

# **GUIDELINES FOR ACCIDENT AND EMERGENCY CARE SERVICES IN GOVERNMENT HOSPITALS IN SRI LANKA**



**Ministry of Health, Nutrition & Indigenous Medicine**

**Sri Lanka**

**2016**

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Links to	Accident and Emergency Care Policy of Sri Lanka

# Accident & Emergency Care Guidelines

## Contents:

Message from the Honourable of the Ministry of Health, Nutrition & Indigenous Medicine	V
Message from the Secretary of the Ministry of Health, Nutrition & Indigenous Medicine	Vi
Message from the Director General of Health Services	Vii
Message from the Deputy Director General of Health Services (Medical Services Ii)	Viii
Acknowledgments	Ix
1. A & E Operational Structure and Patient Care Model	1
2. Accident and Emergency (A&E) Care Unit	2
3. Triage in the A&E Department;	4
4. Infrastructure Development Guidelines;	16
5. Standard Human Resources at Each Level;	17
6. Standard Equipment in Each Level;	18
7. Standard Equipment, facilities and capacity building required for ambulances for inter hospital transfer of patients;	19
8. Standard Drugs list for A&E Care in each level.	26
9. Standard Emergency Trolley requirements for A&E Units	28
10. Information System for A & E	29
11. Guidelines for improvement of quality in the A & E unit	30
12. The A&E clinical quality indicators to be introduced;	31
13. Capacity Building for human resources within the A&E units	32
14. Common plan of the accident and emergency units (Accident & Emergency Complex)	34 33
15. Strategic Objectives	40





## **Message from the Honourable of the Ministry of Health, Nutrition & Indigenous Medicine**

Providing emergency care to patients or victims of an accident needs serious commitment and swift action. Patients of victims seeking sch help are normally in a helpless situation and may be severely mentally or physically traumatized. Health workers have a duty to ensure that they provide necessary care in an efficient, prompt, uncomplicated and easy to navigate manner as far as possible.

This need is well exemplified by the “Golden hour in Emergency Medicine” promoted by Dr Cowley of Maryland University, considered “Father of Emergency Medicine and Shock Trauma.” He based his observations on French Military date from World War 1, which refers to a time period lasting for one hour during which there is the highest likelihood that prompt medical treatment will prevent death. Though this is disputed by some, it still holds good and very valid.

The key to providing such a service is coordination and integration. Such an approach makes good clinical, financial and practical sense for all in the health sector, both public and private, through designing, providing and maintaining services that ensure our patients receive the highest quality care possible. Ministry of Health has continued to lay emphasis in further strengthening of accident and emergency services as a priority in modernizing of our health care services. In fact it is in this context the Government recently embarked in a programmer to further expand the national ambulance fleet with over 100 units through a grant from the Government of India.

Thus, I consider the publication of “Guidelines for Accident and Emergency Care Services in Government Hospitals of Sri Lanka” as useful addition to our arsenal in fighting for the lives of trauma victims. One of the key issues related to the implementation of these guidelines will be insufficient trained staff, to overcome which, priority should be given for training. I have no doubt the publication will help to address this void in a big way.

**Dr. Rajitha Senaratna**

**Hon. Ministry of Health, Nutrition & Indigenous Medicine**

**Ministry of Health, Nutrition and Indigenous Medicine**



## **Message from the Secretary of the Ministry of Health, Nutrition & Indigenous Medicine**

Sri Lanka is fast developing in many sectors; and healthcare is no exception. There is continued commitment for the development of the health sector and plans for increased budgetary allocations for health by the present government.

The population aging in Sri Lanka is on the increasing trend. The development of the health sector with the notable improvements in health care quality and equitable distribution, has contributed to this increase in life expectancy. The resulting demographic transition in the society has resulted in an elderly population who are prone to non-communicable diseases including injuries too. With the said demographic transition a notable shift in the disease pattern from communicable diseases to non-communicable disease is also evident.

It is well known that the care given within the “golden hour” for any emergency has a significant effect in reducing its complications and permanent disability. In view of this the Ministry of Health and Indigenous medicine has taken steps to improve the A&E care facilities throughout the country. Thus, policy direction and set guidelines in this area is of utmost importance to achieve the expected goals. According to the approved policy there are four tiers of hospitals which provide A&E care throughout the country.

This guideline document has addressed the key concerns related to improving of this service and ensures all hospitals of a certain tier shall provide the same level of care expected for that tier. It also specifies all equipment and medications that should be available at these institutions. Further, guidelines for triage and standard care procedures are well defined. This guideline will ensure that all government hospitals throughout the country shall provide standard A&E care for the population of Sri Lanka. I believe it is timely that we consider extending this effort to involve the private healthcare providers also.

I express my pleasure at this occasion at the launching of the guidelines for accident and emergency care service in government hospitals and I would like to state that this marks the dawning of a golden era for accident and emergency care for Sri Lanka.

vi

**Mr. Anura Jayawickrama**

**Secretary,**

**Ministry of Health, Nutrition & Indigenous Medicine**



## **Message from the Director General of Health Services**

Accidents and emergencies are acute conditions, those pose an immediate threat to a person's life. Thus, necessitating prompt attention and appropriate care. The first Emergency Treatment Unit established at Base Hospital Nuwara-Eliya in 1988, symbolize the birth of basic emergency and trauma care in Sri Lanka. The establishment of ETUs, PCUs, in other hospitals and establishment of a purpose built Accident Service at NHSL, improved the quality of emergency care in Sri Lanka over the past few decades.

The Ministry of Health has identified further strengthening of accident and emergency services as a priority in modernizing of health care services and necessary funds were allocated through Second Health Sector Development Project since four years.

