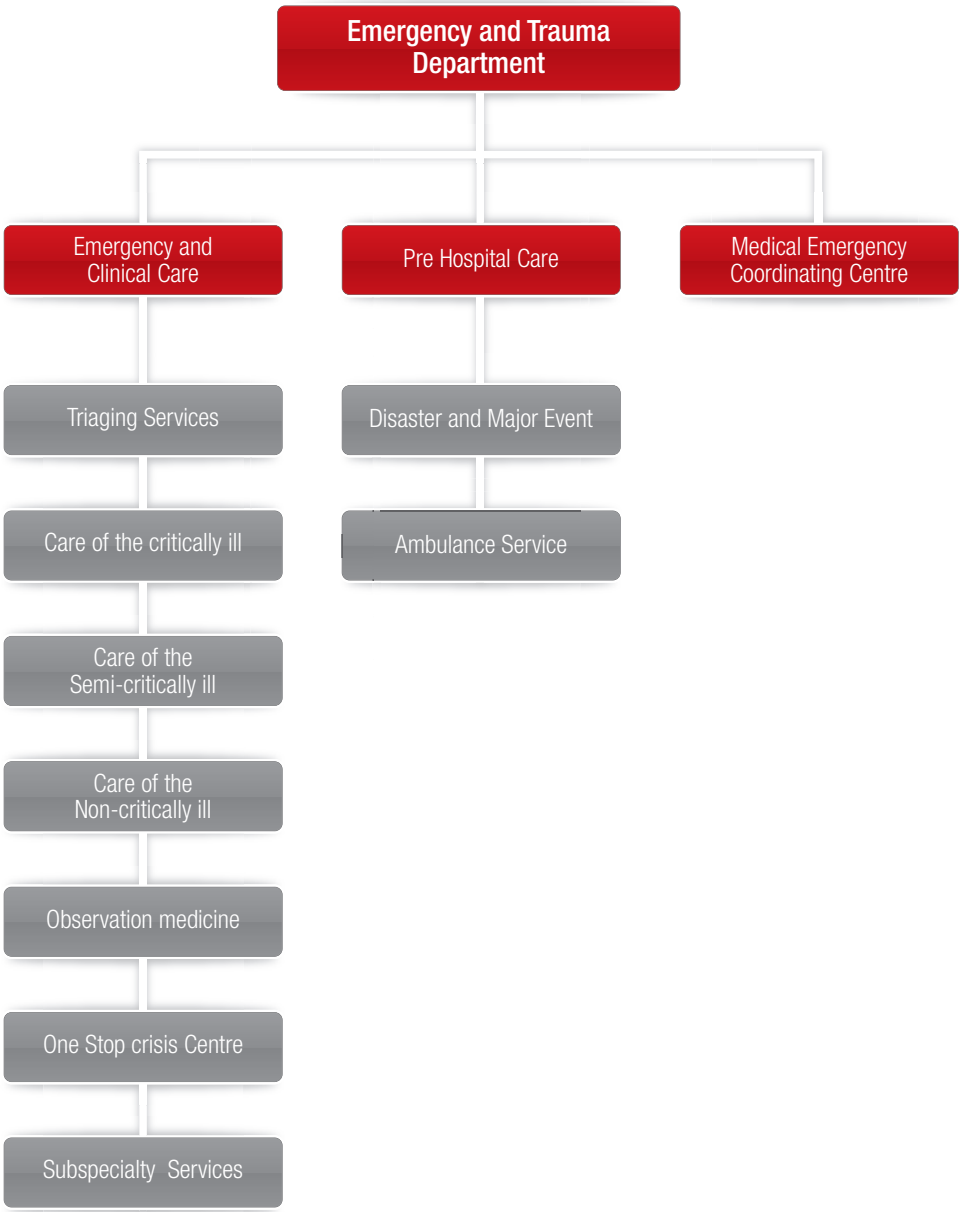
ORGANIZATIONAL CHART

Emergency and Trauma Department



APPENDIX 4

Service Components Organization



APPENDIX 5

HUMAN RESOURCE NORMS IN EMERGENCY AND TRAUMA DEPARTMENT, MOH

1. Criteria to be used in the need of human resource are as below:

    1.1 Total increase of workload

    1.2 Reference to Emergency Departments of developed countries (USA, Canada & Europe).

    1.3 The formula to be used encompasses the following aspects:

        1.3.1 Dedicated structure according to the treatment zones.

        1.3.2 Work process/service system which is offered by the hospitals listed

        1.3.3 Level of service offered with reference to the current and estimated workload.

        1.3.4 Additional services which is offered.

    1.4 All hospitals designated as State Hospitals/HKL will have “active coverage” and specialist “on the floor”.

    1.5 All hospitals designated as major Specialist Hospital will have specialist coverage 24 hours, either as active or passive coverage.

    1.6 All hospitals designated as minor Specialist Hospital will be headed by an Emergency Physician (EP), with a minimal number of three (3) EP’s.

    1.7 Placement of Specialists/Medical Officers will be based on the priority of individual states.

    1.8 For designated minor hospitals (Level II), additional 10% from the workload statistic.

2. Formula: The human resource norm for Emergency and Trauma Department is as below:

    2.1 Medical Officer

        2.1.1 1:5 Red Zone (critical) patients per shift in a day

        2.1.2 1:10 Yellow Zone (semi-critical) patients per shift in a day

        2.1.3 1:25 Green Zone (non-critical) patients per shift in a day

2.2 Allied Health Professional

2.2.1 1:1.5 Red Zone (critical) patients per shift in a day

2.2.2 1:5 Yellow Zone (semi-critical) patients per shift in a day

2.2.3 1:10 Green Zone (non-critical) patients per shift in a day

2.3 Emergency Physician

2.3.1 Level IV Hospital (300 patients/day) 1:8000 attendances/year

2.3.2 Level III Hospital (200 patients/day)1:8000 attendances/year

2.3.3 Level II Hospital minimum 3 Emergency Physicians per hospital

Emergency Physician Norms can be calculated with the formula below

Example:

Hospital Level	2010	2015	2020
IV (300pt/day)	14	20	28
III (200pt/day)	9	14	18
II (150pt/day)	3	3	3
I	-	-	-

Medical Officer (MO)

Hospital Level	Zone	No. of case/day	No. of case/shift	No. of Medical Officer	No. of MO needed x 5 (taking into consideration MOs that are on leave/nights off)
IV 300 cases/day	Red (10 %)	30	10	2	
	Yellow (40%)	120	40	4	
	Green (50%)	150	50	2	
Total				8 x 5	40
III 200 cases/day	Red (10%)	20	7	1	
	Yellow (40%)	80	27	3	
	Green (50%)	100	35	2	
Total				6 x 5	30
II 150 cases/day	Red (10%)	15	5	1	
	Yellow (40%)	60	20	2	
	Green (50%)	75	25	1	
Total				4 x 5	20
I					5
Total					5

2.4 Ambulance driver

2.4.1 1: 2 ambulance response (include emergency call, inter-facility transfer, medical coverage) per shift per day

2.5 Additional;

2.5.1 1 medical officer : 3 Medical officer for general relieve/night off
2.5.2 1 nurses : 3 nurses for general relieve/night off
2.5.3 1 assistant medical officer : 3 assistant medical officer for general relieve/night off
2.5.4 1 ambulance driver : 3 ambulance driver for general relieve/night off
2.5.5 Paramedic in yellow zone also in charge minor OT cases such as T&S (toilet and suturing) cases.

APPENDIX 6

RECOMMENDED BASIC TRAINING REQUIREMENT FOR VARIOUS CATEGORY OF PERSONNEL

A. Specialist

- Advance Airway Management Course
- Area of Interest - Toxicology, Pre-hospital Care, Sport Medicine, Disaster Medicine, Hyperbaric and Underwater Medicine, Emergency Critical Ultrasonography
- Research methodology and biostatistics
- Quality assurance
- Professional conferences
- Middle level management

B. Medical Officer

- Basic Life Support
- Trauma Life Support
- Pediatric Advanced Life Support
- Advanced Life Support
- Triage Skills and Competency
- Corporate Culture and Communication
- First Responder Life Support: Trauma, Medical Emergencies, Disaster, CBRNE
- Pain Management Course

C. Assistant Medical Officer/Staff Nurse

- Basic Life Support
- Advanced Life Support Courses (Trauma, Cardiac)
- Pediatric Advanced Life Support
- Holistic Pain Management
- Triage Skills and Competency
- Corporate Culture and Communication
- First Responder Life Support: Trauma, Medical Emergencies, Disaster, CBRNE
- Pre Hospital Care
- Post Basic Trauma Care Intensive/Coronary Care
- Pain Management Course

APPENDIX 7

BASIC EMERGENCY CARE – LIST OF MEDICAL EQUIPMENTS AND MEDICATIONS

1. Airway Management

- Oro-pharyngeal Airway (various sizes)
- Nasopharyngeal Airway (various sizes)
- Bag-Valve and Mask
- Advance Airway Adjunct (Laryngeal Tube/Laryngeal Mask)
- Laryngoscope
- Video assised Laryngoscope
- Endo-tracheal Tube (various sizes)
- Endo-tracheal Tube Introducer
- Adhesive Tapes
- Syringes (20cc, 10cc) & Needles (sizes 18G, 20G, 22G, 24G)
- Lubrication Gel

2. Breathing and Ventilators Support

- Oxygen Supply or Oxygen Tank with oxygen regulator
- High Flow Mask
- Nebulizer Mask
- Suction Outlet or Portable Suction Machine
- Portable Resuscitator
- Portable Ventilator

3. Circulation and Hemorrhage Control

- Automated External Defibrillator (AED)/Defibrillator with TCP Capability
- Intravenous Cannula (Sizes 16G, 18G, 20G, 22G, 24G)
- Intravenous Fluids (Normal Saline/Hartman's Solution)
- Water for Irrigation
- Compression Bandages
- Triangular Bandages
- Sutures
- Chest Tube Set with under water seal
- ECG Machine

4. Skeletal Immobilization.

- Cervical Collar (adjustable)
- Head Immobilizer (various sizes)
- Upper Limb Immobilizer (various sizes)
- Lower Limb Immobilizer (various sizes)
- Traction Immobilizer

5. Monitoring Equipment

- Non Invasive Blood Pressure with Oxygen Saturation
- Capillary Blood Sugar Machine
- Vital Signs Monitor (BP/PR/RR/SpO_2/ECG)

6. Personal Protective Equipment (Disposable)

- Gloves
- Apron
- Surgical Face Mask

7. Emergency Medications (Drugs)

- Adrenaline
- Adenosine
- Frusemide
- Flumazenil
- Opioids
- Atropine
- Calcium Gluconate
- Sodium Bicarbonate
- Amiodarone
- Lignocaine
- Dextrose 50%
- Naloxone
- Magnesium Sulphate
- Beta 2-Agonist for Asthma/COPD
- Benzodiazepines
- Aspirin
- Glyceryl Trinitrate
- Hydrocortisone/ Prednisolone
- 0.9% Saline

APPENDIX 8

MALAYSIAN TRIAGE CATEGORY (2011)

Triage			Usual Presentation
Color Code	Category	Sub-Category	
Red	Critical Seen Immediately	Requires Immediate Life Saving Intervention	Cardiac arrest. Stridor/respiratory arrest/RR>30 or <10 Severe respiratory distress/agonal or gasping type respiration. SpO_2 <90. Unresponsive trauma patient. Severe bradycardia (HR<60) or tachycardia (HR>150) with signs of hypo-perfusion. Hypotension (SBP<90) with signs of hypo-perfusion. Trauma patient who requires immediate fluid resuscitations. Chest pain (Anginal type), pale, diaphoretic. Anaphylactic reaction. Baby that is flaccid (unresponsive) Unresponsive with history of poisoning. Hypoglycemia with a change in mental status. Exsanguinations hemorrhage Severe crush injuries to limbs Extensive burns (> than 25% BSA) or involve facial region Near-drowning Firearms wounds to head, neck, trunk or abdomen or trajectory undetermined Elevated BP systolic >220 mmHg or diastolic >120 mmHg with systemic symptoms or neurological deficit Elevated blood sugars with neurological or systemic impairment

Triage			Usual Presentation
Color Code	Category	Sub-Category	
Yellow	High Risk Seen within 30 minutes	High Risk Situation or Confused/lethargy /disorientated or Severe pain/Distress or Unable to walk but airway is secure, haemodynamically stable and on trolleys	Altered conscious level but not comatose Head injured: GCS>13 GCS full but pupils unequal Fractures of long bones of lower limbs/pelvis Active chest pain, suspicious for coronary syndrome, but does not require an immediate life-saving intervention, stable. Chest pain – visceral and not associated with other symptoms Immunocompromised (on chemotherapy, SLE) with a fever. A suicidal or homicidal patient Open fractures of upper limbs Spine injuries Eye injuries with loss or impaired vision Dislocations of major joints Limb amputation: total or near-total Burns 15-25% of BSA regardless of depth and/or 10-20% 3rd degree burns with no compromise to airway and circulation Vascular injuries Uncontrollable major bleeding Patients with acute abdomen Chemical exposure involving eyes Poisoning or drug overdose with impairment of conscious level Severe pain: Pain score: 7 - 10/10 Post-ictal states with neurological deficit Mild or moderate dyspnoea with saturation >95% and/or rate <40 min Hyperventilation and unable to maintain posture Arrhythmias: heart rate <150 or >60/min Elevated BP systolic <220 mmHg or diastolic <120 mmHg with minimal systemic symptoms but no neurological deficit Other medical urgencies requiring intravenous intervention and intermittent monitoring only: Dehydration Diarrhea with vomiting Adult pyrexia > 40°c Child aged 1-3 months with T>38°c Signs of infection Dialysis problems Acute psychotic episode Chemotherapy or immunocompromise <3 months-HR>180, RR>50 3 months-3 years-HR>160, RR>40 3-8 years-HR>140,RR>30 >8 years-HR>100, RR>20 SPO_2 <92ESI

Triage			Usual Presentation
Color Code	Category	Sub-Category	
Green	Non-critical	G1 Requires many resources	Children less than 2 years Senior citizens more than 65 years Chest pain – No risk factors and not associated with other symptoms, normal ECG Abdominal pain Abuse/Neglect/Assault Elevated blood sugar without any major symptoms Mild asthma Acute urinary retention Closed fracture of upper limbs or ankle with major angulations Dislocations of small joints Diarrhea and/or vomiting with dehydration
		G2 Requires minimal resources	Non-aggressive psychiatric patients Foreign body Minor allergic reaction Burns <15% of BSA regardless of depth and/or <10% 3rd degree burns Minor trauma Diarrhea and/or vomiting with no dehydration Lumps and bumps Abdominal pain: chronic General medical conditions or minor illnesses not requiring monitoring Ear ache Nail prick Acute infective eye conditions Fever >38°c for adult age Fever in children between 2 to 12 years of age
		G3 Non-emergency	Sore throat – no respiratory symptoms Simple skin diseases – chronic Simple upper respiratory tract infection in adults Chronic trauma injuries >6 months Missed appointments Medications exhausted Second opinion seeking Wound dressing and opening stitches (STO) Medical Certificate Specialist clinic cases Routine change of urinary catheter and naso-gastric tube

Triage Away Policy

- Non-emergency cases can be turned away from Emergency Department
- Documentation must be done
- Secondary triaging done and recording of vital signs
- Cannot triage away from primary triage
- Children below 12 should not be triaged away

APPENDIX 9

JOB DESCRIPTION HEAD OF EMERGENCY AND TRAUMA DEPARTMENT

1. Manage and organize of all activities under emergency medicine and trauma services.

i. Clinical management and control standard of patient care
ii. Set-up proper strategies to ensure quality services are given
iii. Coordinate of all services activities provided for patients in the emergency department

2. Planning and manage of expenditure.

i. Planning expenditure target yearly
ii. Planning purchasing of medical equipments
iii. Structural development planning

3. Administration

i. Planning human resource needed
ii. Dividing the duties, functions and roles of all staff
iii. Planning professional progress of all staff
iv. To carry out all duties directed by the Hospital Director from time to time

4. Clinical

i. To manage and treat critical and complex trauma cases which needs specialized clinical treatment in this field.
ii. To provide clinical teaching, leadership and specialized guidance to the Medical Officers and Paramedics regarding emergency treatment.
iii. To provide intensive treatment on critical patients who are at the Emergency Department within 24 hours.
iv. To carry out duty as a Specialist on call for 24 hours.
v. To coordinate/supervised or conduct life saving procedures.
vi. To coordinate 'Major Casualty Incident' and Pre Hospital Care services from time to time.

5. Training

i. Training of Medical Officers, House Officer, Post-graduate Students and Paramedics in emergency and clinical treatment
ii. Supervision of two Master of Emergency students at one time.
iii. Coordination of CME in the Emergency Department.
iv. To be a lecturer and facilitator in courses such as MTLS, FRLS, CPR, ALSIC and also seminars, scientific conference in line with emergency treatment.

6. QA/QI Activities

i. QA/QI coordinator for the Emergency Department
ii. To organize QA projects in the department level
iii. Client Satisfaction
iv. ISO/Accreditation

v. NIA/KPI
vi. Risk Assesment and Management

APPENDIX 10

JOB DESCRIPTION OF EMERGENCY PHYSICIANS

i. Taking history, do the physical examination, resuscitation, stabilization, given general and emergency treatment to the patients in the emergency department.
ii. To be responsible as a team leader and coordinator in handling critical cases and to implement multidisciplinary treatment for such cases.
iii. To carry out minor surgeries as well as reduction in uncomplicated fractures and dislocations.
iv. To observe and treat patients in the emergency ward before they are admitted to the respective ward.
v. To refer patients to the respective specialized unit concerned to get further treatment as well as follow up treatment.
vi. To be present for ward rounds when the Head of Department does his daily rounds.
vii. To be the coordinator in department activities such as department CME, Mortality and Morbidity conference, X-ray Conference and courses which are carried out as well as sports and social activities.
viii. To supervise the work flow and work process in each zone of the department.
ix. To supervise the duties of medical officers and all staff in the department.
x. To prepare the weekly roster for the medical officers.
xi. To coordinate the medical reports prepared by the medical officers.
xii. To act as the Medical Officer In- Charge in the absence of the Head of Department.
xiii. To prepare medical reports and attend court cases as a witness when needed.
xiv. To be on duty with the special medical team in natural disasters as a standby medical team when needed.
xv. To coordinate and supervise yearly or collective projects as stipulated.
xvi. To coordinate and supervise Quality Assurance Research for the department.
xvii. To be the first evaluating Officer for the yearly appraisal evaluation for the medical officers.
xviii. To notify all communicable diseases to the Health Office.
xix. To carry out duties directed by the Head of Department from time to time.
xx. To supervise or coordinate life saving interventia.

JOB DESCRIPTION OF MEDICAL OFFICERS

i. Taking history, do the physical examination, resuscitation, stabilization, emergency treatment and general treatment to the patients in the emergency department.
ii. To carry out minor surgeries as well as reduction in uncomplicated fractures and dislocations.
iii. To carry out observations on patients admitted to the emergency ward and give treatment as needed.
iv. To refer patients to specific specialized units for further treatment and follow- up treatment.
v. To be responsible as a team leader and coordinate in handling critical cases and to implement multidisciplinary treatment for such cases.
vi. To be present for ward rounds when the Head of Department does his daily rounds.
vii. To attend at least 80% of the department CME.
viii. To be the coordinator for courses in the department and also activities of other departments.
ix. To finish all individual or team yearly projects set by the department.
x. To prepare medical reports and attend court cases as a witness when needed.
xi. To be on duty with the special medical team in natural disasters as a standby medical team when needed.
xii. To notify all communicable diseases to the Health Office.
xiii. To carry out duties directed by the Head of Department from time to time.
xiv. To conduct life saving critical intervention.

JOB DESCRIPTION OF HOSPITAL SUPERVISOR U36

i. To assist Head of Department to organize all emergency service activities in the Emergency Department and to divide the duties and functions for each category of the staff.
ii. Clinical management involving discipline control, standard service and patient care by the paramedics under him in each service zone in the Emergency Department.
iii. To teach and guide in clinical aspect for all paramedic staff.
iv. To coordinate CME for all paramedics in the Emergency Department and take part in emergency training activities.
v. Planning quality activities and clinical research for all Assistant Medical Officers in the Emergency Department.
vi. To function as a coordinating officer in the disaster room in the Emergency Department when there is a disaster.
vii. To prepare the yearly appraisal report for the staff under him.
viii. To do counseling sessions.
ix. To be responsible to solve problems which cannot be solved by the staff under him whether internally or externally regarding the service and duties carried out in the Emergency Department.
x. To carry out other duties directed by the Head of Department.

JOB DESCRIPTION OF ASSISTANT MEDICAL OFFICER U32

1. Duty in Medical Emergency Coordination Centre

i. Control and coordination in all ambulance services in the hospital. (Inter-hospital, Inter-facility transfer and Ambulance Response)
ii. To receive and coordinate calls for referral cases to the hospital.
iii. To document all referred cases in the CDC book.
iv. To function as a “Call Triages” for all ambulance calls.
v. “Dispatching” the ambulance for emergency calls.
vi. To carry out “Networking” for cases outside the service area or when there is no availability of ambulance.
vii. To be responsible for all medical equipments in the ambulance.
viii. To manage all activities regarding medical coverage team and ambulance calls.

2. To guide Assistant Medical Officer in all services zone

i. To be the chief for every shift and function as a resource reference for all Assistant Medical Officer U29.
ii. To make sure ‘Primary Triage’ services by the Assistant Medical Officer U29 is carried out efficiently and effectively.
iii. Must ensure that treatment is carried out fast and according to department protocol at all zone including critical, semi critical, asthma and procedure room area.
iv. To ensure all response for ambulance calls and “Inter-facility” services is carried out fast and following the NIA indicator as stated.
v. To ensure OSCC cases to be handling according to the protocol stated.

vi. To ensure all regulations regarding biohazard and high risk cases is carried out properly following the Universal Precautions.
vii. To carry out clinical procedures directed by the Medical Officer from time to time.
viii. To supervise the smoothness of the service carried out by the Assistant Medical Officer U29 in each zone.
ix. To solve problems regarding with patient treatment faced by the Assistant Medical Officer U29 in each zone.
x. To refer emergency problems which cannot be solved or beyond their control to the Medical Officer or Supervisor.

3. Rapid Response

i. To act fast to overcome complaints or problems so that it can be overcome quickly without interrupting services or operations of the department. With this there is no chance of it being carried forward as it involves supply, treatment and others facilities or services.
ii. To alert the emergency staff when unexpected disaster or crisis occurs. Priority treatment should be given to the critical case.
iii. To notify problems which arise and is beyond their control to the Medical Officer in charge or Supervisor in emergency.

4. Other Duties

i. To ensure all staff is always ready to give services, practices teamwork, having caring attitude and high professionalism at all times.
ii. Supervise all cleaning jobs done by concession staff.
iii. To ensure the attendance of the staff on each shift. To take steps to overcome if the staff is absent.
iv. To activate 'Disaster Plan' in case of crisis or disaster.
v. To examine all medical equipments to ensure they are always in functioning order and to take action on repairs if faulty.
vi. Supervision on duties of Assistant Medical Officers, Attendant and Drivers.
vii. To prepare 'Incident Reporting' when there is an extra ordinary report.

5. Administrative

i. To check overtime claims of the Assistant Medical Officers and Attendant.
ii. To attend department and hospital meetings. To also conduct staff meeting.
iii. To prepare a list for consumable and medical equipment needed.
iv. To prepare yearly appraisal report for all staff under his supervision.
v. To receive directive from Officers above him from time to time.

JOB DESCRIPTION OF ASSISTANT MEDICAL OFFICER U29

1. Primary Triage

i. To receive and evaluate all types of cases coming for treatment in the Emergency Department by Triaging Criteria Guidelines. Preference given to critical cases which are life threatening.
ii. To carry out technical extrication and immobilization to patients in the car and triage according to the protocol guidelines.
iii. To give basic immobilization treatment such as bandaging and splinting to patients who need it.
iv. To give clear information regarding emergency services to the public who come to the Triage Counter.
v. To manage all activities in the Primary Triage such as services of wheel chair and trolley for sending patients to the respective zone in the department.

2. Medical Emergency Coordination Centre

i. Manage ambulance services.(Inter-hospital, Inter-facility transfer and ambulance response)
ii. Coordinate all of cases referred to or referred from to other Health Institutions using telephone lines or two-way trunk radio.
iii. To document all referral cases to the Hospital through the Emergency Department and also referral cases to Health Institutions.
iv. Responsible for all medical equipments in the ambulance.
v. To manage all activities regarding medical coverage and ambulance call.
vi. Responsible to the smoothness running of each shift.

3. Procedure Room

i. To carry out general treatment from the consultation room such as intravenous infusion, splinting, dressing, eye irrigation and blood taking when needed.
ii. To assist in cases involving medico-legal such as rape, murder and poisoning in this zone.
iii. To carry out procedures such as toilet & suturing, incision & drainage, nail avulsion and removal of foreign body as directed.
iv. To assist the Medical Officer in cases involving the multidisciplinary Procedure Room when needed.
v. To carry out bandaging and strapping to fracture cases and assist in close manipulative reduction, plastering, back slab and skin traction to the cases requiring it.
vi. Responsible in facilities such as ‘Stat Lab’. Also to run quality controls test every morning shift.
vii. To do Pre Hospital Care services.
viii. Responsibility to all medical equipments in the ‘Minor OT’, ‘POP room’ and ‘Stat Lab room’.

4. Immediate Zone

i. To do basic treatment such as splinting, bandaging, intravenous infusion, ECG and Glucostix.
ii. To carry out duties in emergency treatment such as:
iii. To compress wound bleedings.
iv. Immobilization of the fractures.
v. To give intravenous infusion.
vi. To take vital signs such as pulse rate, temperature and blood pressure.
vii. To carry out procedures such as injection, Ryle’s tube insertion, stomach wash out and catheterization.
viii. To carry out continuous monitoring to patients in this zone.
ix. Responsible towards ensuring and examining all emergency equipments are sufficient for daily use.

5. Asthma Zone

i. To carry out early examination to the asthma patients in this zone.
ii. To assist the Medical Officer in treating asthma cases.
    a. To give nebulizer to the asthma patients.
    b. To document of asthma assessment and charting.

iii. To give treatment such as injection and intravenous therapy as well as medication for asthma patients as directed by the Medical Officer.
iv. To observe asthma patients treated in this zone.
v. To give health advice regarding asthma treatment.

6. Resuscitation Zone Division

i. To assist the Medical Officer in emergency treatment such as :
    a. Intubation
    b. Emergency Injection
    c. Intravenous Therapy
    d. Procedure intervention such as CVP, Cut down, Chest Tube Insertion
    e. Arterial Blood Gas
    f. Emergency Delivery
    g. Cardio-version and Defibrillation
    h. C.P.R.

ii. To prepare and examine specialized equipments such as Volumetric Pump, Syringe Pump, ventilators, Central Monitor and Transport Monitor.
iii. To escort emergency and critical cases to the X-ray department or to the ward with medical emergency equipment as required.
iv. To take care and clean special medical equipments.
v. To do check list on the resuscitation bay.

JOB DESCRIPTION OF MATRON (U36)

i. To assist Head of Department to organize all emergency service activities in the Emergency Department and to divide the duties and functions for each category of the staff.
ii. Clinical management involving discipline control, standard service and patient care by the nurses under her in each service zone in the Emergency Department.
iii. To teach and guide in clinical aspect for all nurses.
iv. To coordinate CME for all nurses in the Emergency Department and take part in emergency training activities.
v. Planning quality activities and clinical research for all nurses in the Emergency Department.
vi. To function as a coordinating officer in Observation Medicine Bay, Asthma Bay and One Stop Crisis Centre.
vii. To prepare the yearly appraisal report for the staff under her.
viii. To do counseling sessions.
ix. To be responsible to solve problems which cannot be solved by the staff under her whether internally or externally regarding the service and duties carried out in the Emergency Department.
x. To carry out other duties directed by the Head of Department.
xi. To monitor equipment and medical supplies.

JOB DESCRIPTION OF SISTER (U32)

General Duties

i. Responsible towards the Hospital Director/Head Nurse/Head of Department regarding nursing administrative and patient treatment.
ii. To assist in preparing department/hospital and nursing services policies.
iii. To follow hospital policies and nursing administrative services guidelines.
iv. To carry out duties on calls after office hours, weekends and public holidays.
v. Should always be ready to give services during emergencies and natural disasters.
vi. To be involved in research studies activities.
vii. To be involved in the hospital activities, voluntary bodies or associations.
viii. To be a member of certain bodies in the hospital.
ix. To observe good relationship among the staff, patient and public.
x. To carry out administrative duties including all letters concerning nursing staff and other staff under her care.

Special Duties

1. Planning and arranging of staff

i. To discuss with the matron/medical officer/medical specialist in planning to upgrade the nursing quality.
ii. Planning the roaster for staff nurses and to ensure that there is enough staff nurses for 24 hours duty.
iii. To apply for extra staff with proper justification to the matron and also in charge transfer of the staff nurses.
iv. Planning the yearly appraisal report for the staff nurses.
v. To ensure staff nurses are placing following their skill, qualification and experience.
vi. To make evaluations for staff nurses, forward confidential report, yearly appraisal or disciplinary action.
vii. To manage job confirmation, pension schemes, promotions and 'acting' on the post for all staff nurses.
viii. To support applications for courses, medical team to Mecca, promotions, excellent service awards for staff nurses. To maintain staff nurses personal data and leave records.
ix. To ensure patient statistical census is maintained from time to time. To make sure nurses follow the infection control regulations. For confirmed cases, it should be reported to the Record Office and Health Office.

2. Directing

i. To ensure directives/policies/guidelines/procedures related with the nursing services is fulfilled.
ii. To prepare work manual procedure, job description (fail meja) and standard guidelines to upgrade the nursing quality to achieve the hospital objective.

3. Control

i. Equipment control and indent medical and non medical supply without any wasting.
    a. To indent monthly supplies for medical and non medical equipments as well as buying of equipments.
    b. To complaint on faulty equipments and send for repairs. If unable to repair, send a list of equipments which need to be condemned.
    c. Ensure the ward is always clean and there is enough linen at all times.
    d. To ensure supply of medicine and storage of dangerous drugs is kept under lock and make spot checks from time to time.

ii. Supervision of patient nursing

a. To make sure medical directives is always carried out and patient received proper treatment.
b. Treatment given should cover the spiritual, physical, mental and social aspect.
c. To be involved in ward rounds and to do nursing rounds.
d. To be responsible in checking patient report.
e. To ensure staff nurses had order diet supply for the patients following the need and to make sure it is always enough.
f. To give advice, guide and talks on health education to patients.
g. Working together to achieve health campaigns such as Health Mental Day, Diabetes Mellitus Day, and World Heart Day.
h. To make sure all specimens taken are sending and tested. Results should be obtained as soon as possible.
i. To ensure patients are referred to rehabilitation centers if required.
j. To ensure referred cases are seen by the welfare officer as required.

4. Authoritative Scope

i. To solve problem arise among staff and also public.
ii. To investigate complaints in wards and nursing staff immediately and to make reports and remarks to the Hospital Director/Head of Department/Matron.

5. Training

i. To have a meetings with staff for planning and discussing about patient care activities.
ii. Planning orientation programmed for all new staff.
iii. Planning CME programmed and courses for all staff.
iv. Suggest staffing for carrying out studies on the nursing scope and sending the study to the higher management once finished.

JOB DESCRIPTION OF STAFF NURSE (U29)

General Duties

i. To check and record dangerous medication in every shift as well as to handle Dangerous Drug Cabinet keys.
ii. To receive patient reports from bed to bed every shift and ensure patients are on the bed and in stable conditions.
iii. To ensure all staff in every shift are on duty as schedule.
iv. To make beds and trolley. To make sure ward surroundings area are clean.
v. To make observations on patients and take vital signs such as temperature, respiration rate, pulse rate and blood pressure.
vi. To check and send all medication, specimens and autoclave items.
vii. To ensure daily disposable items is enough.
viii. To check and indent floor stock medication, dangerous drugs, oxygen and CSSU equipments.
ix. To check all medical equipments such as defibrillator, transport incubator and make sure they are in well functioning.
x. To make complaints if equipment is faulty.
xi. To check and store medication from the pharmacy.
xii. To ensure clinical waste and normal waste is thrown into the correct and clean containers.
xiii. To ensure dirty linen is collected and clean linen is supplied.
xiv. To monitor the service by the concessional cleaners.
xv. To assist in infection control and make sure it is carried out in an aseptic technique and proper hand washing. Ensure there is no needle stick injury.
xvi. To do nursing reports on all patients and also incident reporting.
xvii. To record all medication given to patients.
xviii. To give guidance, teaching and cooperation to the staff under them and also to other categories.
xix. To give Health Education to patients about their condition, follow up treatment and taking medications to help in patient recovery.
xx. To indent domestic equipment, surgical equipment and stationery.

Duties of Staff Nurse in Red Zone

i. To make early assessment on patients.
ii. To assist Medical Officer in such procedure:
    a. Endo-tracheal intubation
    b. Intravenous therapy
    c. Central venous pressure
    d. Chest tube insertion with under water seal
    e. Cardio-version
    f. Defibrillation
    g. Tracheotomy cut down
    h. Cardiopulmonary resuscitation
    i. Emergency delivery
    j. Arterial line blood gas sampling
    k. Stomach washout

iii. To give medication and injections as directed by medical officer. To do observation on patient vital signs and head chart as directed.
iv. To escort cases to the Imaging Department for X-ray, CT scan or Ultrasound, Ward, Intensive Care Unit, Coronary Care Unit and High Dependency Ward with intensive medical equipments such as transport ventilator and monitor.

Duties of Staff Nurse in the Yellow Zone

i. To make early assessment on patients.
ii. To do basic nursing to patients such as dressing, splinting, bandaging, administrating oxygen or nebulizer
iii. To take vital signs such as temperature, pulse rate, respiration, blood pressure, Glasgow Coma Scale and Limb Circulation.
iv. To do patient registration.
v. To assist the doctor in examination on patients and procedures such as toilet and suturing and intravenous infusion.
vi. To carry out treatment as directed such as continuous bladder drainage, stomach washout, eye irrigation, suction and Ryle's tube insertion.
vii. To give injections and medication as directed by medical officer.
viii. To re-evaluate the patient's condition and the doctor should be informed on any counter reaction of treatment given earlier.
ix. To carry out investigation procedures such as ECG, Dextrostic/ ketostic, taking of blood and urine specimen and swab taking.
x. To clean and keep the patient comfortable.
xi. To assist in emergency treatment.
xii. To prepare patient for operations.
xiii. To safeguard patients property and return it to the next of kin if any.
xiv. To contact the patients relative.
xv. To have good relationship with the patient and inform the condition of the patient to the relatives when allowed by the doctor.
xvi. To contact the referral doctor to refer cases to other units.
xvii. To make sure beds are ready for patients to be warded.
xviii. Escort patients to the Imaging Department, Operation Theater or to the ward.
xix. To prepare ward discharges.

Duties of Staff Nurse in the Green Zone

i. To screen all patients in the green zone.
    a. To take history of past illness of patient.
    b. To take vital signs such as blood pressure, pulse rate, respiration and temperature.
    c. To do procedures such as ECG, Dextrostic or ketostic.
    d. To do dressing and bandaging wounds.
    e. To give ATT injection.

ii. To inform the Medical Officer in the green zone if the patient becomes critical or life threatening.
iii. To send patients to the Yellow or Red zone depending on the seriousness of the patient.
iv. To ask patients to wait their turn to see the doctor after screening.
v. To record details and information in the Out Patient Card.

Duties of Staff Nurse in the Green ZoneDuties of Staff Nurse in the Observation Ward

i. To do sponging or bed bath on patients who are bed ridden.
ii. To receive new cases from Green zone or Immediate Care.
iii. To take vital signs, head chart and limb circulation on patients.
iv. To assist the Medical Officer during examination of the patients.
v. To give treatment such as dressing, splinting, bandaging and tepid sponging
vi. To give injections and medication as directed by medical officer.
vii. To contact the referral doctor to refer cases to other units.
viii. To collect and send specimen to the lab.
ix. To inform the doctor on lab results and reverse reaction on treatment given.
x. To indent and serve diet to patients.
xi. To send patients to the Imaging Department for X-ray or to the ward.
xii. To take appointments from other units to the patients.
xiii. To give medical leave and prescription slip signed by the doctor to the patients.
xiv. To prepare ward discharges.

JOB DESCRIPTION OF THE MEDICAL ATTENDANT

General Duties

To assist Assistant Medical Officer and Staff Nurses in patient care.

i. To assist Assistant Medical Officer and Staff Nurses do the dressing, bed making, bandaging, splinting and other procedures for the patient.
ii. To assist patients in changing their clothes.
iii. To feed the unable patients.
iv. To ensure the utility and the dirty utility room is always clean and tidy.
v. To give bed pan/urinal to patients and clean them after use.
vi. To send specimens to the lab and take blood from the Blood Bank as required.
vii. To escort patients to the Imaging Department and wards.
viii. To carry out dispatch when required.

Special Duties

i. To clean medical equipments such as splint, hard collar, oxygen mask, oxygen tubing in the proper way.
ii. To change the water in the humidifier container and oxygen tubing every morning.
iii. To arrange the trolley neatly in the utility room.
iv. To ensure patient trolley, chairs, waste containers and sharp bin is available in each bay.
v. To clean suction containers and change once used.
vi. To always be in the working area so that the Assistant Medical Officer, Staff Nurse and Community Nurses can request for their assistance at any time.
vii. To ensure the Medical Officer's eating room is clean and tidy every morning.
viii. To assist Assistant medical Officer and Staff Nurses in examining and preparing medical equipments and to make sure they are in good condition and safe to use. For examples changing the empty oxygen tank, to take oxygen from the oxygen supply store and etc.

JOB DESCRIPTION OF AMBULANCE DRIVERS (R3)

Function

To ensure ambulances are always in good condition. He must drive the ambulance carefully and safely and always heeding to the own safety and the patient in the ambulance. The driver must be patient, responsible and have a caring attitude.

General Duties

i. To ensure the ambulance is always in good condition.
ii. To follow the standard ambulance checklist strictly.
iii. To drive the ambulance safely and follow the road safety rules and regulations.
iv. To make sure the ambulance is always clean inside as well as outside.
v. To assist in lifting patients to the ambulance.
vi. Maintenance of vehicles in the pretext of repairs, loss of spare parts and medical equipments in the ambulance.
vii. To pass his duties to the driver of the next shift.
viii. To ensure the authenticity of his license and make sure the road tax is not expired.
ix. To make a police report and inform the officer in charge of the vehicles when an accident occurs. To carry out duties directed by the Head of Unit from time to time.

Special Duties in the Emergency Department

i. To send the patient from the Emergency Department for referral to another hospital as required.
ii. To be in the medical team as a secondary response or during the disaster.
iii. To be in the medical coverage team or in the team when a natural disaster occurs.
iv. To be equipped in nursing Knowledge
v. To have basic knowledge in emergency and attend courses on ‘First Responder’

APPENDIX 11

SUGGESTED BASIC MEDICATION IN EMERGENCY AND TRAUMA DEPARTMENT

(A) Tablet/Capsule

No.	Generic Name	Prescriber categories	Notes
1.	Acetylsalicylic Acid 300mg Tablet	C	
2.	Albendazole 200mg Tablet	C	
3.	Allopurinol 300mg Tablet	A/KK	
4.	Amoxicillin 250mg capsule	B	
5.	Amoxicillin 500mg + Clavulanate 125mg Tablet	A/KK	
6.	ARB Oral	A	
7.	Ascorbic Acid 50mg Tablet	C	
8.	Atenolol 100mg Tablet	B	
9.	B Complex Tablet	C	
10.	Bacampicillin 400mg Tablet	B	
11.	Benzhexol 2mg Tablet	B	
12.	Bisacodyl 5mg Tablet	C	
13.	Bromhexine 8mg Tablet	B	
14.	Calcium Lactate 300mg Tablet	C	
15.	Cefuroxime 250mg Tablet	A/KK	
16.	Celecoxib 200mg Capsule	A*	For hospital with Emergency Physician only
17.	Cephalexin 250mg Capsule	B	
18.	Charcoal Activated 250mg Tablet	C	
19.	Chlorpheniramine 4mg Tablet	C	
20.	Chlorpromazine 100mg Tablet	B	
21.	Cinnarizine 25mg Tablet	B	
22.	Clopidogrel 75mg Tablet	A*	For hospital with Emergency Physician only

No.	Generic Name	Prescriber categories	Notes
23.	Cloxacillin Sodium 250mg Capsule	B	
24.	Dexchlorpheniramine 2mg, 6mg Tablet	B	
25.	Diclofenac Sodium 50mg Tablet	B	
26.	Digoxin 0.25mg Tablet	B	
27.	Diosmin 450mg & Hesperidin 50mg Tablet	A/KK	
28.	Diphenoxylate HCl 2.5mg + Atropine Sulphate 25mcg Tablet	B	
29.	Doxycycline 100mg Capsule	B	
30.	Erythromycin EthylSuccinate 400mg Tablet	B	
31.	Etoricoxib 120mg Tablet	A*	For hospital with Emergency Physician only
32.	Ferrous Fumarate 200mg Tablet	C	
33.	Fluvoxamine 50mg Tablet	B	
34.	Folic Acid 5mg Tablet	C	
35.	Frusemide 40mg Tablet	B	
36.	Glibenclamide 5mg Tablet	B	
37.	Gliclazide 80mg Tablet	B	
38.	Glyceryl Trinitrate 0.5mg Tablet	C	
39.	Griseofulvin 125mg Tablet	B	
40.	Haloperidol 1.5mg Tablet	B	
41.	Haloperidol 5mg Tablet	B	
42.	Hydrochlorothiazide 25mg Tablet	B	
43.	Hyoscine N-Butyl bromide 10mg Tablet	B	
44.	Ibuprofen 200mg Tablet	B	
45.	Indomethacin 25mg Capsule	B	
46.	Isosorbide Dinitrate 10mg Tablet	B	

No.	Generic Name	Prescriber categories	Notes
47.	Labetalol 100mg Tablet	B	
48.	Levonorgestrel 150mcg & Ethinyloestradiol 30mcg Tablet	C	
49.	L-Thyroxine 0.1mg Tablet	B	
50.	Magnesium Trisilicate Tablet	C	
51.	Mefenamic Acid 250mg Capsule	B	
52.	Metformin 500mg Tablet	B	
53.	Methyldopa 250mg Tablet	B	
54.	Metoclopramide 10mg Tablet	B	
55.	Metoprolol 100mg Tablet	B	
56.	Metronidazole 200mg Tablet	B	
57.	Nifedipine 10mg Tablet	B	
58.	Omeprazole 40mg Tablet	B	
59.	Oral Rehydration Salt	C	
60.	Paracetamol 500mg Tablet	C	
61.	Penicilline 125mg Tablet	C	
62.	Potassium Chloride 600mg Tablet	B	
63.	Perindopril 4mg Tablet	B	
64.	Prazosin 1mg Tablett	B	
65.	Prednisolone 5mg Tablet	B	
66.	Prochlorperazine 5mg Tablet	B	
67.	Prolase Tablet	B	
68.	Propranolol 40mg Tablet	B	
69.	Ranitidine 150mg Tablet	B	
70.	Salbutamol 2mg Tablet	B	

No.	Generic Name	Prescriber categories	Notes
71.	Sulphamethoxazole 400mg & Trimethoprim 80mg Tablet	B	
72.	Isosorbide Dinitrate 10mg Tablet	B	
73.	Tetracycline 250mg Capsule	B	
74.	Theophylline 125mg Tablet	B	
75.	Theophylline 250mg SR Tablet	B	
76.	Tramadol 50mg Capsule	A/KK	
77.	Tranexamic Acid 250mg Capsule	B	
78.	Triprolidine HCl 2.5mg & Pseudoephedrine HCl 60mg Tablet	B	
79.	Vitamin B1, B6, B12 Tablet	B	

(B) Mixtures/Syrup/Elixir/Liquid

No.	Generic Name	Prescriber categories	Notes
1.	Albendazole 200 mg/5 ml Suspension	B	
2.	Ammonium Bicarbonate, Tincture Ipecac, etc Mixture	B	
3.	Ampicillin 125mg/5ml Suspension	B	
4.	Bromhexine 4mg/5ml Elixir	B	
5.	Carminative Mixture	C	
6.	Cephalexin 125mg/5ml Syrup	B	
7.	Cloxacillin 125mg/5ml Suspension	B	
8.	Dexchlorpheniramine Maleate 2mg/5ml Syrup	B	Strength available: 1mg/5ml
9.	Diphenhydramine HCl 10mg/5ml Elixir (Pediatric)	C	
10.	Diphenhydramine HCl 14mg/5ml & Ammonium Chloride 135mg/5ml Expectorant (Adult)	B	
11.	Erythromycin 200mg/5ml Suspension	B	
12.	Lactulose 3.35g/5ml Liquid	B	
13.	Liquid Paraffin	C	
14.	Magnesium Trisilicate Mixture	C	
15.	Multivitamin Syrup	C	
16.	Nystatin 100,000 units/ml Suspension	B	
17.	Paracetamol 120mg/5ml Syrup	C	
18.	Phenoxymethyl Penicillin 125mg/5ml Syrup	C	
19.	Prednisolone 3 mg/5 ml Syrup	B	
20.	Potassium Citrate Mixture	C	
21.	Promethazine HCl 5 mg/5 ml Syrup	B	
22.	Salbutamol 2mg/5ml Syrup	B	
23.	Sulphamethoxazole 200 mg & Trimethoprim 40 mg/5ml Suspension	B	
24.	Triprolidine HCl 1.25mg & Pseudoephedrine HCl 30mg per 5ml Syrup	B	

(C) Cream/Ointment/Gel

No.	Generic Name	Prescriber categories	Notes
1.	Aqueous Cream	C	
2.	Benzyl Benzoate 25% Emulsion	C	
3.	Betamethasone 17-Valerate 1:10 Cream	B	
4.	Calamine Cream	C	
5.	Glycerine	C	
6.	Hydrocortisone 1% Cream	B	
7.	Lignocaine 2% Jelly	B	
8.	Magnesium Sulphate 45% Paste	C	
9.	Methyl Salicylate 25% Ointment	C	
10.	Miconazole 2% Cream	B	
11.	Neomycin 0.5% Cream	B	
12.	Nystatin 100,000 units/g Cream	B	
13.	Silver Sulphadiazine 1% Cream	B	
14.	Vaseline Ointment	C	
15.	Zinc Oxide Cream	C	

(D) Lotion/Solution/Gargle/Mouthwash

No.	Generic Name	Prescriber categories	Notes
1.	Acriflavine 0.1% Lotion	C	
2.	Calamine Lotion	C	
3.	Cetrimide 2% Lotion	C	
4.	Chlorhexidine Gluconate 4% Solution	C	
5.	Chlorhexidine Mouthwash 0.2%	C	
6.	Chlorinated Lime Solution & Buffered Acetate Solution	C	
7.	Menthol 1.6% in Industrial Methylated Spirit Inhalation	C	
8.	Potassium Permanganate 1.5% Solution	C	
9.	Thymol Gargle	C	

(E) Eye/Ear/Nasal Drops

No.	Generic Name	Prescriber categories	Notes
1.	Chloramphenicol 0.5% Eye Drops	C	
2.	Chloramphenicol 5% Ear Drops	C	
3.	Chloramphenicol Eye Ointment	C	
4.	Ephedrine 0.5% Nasal Drop	A/KK	
5.	Sodium Bicarbonate 5% Eardrop	C	
6.	Sodium Chloride 0.9% Eye Drops	C	

(F) Others

No.	Generic Name	Prescriber categories	Notes
1.	Anusol Suppository (Bismuth Subgallate & Benzyl Benzoate Suppository)	C	
2.	Bisacodyl 5mg, 10mg Suppository	C	
3.	Clotrimazole 200mg, 500mg Pessary	B	
4.	Diclofenac 12.5mg Suppository	A*	For hospital with Emergency Physician only
5.	Glycerin 25 % & Sodium Chloride 15 % Disposable Enema [Ravin]	C	
6.	Lignocaine, Aluminium Acetate, Zinc Oxide & Hydrocortisone Ointment	A/KK	
7.	MDI Inflammide or equivalent	B	
8.	MDI Combivent or equivalent	B	
9.	Paracetamol 125mg Suppository	B	
10.	Paracetamol 250mg Suppository	B	

(G) Injections

No.	Generic Name	Prescriber categories	Notes
1.	Acetylcysteine 2g/10ml Inj (Parvolex®)	A*	For hospital with Emergency Physician only
2.	Adenosine 6mg/2ml Inj (Adenocor®)	B	
3.	Adrenaline 1mg/ml Inj	B	
4.	Albumin Human 20%/25% Inj	B	
5.	Amiodarone 150mg/3ml Inj	A*	For hospital with Emergency Physician only
6.	Anti Rabies Vaccine Inj (Verorab®)	B	
7.	Anti Tetanus Toxoid Inj (ATT vaccine)	C	
8.	Antivenom Cobra/King Cobra/Inj	B	
9.	Antivenom Snake Serum (Polyvalent®)	B	
10.	Antivenom Malayan Pit Viper Inj	B	
11.	Antivenom Sea Snake Inj	B	
12.	Atropine Sulphate 1mg/ml Inj	B	
13.	Bupivacaine 0.5% Vial	A	
14.	B2 Agonist	B	
15.	Calcium Gluconate 1g/10ml Inj	B	
16.	Calcium Polystyrene Sulphonate Powder (Kalimate®)	A	For hospital with Emergency Physician only
17.	Ceftriaxone Inj	A	
18.	Cefoperazone Inj 1g	A	
19.	Cefuroxime Inj 750mg	A	
20.	Deferrioxamine B Methanesulphonate 0.5g Inj (Desferal®)	A	For hospital with Emergency Physician only
21.	Desmopressin Acetate 4ug/ml (Minirin®)	A	For hospital with Emergency Physician only
22.	Dexamethasone 8mg/2ml Inj	B	
23.	Dextrose 50%w/v Inj (10ml)	B	
24.	Diazepam/Midazolam	B	

No.	Generic Name	Prescriber categories	Notes
25.	Dobutamine 250mg/20ml Inj	A	For hospital with Emergency Physician only
26.	Dopamine 200mg/5ml Inj	B	
27.	D-Penicillamine 0.25 g Capsule	A	For hospital with Emergency Physician only
28.	Enoxaparin 60mg Injection or Fondaparinoux 2.5 mg Injection	A*	For hospital with Emergency Physician only
29.	Etomidate 20mg/10ml	A	
30.	Flumazenil 0.5mg/5ml Inj (Anexate®)	B	
31.	Frusemide	B	
32.	Fuller's Earth Powder	C	
33.	Glucagon 1mg/ml Inj	B	
34.	Glyceryl Trinitrate 50mg/10ml Inj	A	For hospital with Emergency Physician only
35.	Hep B Im.globulin, Human 0.5ml Inj (Hyperhep/Hepabig®)	A	For hospital with Emergency Physician only
36.	Human Tetanus Im.globulin 250u/vial (Hypertet/Serotet®)	B	
37.	Hydrocortisone 100mg Inj	C	
38.	Inj NSAIDs	C	
39.	Isoket 2mg Amp	A	
40.	Ipratropium bromide Neb Solution (Atrovent®)	B	
41.	Isoprenaline 1mg/5ml Inj (Isuprel®)	B	
42.	Ketamine 10mg Vial	A	
43.	Labetolol 25mg Amp	B	
44.	Lignocaine 100mg/5ml Inj Lorazepam Inj	B	
45.	Magnesium Sulphate (MgSO4)	B	
46.	Methylase Inject	A	
47.	Methyl-Prednisolone 500mg Vial	B	
48.	Metronidazole Inj	B	

No.	Generic Name	Prescriber categories	Notes
49.	Naloxone HCl 0.4mg/ml Inj (adult)	B	
50.	Naloxone HCl 0.02mg/ml Inj (neonate)	B	
51.	Neostigmine Methylsulphate 2.5mg/ml Inj	B	
52.	Noradrenaline 4mg/4ml	A	For hospital with Emergency Physician only
53.	Opiods	B	
54.	Pralidoxime Mesylate 500mg/20ml Inj (Pampara)	B	
55.	Propofol 200mg Amp	A	
56.	Panto Prazole Inj	B	
57.	Protamine Sulphate 50mg/5ml Inj (Prosulf®)	B	
58.	Phenytoin Sodium Inj	B	
59.	Ranitidine 50mg Amp	B	
60.	Salbutamol Resp Solution 0.5%	B	
61.	Sodium Bicarbonate 8.4%w/v Inj (10ml)	B	
62.	Sodium Thiosulphate 500 mg/ml Injection	B	
63.	Streptokinase Inj 5 MU Vial	B	
64.	Terbutaline Resp Solution 10mg/ml	B	
65.	Vasopressin 20 units/ml Injection (Pitressin®)	B	For hospital with Emergency Physician only
66.	Verapamil 5mg/2ml (Isoptin®)	A/KK	
67.	Vitamin K1 10 mg/ml Injection	B	
68.	Water for Injections (10ml)	C	

Notes:

1. For medication prescriber's categories A and A* only can be keep in hospital with Emergency Physician only.
2. The stock is according to workload of the Emergency Department.

APPENDIX 12

EMERGENCY AND TRAUMA DEPARTMENT STANDARD STRUCTURE AND HARDWARE REQUIREMENT.

The planning for equipment and structural aspect of the service must be in line with the scope of service provided. The EMTS service fully equipped with basic standard structure, together with hardware and equipment determined by level of care provided which are Level IV, Level III, Level IIA and Level IIB.

Level IV - State and Hospital Kuala Lumpur (HKL)

Level III - Major Specialist Hospital with ETD attendance 200-300 patients per day

Level IIA - Specialist Hospital with ETD attendance 150-200 patients per day

Level IIB - Specialist Hospital with ETD attendance <150 patients per day

These documents should be used as reference documents for further developments of Emergency Medical Trauma Services in Malaysia. The standard list of hardware and medical equipments based on level of care provided and clinical or non clinical area in the Emergency and Trauma Department.

The level of requirement for the various equipments shall divide into 4 categories of recommendations:

M – Mandatory: Such equipment must be made available at the Emergency and Trauma Departments
D – Desirable (Highly recommended): Such equipment should be made available at the Emergency and Trauma Department
O – Options (Recommended): Such equipment is recommended to be made available at the Emergency and Trauma Department
U – Unnecessary: Such equipment is NOT necessary

1. Primary Triage

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Wheelchairs		X				X				X				X			
2.	Transport Trolleys		X				X				X				X			
3.	Triage Trauma Immobilization Set – **Shown Below**		X				X				X				X			
4.	Oxygen Tank & Oxygen Regulator		X				X				X				X			
5.	Bag-valve Mask, HFM & Tubing		X				X				X				X			

1.1 Triage Trauma Immobilization Set

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Upper Limb Immobilizers		X				X				X				X			
2.	Lower Limb Immobilizers		X				X				X				X			
3.	Cervical Collar (Various Sizes)		X				X				X				X			
4.	Arm slings		X				X				X				X			

2. Secondary Triage/Rapid Initial Assessment

Bil.	Subject	No: Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Non Invasive BP with SpO_2 Parameters	1:1	X				X				X				X			
2.	Thermometers (Tympanic/Digital)	1:1	X				X				X				X			
3.	ECG Machine	1:1	X				X				X				X			
4.	Pulse Oxymetry	1:1	X				X				X				X			
5.	Dextrostix Set	1:1	X				X				X				X			
6.	Dressing Sets	1:1	X				X				X				X			
7.	Examination Couch	1:1	X				X				X				X			
8.	Table and Chair	1:1	X				X				X				X			
9.	Medication Fridge	1:1	X				X				X				X			

3. Registration Counter

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Table & Chairs Ergonomically Design		X				X				X				X			
2.	Stationery		X				X				X				X			
3.	Record & Receipt Books		X				X				X				X			
4.	Electronic Call Numbering System		X				X				X				X			
5.	PA System		X				X				X				X			
6.	Cabinet		X				X				X				X			
7.	Computer (Desktop)		X				X				X				X			
8.	Telephones		X				X				X				X			

4. Patient Waiting Area

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Cushion Seats		X				X				X				X			
2.	Color Television – Plasma Screen		X				X				X					X		
3.	Electronic call number system		X				X				X				X			
4.	Notice Boards		X				X				X				X			
5.	Information Center		X				X				X				X			
6.	Patient Education material – Video, Reading Material etc		X				X				X				X			
7.	Air Conditioning System and Air Change Management		X				X				X				X			
8.	Closed Circuit TV System and Security		X				X				X					X		
9.	Children Playing Area		X				X				X				X			
10.	Pipeline Music		X				X				X				X			
11.	Breast Feeding Room/Area		X				X				X				X			
12.	Complaints Management Box		X				X				X				X			
13.	Prayer Area/Room		X				X				X				X			
14.	Toilets		X				X					X			X			

5. Green Zone (Non Critical)

5.1 Medical Officer Examination Room – Each of this examination room shall be equipped with the following equipments.

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Diagnostic Set – Wall Mounted		X				X				X				X			
2.	Sphygmomanometer		X				X				X				X			
3.	Examination Couch		X				X				X				X			
4.	Weighing Machine		X				X				X				X			
5.	Doctor's Stethoscope		X				X				X				X			
6.	Ergonomic Doctor's Examination Table		X				X				X				X			
7.	Comfortable (Ergonomically Design) Chairs		X				X				X				X			
8.	Illuminated X-ray Viewer		X				X				X				X			
9.	Phone Lines		X				X				X				X			
10.	Notice Board		X				X				X				X			
11.	Electronic Call Numbering System		X				X				X				X			

5.2 Psychiatric Patient Examination Room in Non-Critical Zone

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Diagnostic Set – Wall Mounted		X				X				X				X			
2.	Sphygmomanometer		X				X				X				X			
3.	Examination Couch		X				X				X				X			
4.	Phone Lines		X				X				X				X			
5.	Resuscitation Trolley		X				X				X				X			
6.	Ergonomic Doctor's Examination Table		X				X				X				X			
7.	Comfortable (Ergonomically Design) Chairs		X				X				X				X			
8.	Illuminated X-ray Viewer		X				X				X				X			
9.	Padded Wall or Equivalent		X				X				X				X			
10.	Notice Board		X				X				X				X			
11.	Electronic Call Numbering System		X				X				X				X			
12.	CCTV		X				X				X				X			
13.	Panic button /Alert System		X				X				X				X			
14.	Double Exit Doors		X				X				X				X			

5.3 Examination Room
– The following equipments shall be shared among each examination rooms.

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Foreign Body Removal Set	1	X				X				X				X			
2.	Dextrostix Set	2	X				X				X				X			
3.	Pulse Oxymetry	1	X				X				X					X		
4.	Airway Management Set – BVM, HFM, Nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1	X				X				X				X			
5.	Emergency Cart – Consumables (Drugs, Cannulas, Syringes, Needles, IVD tubing, IV Solutions etc)	1	X				X				X				X			
6.	Manual Defibrillator	1	X				X				X				X			
7.	Oxygen Tank with Regulator	1	X				X				X				X			
8.	Vital Sign Machine – ECG, BP, HR	1	X				X				X					X		
9.	Paediatric Weighing Machine	1	X				X				X				X			
10.	Neonate Weighing Machine	1	X				X				X				X			

6. Yellow Zone (Semi-Critical)

6.1 Semi-Critical Zone
– The following equipments shall be made available for each cubicle or bed.

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Physiological Monitor – Cardiac/ECG, BP, SpO_2 Monitoring	1:1	X				X				X				X			
2.	Wall Source Oxygen & Regulator with Mark 4: 2 per bay with Bubble Humidifier each	2:1	X				X				X				X			
3.	Wall Suction Regulator & Suction Pump	1:1	X				X				X				X			
4.	Emergency Critical Trolley	1:1	X				X				X				X			
5.	Stethoscope	1:1	X				X				X				X			
6.	Procedure /Examination Light	1:1	X				X				X				X			
7.	Oxygen Tubing, HFM/Nasal Prongs	1:1	X				X				X				X			
8.	Foldable Plastic Examination Screen or Equivalent	1:1	X				X				X				X			
9.	Light Examination Ceiling Mounted /Wall Mounted	1:1	X				X				X				X			

6.2 Semi-Critical Zone

– The following equipments shall be made available for every two (2) cubicles or beds.

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Portable Ventilator with PEEP	1:4	X				X				X				X			
2.	Defibrillator	1:2	X				X				X				X			
3.	Airway Management Set – BVM, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet etc	1:2	X				X				X				X			
4.	Emergency Resuscitation Cart/ Trolley or Equivalent – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc)	1:2	X				X				X				X			

6.3 Semi Critical Zone

– The following equipments shall be shared among all the cubicles or beds, which a ratio of one (1) equipment for every four (4) cubicles or beds.

Bil.	Subject	No:Katil Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Point of Care Testing (Laboratory) **– shown below**	1 Set	X				X				X				X			
2.	Infusion Pumps	1:4	X				X				X				X			
3.	Syringe Pumps	1:4	X				X				X				X			
4.	Blood Warmer	1:4	X				X				X				X			
5.	Blood Cuff with Manometer	1:4	X				X				X				X			
6.	Illuminated X–ray Viewer	1:4	X				X				X				X			
7.	$ETCO_2$ Monitor	1:8	X				X					X				X		
8.	Portable Ultrasound Machine	1 Unit	X				X					X				X		
9.	ECG Machine	1:8	X				X				X				X			
10.	CBS Testing	1:8	X				X				X				X			
11.	Medication Fridge	1:8	X				X				X				X			
12.	Trauma Immobilization Set **– shown below**	1:4	X				X				X				X			
13.	Diagnostic Set	1:4	X				X				X				X			
14.	Entonox with Delivery Device	1:4	X				X				X				X			
15.	Air-conditioning	All Area	X				X				X				X			
16.	Alert/Alarm System	All Area	X				X				X				X			

Bil.	Subject	No:Katil Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
17.	Color Coding	All Cubicles	X				X				X				X			
18.	Foldable Rigid Partitions or Equivalent	All Cubicles	X				X				X				X			
19.	Patient transport kit **– shown below**	1:4	X				X				X				X			

6.3.1 Point of Care Testing

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Arterial Blood Gaseous Machine		X				X				X				X			
2.	BUSE with Lactate and Haematocrite Machine		X					X					X				X	
3.	FBC machine		X					X				X					X	
4.	UFEME Machine		X				X					X				X		
5.	Cardiac Enzymes (Troponins/CKMB/ FABP) with Cardiac Enzymes Reader		X				X					X					X	
6.	Coagulation Profile		X				X						X				X	
7.	D-Dimmer			X				X					X				X	
8.	BNP			X				X					X				X	
9.	PT/APTT		X					X					X				X	
10.	Urine For Pregnancy Test		X				X				X				X			
11.	Urine for Drug Testing Kit		X				X					X				X		

6.3.3 Patient Transport kit

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Transport Trolley		X				X				X				X			
2.	Long Spinal Board		X				X				X				X			
3.	Short Spinal Board		X				X				X				X			
4.	Scoop Stretcher		X				X				X				X			
5.	Pole Stretcher		X				X				X				X			
6.	Basket Stretcher		X				X					X				X		
7.	Extrication Device		X				X				X				X			
8.	Automated External Defibrillator		X				X				X				X			
9.	Portable Resuscitator		X				X				X				X			
10.	Portable Transport Ventilator (+PEEP)		X				X				X					X		
11.	Portable Cardiac Monitor		X				X				X					X		
12.	Portable Suction Pump		X				X				X				X			
13.	Two Way Communication Set		X				X				X				X			
14.	Portable Handheld SpO_2 monitor		X				X				X				X			
15.	Oxygen Cylinder at Least Size D		X				X				X				X			

6.3.2 Trauma Immobilization Set

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Upper Limb Immobilizers		X				X				X				X			
2.	Lower Limb Immobilizers		X				X				X				X			
3.	Traction Splints		X				X				X				X			
4.	Cervical Collar (Various Sizes)		X				X				X				X			
5.	Pelvic clamp /Immobilizer		X				X				X					X		
6.	Head Immobilizer		X				X				X				X			

7. Red Zone (Critical)

7.1 General Equipments

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Color Coding	All Area	X				X				X				X			
2.	Air-conditioning	All Area	X				X				X				X			
3.	Alert/Alarm system	All Area	X				X				X				X			
4.	X-ray – Portable or Equivalent Facility on Site	1 Set	X				X				X					X		
5.	Image Intensifier* (To be Located on OT/Angiogram Suite)	1:1	X				X				X				X			
6.	Foldable Rigid Partition or Equivalent	All Cubicles	X				X				X				X			
7.	Portable Ultrasound /Echocardiography	1 Unit	X				X				X				X			
8.	Point of Care Testing (Stat Lab) **– as above**	1 Set	X				X				X				X			
9.	Fluid warming cabinet	1	X				X				X				X			
10.	Medication Fridge	1	X				X				X				X			
11.	Blood Fridge	1	X				X				X				X			
12.	CT Scan	1 Unit		X				X					X					X

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Trauma Resuscitation Bay **– shown below**		X				X				X				X			
2.	Medical Resuscitation Bay **– shown below**		X				X				X				X			
3.	Pediatric Resuscitation Bay **– shown below**		X				X				X				X			
4.	Isolation/ Decontamination Resuscitation Bay **– shown below**	Identified Emergency Dept ONLY	X				X				X							

A. Trauma Resuscitation Bay

The equipments below shall be made available for each Trauma Bay/Cubicle.

Bil.	Subject	Structure No: Bay	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Medical Pendant with 2 Arm (Power, Gases, I/V, Monitoring, Equipment) O_2 – 2 Source for Each Arm Vacuum – 1 Source for Each Arm Medical gases – 1 Source for Each Arm	1:1	X				X				X					X		
2.	Physiological Monitor – ECG, BP, HR, RR, SpO_2, $ETCO_2$ and IABP (Optional)	1:1	X				X				X				X			
3.	ICU Type Ventilator with Non-invasive Ventilation (NIV)	1:1	X				X				X				X			
4.	Manual Defibrillator	1:1	X				X				X				X			
5.	Wall Suction Regulator & Suction Pump for each Source	2:1	X				X				X				X			
6.	Oxygen Source & Regulator with Mark 4 (>/= 2) and with Bubble Humidifier	4:1	X				X				X				X			
7.	Emergency Critical Trolley with X-ray Casing (Resuscitation Bed)	1:1	X				X				X				X			
8.	Airway Management set – BVM, HFM, Nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1:1	X				X				X				X			

Bil.	Subject	Structure No: Bay	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
9.	Stethoscope	1:1	X				X				X				X			
10.	Procedure Light /Examination Light - Ceiling Mounted	1:1	X				X				X				X			
11.	Trauma Immobilization Set **– shown below**	1:1	X				X				X				X			
12.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc)	1:1	X				X				X				X			
13.	Entonox with Delivery Device	1:2	X				X				X				X			
14.	Ceiling-mounted X-ray	1:1	X				X				X					X		
15.	Syringe Pumps	2:1	X				X				X				X			
16.	Volumetric /Infusion Pump	1:1	X				X				X				X			
17.	Rapid Fluid Infusion Device	1:8	X				X				X					X		
18.	Diagnostic Set	1:1	X				X				X				X			
19.	Adult Interosseous Device	2:1	X				X				X				X			
20.	Surgical Set for Pelvic External Fixator Including Battery Operated Drill	1:8	X				X				X				X			

A.1 Trauma Immobilization Set

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Upper Limb Immobilizers		X				X				X				X			
2.	Lower Limb Immobilizers		X				X				X				X			
3.	Traction Splints		X				X				X				X			
4.	Cervical Collar (Various Sizes)		X				X				X				X			
5.	Pelvic Clamp /Immobilizer		X				X				X				X			
6.	Head Immobilizer		X				X				X				X			

B. Medical Resuscitation Bay:

Following equipments shall be made available for each Medical cubicle.

Bil.	Subject	No: Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Medical Pendant with 2 Arm (Power, Gases, I/V, Monitoring, Equipment)	1:1	X				X				X				X			
2.	Physiological Monitor - $ETCO_2$, ECG, RR, BP, HR, SpO_2	1:1	X				X				X				X			
3.	Portable ventilator with inbuilt CPAP/PEEP	1:1	X				X				X				X			
4.	Manual Defibrillator + TCP	1:1	X				X				X				X			
5.	Wall Suction Regulator & Suction Pump	1:1	X				X				X				X			
6.	Oxygen Source & regulator with Mark 4 (>/=2)	1:1	X				X				X				X			
7.	Emergency Critical Trolley with X-ray Casing (Resuscitation Bed)	1:1	X				X				X				X			
8.	Airway Management Set – BVM, HFM, Nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1:1	X				X				X				X			
9.	Stethoscope	1:1	X				X				X				X			
10.	Procedure /Examination Light	1:1	X				X				X				X			
11.	Wall-mounted X-ray	1:1	X				X				X					X		
12.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc)	1:1	X				X				X				X			

C. Pediatric Resuscitation Bay

Following equipments shall be made available for each Pediatric cubicle.

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Medical Pendant with 2 Arm(Power, Gases, I/V, Monitoring, Equipment)	1:1	X				X				X				X			
2.	Pediatric Monitor – Cardiac/ECG, BP, HR, SpO_2 $ETCO_2$	1:1	X				X				X				X			
3.	Pediatric ICU Ventilator	1:1	X				X				X				X			
4.	Manual Defibrillator with Pediatrics Paddles/Pads	1:1	X				X				X				X			
5.	Wall Suction Regulator & Suction Pump	1:1	X				X				X				X			
6.	Oxygen Source & Regulator with Mark 4 (>/=2)	1:1	X				X				X				X			
7.	Pediatric Resuscitation Bed/Bay & Warmer	1:1	X				X				X				X			
8.	Pediatric Airway Management Set – BVM, HFM, nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1:1	X				X				X				X			
9.	Pediatrics Stethoscope	1:1	X				X				X				X			
10.	Procedure Light	1:1	X				X				X				X			
11.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc, Interosseous Needle	1:1	X				X				X				X			
12.	Broselow Tape	1:1	X				X				X				X			

D. Neonate Resuscitation Bay

Following equipment shall be made available for each Pediatric cubicle. PLEASE SEE THE TRAUMA RESUSCITATION BAY.

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Medical Pendant with 2 Arm (Power, Gases, I/V, Monitoring, Equipment)	1:1	X				X				X				X			
2.	Pediatric Monitor – Cardiac/ECG, BP, HR, SpO_2 $ETCO_2$	1:1	X				X				X				X			
3.	Neonate Ventilator	1:1	X				X				X				X			
4.	Manual Defibrillator with Pediatrics Paddles/Pads	1:1	X				X				X				X			
5.	Wall Suction Regulator & Suction Pump	1:1	X				X				X				X			
6.	Oxygen Source & regulator with Mark 4 (>/=2)	1:1	X				X				X				X			
7.	Neonate Resuscitation (Open Care) Bed /Bay & Warmer	1:1	X				X				X				X			
8.	Pediatric/Neonate Airway Management Set – BVM, HFM, Nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1:1	X				X				X				X			
9.	Pediatrics Stethoscope	1:1	X				X				X				X			
10.	Procedure Light	1:1	X				X				X				X			

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
11.	Portable Incubator	1 Set	X				X				X				X			
12.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc, Interosseous Needle	1:1	X				X				X				X			
13.	Umbilical Vein Catheter	1:1	X				X					X				X		

E. Isolation/Decontamination Resuscitation Room

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Medical Pendant with 2 Arm (Power, Gases, I/V, Monitoring, Equipment)	1:1	X				X						X				X	
2.	Monitor – Cardiac/ECG, BP, HR, SpO_2	1:1	X				X					X				X		
3.	Portable Ventilator with Inbuilt CPAP/PEEP	1:1	X				X					X				X		
4.	Manual Defibrillator	1:1	X				X					X				X		
5.	Wall Suction Regulator & Suction Pump	1:1	X				X					X				X		
6.	Oxygen Source & Regulator with Mark 4 (>/=2)	1:1	X				X					X				X		
7.	Emergency Critical Trolley with X-ray Casing (Resuscitation Bed)	1:1	X				X					X				X		
8.	Airway Management Set – BVM, HFM, nasal Prongs, Oro- & Nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet	1:1	X				X					X				X		
9.	Stethoscope	1:1	X				X					X				X		
10.	Procedure Light	1:1	X				X					X				X		

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
11.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc)	1:1	X				X					X				X		
12.	Personal Protective Equipment		X				X					X				X		
13.	Negative Pressure Re-breathing Circuit		X				X					X				X		
14.	Decontamination Shower	1:1	X				X					X				X		
15.	Split Air Condition Unit	1:1	X				X					X				X		
16.	PAPR	4	X				X					X					X	

7.3 Critical Zone

– The following equipments shall be shared among all the cubicles or beds.

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Defibrillator with TCP Capabilities	1:4	X				X				X				X			
2.	Infusion Pumps	1:2	X				X				X				X			
3.	Syringe Pumps	1:2	X				X				X				X			
4.	Blood Warmer	1:2	X				X				X				X			
5.	Blood Cuff with Manometer	1:2	X				X				X				X			
6.	Illuminated X–ray Viewer	1:2	X				X				X				X			
7.	Portable Ventilator (with BiPAP/CPAP)	1:4	X					X					X				X	
8.	$ETCO_2$ Monitor	1:5	X				X						X				X	
9.	Level 1 Rapid Fluid Infuser Machine	1:4	X					X					X				X	
10.	Difficult Airway Management set **– shown below**	1:4	X				X					X					X	
11.	ECG Machine	1:4	X				X				X				X			
12.	Dextrostic Set (CBS Testing)	1:4	X				X				X				X			
13.	Medication Fridge	1:8	X				X				X				X			
14.	Blood Fridge	1:8	X				X				X				X			
15.	Patient Transport Kit **– shown below**	1:8	X				X				X				X			
16.	Diagnostic Set	1:4	X				X				X				X			

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
17.	Thermometer (Digital)	1:1	X				X				X				X			
18.	WARMING Blanket Air Driven or Equivalent	1:4	X				X				X				X			
19.	Microwave Oven for Rapid Warming /Warming Cabinet	1:8	X				X				X				X			
20.	Tracheotomy Set	1:4	X				X				X					X		
21.	Burr Hole Set	1:4	X				X				X						X	

NOTE:
Syringe and infusion must not be shared between cubicles

ICU type ventilator with NIV/ BiPAP can be shared 1:4
Option of CVP, Invasive BP monitoring and ICP monitoring with Vital Sign Monitors
Each resus cubicle must have a wall mounted diagnostic set.

7.3.1 Difficult Airway Management Set

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Laryngeal Scope – Fibre Optic	1 Set	X					X					X				X	
2.	Laryngeal Scope with Flap Lip – Fibre Optic	1 Set	X				X					X				X		
3.	Oxygen Resuscitator Kit	1 Set	X				X				X				X			
4.	Supraglottic Airways (LMA) /LTS Different Sizes	1 Set	X				X				X				X			
5.	Introducer (Stylet)	1 Set	X				X				X				X			
6.	Tracheotomy Set	1 Set	X				X				X				X			
7.	Bougie	1 Set	X				X				X				X			
8.	Esophageal Balloon Detector	1 Set	X				X					X				X		
9.	Retrograde Intubations Set	1 Set	X				X					X				X		
10.	Emergency Cricothyrotomy Set	1 Set	X				X				X				X			
11.	Jet ventilation Set	1 Set		X				X				X			X			
12.	Percutaneous Tracheotomy Set	1 Set	X				X				X				X			
13.	Mc Coy Laryngoscopic Blade	2 Sets	X				X				X				X			
14.	Magill Laryngoscopic Blade (Fibre Optic) Different Sizes	2 Sets	X				X				X				X			

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
15.	Coloric Capnometer + Capnograph	1	X				X					X				X		
16.	Laryngoscope with Video Capability (Video Larygnscope)	1 Set	X				X					X				X		
17.	Bronchoscope /Flexible Intubation Scope	1 Set		X				X					X					X

7.3.2 Patient Transport Kit

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Transport Trolley		X				X				X				X			
2.	Long Spinal Board		X				X				X				X			
3.	Short Spinal board		X				X				X				X			
4.	Scoop Stretcher		X				X				X				X			
5.	Pole Stretcher		X				X				X				X			
6.	Basket Stretcher		X				X					X				X		
7.	Extrication Device		X				X				X				X			
8.	Automated External Defibrillator with Monitor		X				X				X				X			
9.	Portable Resuscitator		X				X				X				X			
10.	Portable Transport Ventilator (+PEEP)		X				X				X				X			
11.	Portable Cardiac Monitor		X				X				X				X			
12.	Portable Suction Pump		X				X				X				X			
13.	Two Way Communication Set		X				X				X				X			
14.	Oxygen Cylinder at Least Size D		X				X				X				X			
15.	Transport Monitors with HR, RR, ECG and SpO_2 Parameters		X				X				X				X			
16.	Portable Handheld $ETCO_2$ Monitor		X				X					X					X	
17.	Airway Management Kit		X				X					X				X		

8. Asthma Bay

Bil.	Subject	No:Bay Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Nebulizer Machine – Electricity Driven	1:2	X				X				X				X			
2.	Peak Flow Meter (Manual)	1:4	X				X				X				X			
3.	Oxygen Regulator with Connector	1:1	X				X				X				X			
4.	SpO_2 Machine	1:4	X				X				X				X			
5.	NIBP Set	1:4	X				X				X				X			
7.	Wall Source Oxygen & Tubing	1:1	X				X				X				X			
8.	Nebulizer Mask Set	1:1	X				X				X				X			
9.	Ergonomic Chairs /Seats	1:1	X				X				X				X			
10.	Ergonomic Doctors Examination Table	1	X				X				X				X			
11.	Suction Outlet	1:1	X				X				X				X			
12.	Ventilation Fan	As Required	X				X				X				X			
13.	Emergency Resuscitation Cart	1	X				X				X				X			
14.	X-ray Viewer	2	X				X				X					X		
15.	Weighing Machine	1	X				X				X					X		

9. OSCC Room

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	OSCC Examination Chair – Complete Set	1	X				X				X				X			
2.	Diagnostic Set	1	X				X				X				X			
3.	Weighing Machine	1	X				X				X				X			
4.	Sphygmomanometer /NIBP Set	1	X				X				X				X			
5.	Cupboard for Equipment	1 Set	X				X				X				X			
6.	One Stop Crises Centre Kit	As Required	X				X				X				X			
7.	Digital Camera /Instant Camera	1	X				X				X				X			
8.	Specimen handling Area	1	X				X				X				X			
9.	Wash Basin	1	X				X				X				X			
10.	Toilet and Shower Area		X				X				X				X			
11.	Counselling Area		X				X				X				X			
12.	Rest Area		X				X				X				X			
13.	Video Colposcopy Unit		X					X				X					X	

10. POP Room

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1	POP Cutter with Vacuum	1 Set	X				X				X				X			
2	POP Shredder	2	X				X				X				X			
3	POP Splitter	2	X				X				X				X			
4.	POP Scissor	2	X				X				X				X			
5.	Mobile POP Trolley	1	X				X				X				X			
6.	Entonox with Delivery Device	1	X				X				X				X			
7.	Image Intensifier with Fluoroscopy	1		X				X				X				X		
8.	Wall O_2 Source with Bubble Humidifier	2	X				X				X				X			
9.	Wall Suction with Regulator	2	X				X				X				X			
10.	POP OT Table	1	X				X					X				X		
11.	Wall O_2 with Bubble Humidifier	2	X				X				X				X			
12.	Wall Air	2	X				X				X				X			
13.	Wall Vacuum with Regulator	2	X				X				X				X			
14.	X-Ray Viewer	2	X				X				X				X			
15	Ring Cutter	2	X				X				X				X			
16.	Vital Sign Transport Monitor	1	X				X				X				X			
17.	Sink with POP Filter	1	X				X				X				X			

11. Training, R&D Equipment

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Air Way Adjunct Manikin	As Required	X				X				X				X			
2.	Adult CPR Manikin	As Required	X				X				X				X			
3.	Adult Choking Manikin	As Required	X				X				X				X			
4.	Infant CPR Manikin	As Required	X				X				X				X			
5.	Infant Choking Manikin	As Required	X				X				X				X			
6.	Algorithm Manikin (ACLS)	As Required	X				X				X					X		
7.	Trauma Manikin	As Required	X				X				X				X			
8.	Adult Airway Management Manikin & Cricothyrodotomy Trainer	As Required	X				X				X				X			
9.	Pediatric Airway Management Manikin	As Required	X				X				X				X			
10.	I/V Intervention Limb (Upper & Lower)	As Required	X				X					X					X	
11.	Chest Drain Simulator /Intervention	As Required	X				X					X					X	
12.	Bag Valve Mask	As Required	X				X				X				X			
13.	Pocket Mask	As Required	X				X				X				X			
14.	AED Trainer	As Required	X				X				X				X			

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
15.	Computer with Printer	As Required	X				X				X				X			
16.	LCD Projector	As Required	X				X				X				X			
17.	Screen Projector	As Required	X				X				X				X			
18.	X-ray Illuminator	As Required	X				X				X				X			
19.	Intra-osseous Mannequin	As Required	X				X				X				X			
20.	Digital Camera	As Required	X				X				X				X			
21.	Polaroid Camera	As Required	X				X				X				X			
22.	Video Camera	As Required	X				X				X				X			
23.	ACLS Simulator	As Required	X				X					X				X		
24.	Multiple Modality Simulator (e.g. Sim Man)	As Required	X				X						X					X
25.	Central Venous Catheter Simulator	As Required	X				X					X						X
26.	Suprapubic Catheter Simulator	As Required	X				X				X					X		

12. Disaster Management

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Disaster Tent 90'x90'		X				X				X					X		
2.	Generator		X				X				X					X		
3.	Portable Fan		X				X				X					X		
4.	Scope Stretcher		X				X				X					X		
5	Pole Stretcher		X				X				X					X		
6.	Basket Stretcher		X				X				X					X		
7.	Medical Equipment Chest Box		X				X				X					X		
8.	Trauma Equipment Chest Box		X				X				X					X		
9.	Extrication Device		X				X				X					X		
10.	Safety Helmet		X				X				X					X		
11.	Safety Protective Gear		X				X				X					X		
12.	Safety Cone		X				X				X					X		
13.	Cordon Tape		X				X				X					X		
14.	Emergency Light		X				X				X					X		
15.	Trauma Rescuer Kit		X				X				X					X		
16.	Personal Protective Equipment		X				X				X					X		
17.	Decontamination Tent (Portable)		X				X				X					X		
18.	Torch Light		X				X				X					X		
19.	Radiation Meter (Selected Hospital ONLY)		X				X					X				X		

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
20.	Ice Maker		X				X				X					X		
21.	Cooling Fan with Water/Mist Spray		X				X				X					X		
22.	Loud Hailer		X				X				X							
23.	Triage Cards		X				X				X					X		
24.	Foldable Couch		X				X				X					X		
25.	Evacuation Chair		X				X				X					X		
26.	Simple Foldable Chair		X				X				X					X		
27.	Search Light		X				X				X					X		
28.	Helmet Torch Light		X				X				X					X		
29.	Fire Retardant Jump Suit		X				X				X					X		
30.	Protective Jacket Waterproof		X				X				X					X		
31.	Protective Shoes with Steel Toe Tip		X				X				X					X		
32.	Identification Vest for Various Situations e.g. Doctor, Medical Commander, Triage Officer etc		X				X				X					X		
33.	Foldable Table		X				X				X					X		
34.	Detachable IV Pole for Pole Stretcher		X				X				X					X		
35.	Protective Gloves		X				X				X					X		
36.	Disaster Trolley (Field)		X				X					X				X		

13. Relative Waiting Room/Good Hope Room

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Cushions & Sofa Set (Ergonomic Design)		X				X				X				X			
2.	TV		X				X				X				X			
3.	Prayer Area		X				X				X				X			
4.	Bathroom/Toilet		X				X				X				X			
5.	Patient Information – Reading Material		X				X				X				X			
6.	Lighting System		X				X				X				X			

14. Isolation/Decontamination Room

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Personal Protective Equipment		X				X				X					X		
2.	Negative Pressure Re-breathing Circuit		X				X				X					X		
3.	Build in Shower and Toilets		X				X				X					X		
4.	Resuscitation Bed		X				X				X					X		
5.	Intercoms		X				X				X					X		
6.	Phone Lines		X				X				X					X		

15. Pre-hospital Care & Ambulance Service *(Please also Refer to MOH Ambulance specifications)*

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Call Centre Communication System	As Required	X				X				X				X			
2.	EMTS Kit	As Required	X				X				X				X			
3.	Immobilization Set	As Required	X				X				X				X			
4.	Airway Management Set	As Required	X				X				X				X			
5.	Automated External Defibrillator	As Required	X				X				X				X			
6.	Scope Stretcher	As Required	X				X				X				X			
7.	Extrication Device	As Required	X				X				X				X			
8.	Portable Ventilator with PEEP	As Required	X				X				X				X			
9.	Vital Sign Transport Monitor	As Required	X				X				X				X			
10.	Spinal Board	As Required	X				X				X				X			
11.	Oxygen Tank with Oxygen Regulator	As Required	X				X				X				X			
12.	Portable Suction Machine	As Required	X				X				X				X			
13.	Extrication Chair	As Required	X				X				X				X			
14.	Helmet with Helmet Torch Light	As Required	X				X				X				X			
15.	Fire Retardant Jump Suit	As Required	X				X				X				X			
16.	Protective Jacket Waterproof	As Required	X				X				X				X			

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
17.	Identification Vest	As Required	X				X				X				X			
18.	Handheld SPO_2	As Required	X				X				X				X			
19.	IV set Including Adult and Pediatric Interosseous Needle	As Required	X				X				X				X			
20.	Pressure Bag for IV Bottle	As Required	X				X				X				X			
21.	Torch Light	As Required	X				X				X				X			
22.	Foldable Wheel Chair	As Required	X				X				X				X			
23.	Dead Body Management Kit	As Required	X				X				X				X			
24.	Motorcycle Ambulance	As Required	X				X					X					X	
25.	Emergency Doctors Response Car	As Required	X				X				X					X		
26.	Patient Transport Service Vehicle	As Required	X				X				X				X			
27.	Land Ambulance	As Required	X				X				X				X			
28.	Mobile Command & Communication Vehicle	1		X				X				X					X	

16. Procedure Room/Interventional Suite

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Anesthetic Machine with Attached Ventilator Gases Equipment		X				X					X					X	
2.	Monitoring Equipment – ECG, BP, PR, SpO_2, $ETCO_2$		X				X				X				X			
3.	Emergency Trolley – Consumables (Drugs, Cannulas, Syringes, Needles, IVD Tubing, IV Solutions etc)		X				X				X				X			
4.	Airway Management Set – BVM, HFM, Nasal Prongs, Oro- & nasopharyngeal Airways, ETTs, Laryngoscopes, Stylet		X				X				X				X			
5.	Manual Defibrillator		X				X				X				X			
6.	Transvenous Pacemaker		X				X						X				X	
7.	Image Intensifier Limb & Fluoroscopy			X				X					X				X	
8.	Bronchoscope			X				X					X					X
9.	OGDS			X				X					X					X
10.	OT Table, Radiolucent Allow For Image Intensifier		X					X					X				X	

Bil.	Subject	Structure	IV				III				IIA				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
11.	Wall O_2 with Bubble Humidifier		X					X					X				X	
12.	Wall Air		X					X					X				X	
13.	Wall Vacuum with Regulator		X					X					X				X	

17. Cleaning Room

Bil.	Subject	Structure	IV				III				IIC				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Drying Cabinet		X				X				X				X			
2.	Portable Autoclave		X				X				X				X			
3.	Sterad			X					X				X					X
4.	Deep Stainless Steel Sink		X				X				X				X			
5.	Big Containers /Tub for Soaking		X				X				X				X			
6.	Wall Air with Air Gun		X				X				X				X			
7.	Drying Rack		X				X				X				X			
8.	Exhaust Fan		X				X				X				X			

18. Department Security System

Bil.	Subject	Structure	IV				III				IIC				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	CCTV		X				X				X				X			
2.	Security Guards		X				X				X				X			
3.	Electronic Security Door Locks		X				X				X				X			
4.	Intercom & Paging System		X				X				X				X			
5.	Emergency Alert System		X				X				X					X		

19. Specialized Requirements

Bil.	Subject	Structure	IV				III				IIC				IIB			
			M	D	O	U	M	D	O	U	M	D	O	U	M	D	O	U
1.	Hyperbaric Chamber (Selected Hospitals Only)		Designated Hospital Only															
2.	Portable Hyperbaric Chambers (Selected Hospitals Only)		Designated Hospital Only															
3.	Portable Negative Pressure Tent (Selected Hospitals Only)		Designated Hospital Only															
4.	ENT Examination Table		X				X				X					X		
5.	Dental Chair		X				X					X				X		
6.	Slit Lamp		X				X					X					X	

APPENDIX 13

NORM GUIDELINES FOR AMBULANCE SERVICE FOR MINISTRY OF HEALTH

INTRODUCTION

This guideline serves to be an important document for the purpose of planning and implementation of an ambulance service which are both effective and comprehensive. MOH circular had been made public in 1983, in which ambulance norm are based on number of beds in hospital and type of health facility. This document has been updated and modified by using relevant and appropriate set of criterias based on current service requirement.

TYPE OF SERVICES

Ambulance service provides multiple function that is not limited to hospitals but also covers primary health facility. Types of ambulance services are:

1. Primary Response Service covers management of incidences which require emergency medical treatment in and out-of-hospital environment. Once a public emergency call has been made, an ambulance will be dispatched to the site to provide Pre-Hospital Care services within the stipulated ambulance response time frame. The Allied Health Personnel involved in this scope of service are professionally trained and certified in the Pre-Hospital Care programme.

2. Secondary Response Team serves to support the Primary Response Team. The Secondary Response Team consists of Allied Health Personnel who are trained in advanced emergency medical care. The Secondary Response Team can be dispatched in the event when the Primary Response Team requires assistance.

3. Interfacility Transfer provides transportation service for patient especially for the purpose of referral or advanced medical care. For patients who are stable, able to self-ambulate and comfortable in sitting position, Patient Transport Service Vehicle (PTSV) can be used for the transfer. Patient Transport Service Vehicle (PTSV) shall be equipped with basic medical equipments such as oxygen supply and vital sign transport monitor. This vehicle shall provide space and comfort to the patient.

4. Medical Standby provides medical coverage for public events that are attended by head of government or VIP, or sport events that involve risk.

5. Disaster Management; In the event of a disaster, the ambulance service is needed for the purpose of transport, transfer and management of both semi-critical and critical patients.

NORM TO DETERMINE NUMBER OF AMBULANCE

Norm of number of ambulance shall be based on

1. Current Work Load

1.1 Interfacility Transfer of Patient Between Health Facilities

This depends on standard quality for services provided including services from hospital to hospital and also from health facilities to hospitals. This also depends on time frame needed to complete an Interfacility Transfer.

Ambulance services must be prepared according to patient clinical condition.

1.2 Transport of Critical Patients

Time frame to transport critical patients from one place to the other by ambulance is on average 2 hours one way.

1.3 Transport of Non Critical Patient

Ambulance service must be provided within 24 hours

Number of Interfacility Transfer per shift take an average 4 hours in a mission

1.4 Primary Response

For Primary Response, the ambulance should arrive at the scene in a stipulated time frame between 15 to 30 minutes for 5km radius after an emergency call received by the Medical Emergency Coordinating Centre (MECC). Average of return journey for an ambulance is one hour.

Number of Pre Hospital Care Response in one shift takes into account the time frame that has been set in one mission-2 hours for a radius of 5km-10km from hospital.

1.5 Secondary Response

Secondary Response Team shall arrive at an incident area to assist Primary Response Team in managing patients in a time frame less than 30 minutes after a Primary Team arrives.

1.6 Medical Standby Service

Medical Standby is a core service in Ministry of Health hospitals and each mission can extend up to few days. Therefore this activity has to be taken into consideration in calculations of ambulance norm

Number of medical standby activities in a day requires 7 hours per mission.

2. Estimated Work Load

The calculated numbers of ambulance based on the above factors shall be added with 30% increment. This is to ensure continuouity and efficiency of services especially during disaster and the down-time of ambulance.

3. New Hospital

For new hospital, following is the norm for number of required ambulance for newly developed hospital

District Hospital Without Specialist
Minimum 4 ambulances

Minor Specialist Hospital
Minimum 5 ambulances

Major Specialist Hospital
Minimum 7 ambulances

State Hospital
Minimum 12 ambulances

CALCULATION

Specific formula calculations for ambulance norm

1. Average Pre Hospital Care Response Service in a Shift

Number of ambulance provided depends on average of the busiest Pre Hospital Care Response/shift service (Average number of services is rounded to the nearest decimal)

Example: If an average of Pre Hospital Care Response in a busiest shift is one or half from one shift, therefore ambulance to be provided for Pre Hospital Care is 1 ambulance.

2. Average of Interfacility Transfer in a Shift

Number of ambulance provided depends on average of the busiest interfacility transfer/shift (average of services is rounded to the nearest decimal)

Example: If an average of interfacility transfer in a busiest shift is one or half from one shift, therefore ambulance to be provided for interfacility transfer is 1 ambulance.

3. **Average Number of Medical Standby Team on Duty Daily**
Number of ambulance provided depends on an average number of ambulance needed for Medical Standby Team on duty daily (average of services is rounded to the nearest decimal)

Example: If an average of number of Medical Standby Team on duty daily is one or half from one shift, therefore ambulance to be provided for Protection Team is 1 ambulance.

4. One replacement ambulance will be provided for every 3 ambulance
(additional 30% for total number of ambulance to be provided)

5. Replacement of ambulance must be taken into consideration every 5 years in service

6. For facilities in urban and area, motorcycle squad services can be considered for Rapid Response in Primary response services when taking into consideration the calculations of numbers in ambulance norm.

Example; Calculating Ambulance Norm

Services	Average For Busiest Shift	Number Ambulance Required
Pre Hospital Care Response (Primary Response + Secondary Response)	2.4	2
Interfacility Transfer	3.8	4
Medical Standby/Day	2	2
Total	-	8
+ 30%	-	2
Required Number of Ambulance		10

SUMMARY

Norm of number of ambulance for hospital and health facility is based on several criterias:

1. Current Work Load

Pre Hospital Services (Primary Response + Secondary Response)
Inter Facility Transfer Service
Medical Standby Services

2. Estimated Work Load

Increment of 30% from the norm calculated

List of Ambulance Equipment

Hospital

1. General

1.1 Paramedic suite/helmet/safety boot
1.2 Sharps container
1.3 Clinical waste bin

List of Ambulance Equipment

Ambulance Type A

1. EMTS Kit (Responder Bag)
2. Oxygen Resuscitator+Airway Delivery Set
3. Defibrillator Machine/AED
4. Vital Sign Monitor (BP/PR/RR/SpO_2/ECG)
5. Portable Suction Set
6. Foldable Wheel Chair/Sedan Chair
7. Spinal Board
8. Scoope Stretcher
9. Portable Ventilator
10. Immobilization Set (Cervical/Upper Limb/Lower Limb/Pelvic)
11. Triage Card
12. Handheld Pulse Oxymeter
13. Glucometer
14. Ambulance Stretcher

List of Ambulance Equipment

Ambulance Type B

General Use

1. Paramedic Suite/Helmet/Safety Boot
2. Sharp Container
3. Clinical Waste Bin

List of Ambulance Equipment

Ambulance Type B

1. EMTS Kit (Responder Bag)
2. Oxygen Resuscitator+Airway Delivery Set
3. Defibrillator Machine/AED
4. Vital Sign Monitor (Bp/RR/SpO_2)
5. Portable Suction Set
6. Foldable Wheel Chair
7. Spinal Board
8. Scoope Stretcher
9. Triage Card
10. Handheld Pulse Oxymeter
11. Glucometer
12. Ambulance Stretcher

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