The guidelines prescribed in this document includes the A&E operational structure and care model, triage system, infrastructure development, quality improvement, standard requirements for HR, and A&E information system. I am sure adoption of this guideline will ensure timely and efficient emergency care to the citizens and such services will significantly bring down preventable mortality and disability due to accidents and emergencies.

One of the key issues related to the implementation of these guidelines will be insufficient trained staff, and to overcome it priority should be given for training.

I am truly impressed by the progress of A&E care services in Sri Lanka and wish to state that this document will immensely helpful to those who are engage in provision of emergency care in Sri Lanka.

**Dr. P.G. Mahipala**  
**Director General of Health Services**  
**Ministry of Health, Nutrition and Indigenous Medicine**



## **Message from the Deputy Director General of Health Services (Medical Services II)**

Out of all Accident and Emergency challenges occurring in the country, the Ministry of Health Accident and Emergency care service take the center stage. If we organize ourselves in prevention of Accidents and Emergencies occurrence and implementation on evidence based Accident and Emergency Service care could save large number of lives in future.

I would take this opportunity to appreciate the grate leadership given by the Hon. Minister of Health, Nutrition & Indigenous Medicine Dr. Rajith Senarathne to implement this policy.

We introduce many Accident and Emergency care Infrastructure Development Projects, Training of front line staff by getting professional colleges and other stakeholders involved in Accident and Emergency care prevention.

I hope this policy would have positive implact on the whole country and we should be an example for our part of the world.

**Dr. Amal Harsha De Silva**  
**Deputy Director General (Medical services) II**  
**Ministry of Health, Nutrition and Indigenous Medicine**



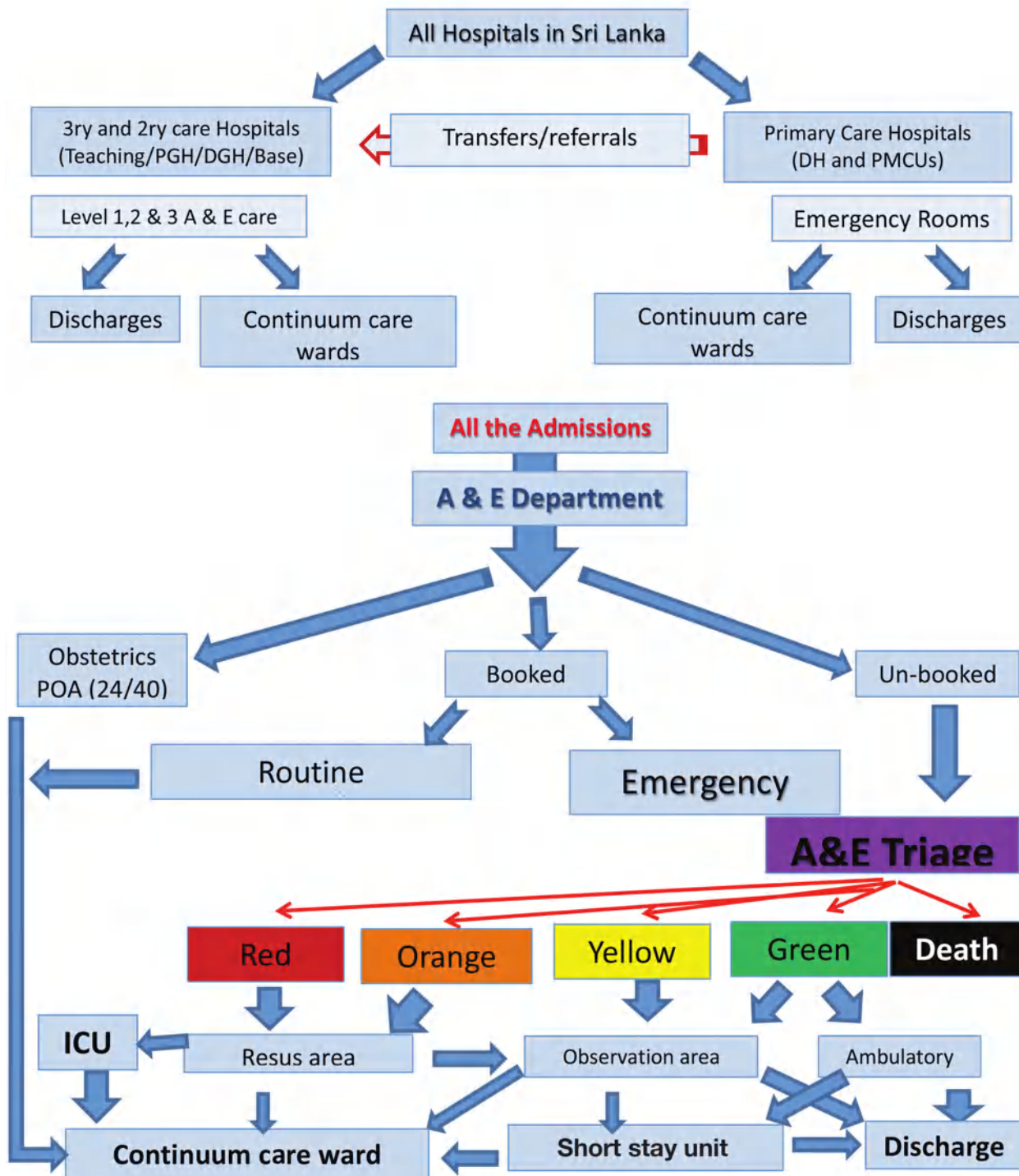
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X

# 1. OPERATIONAL STRUCTURE AND PATIENT CARE MODEL



## 2. ACCIDENT AND EMERGENCY (A&E) CARE UNIT

### 2.1 GENERAL:

All admissions to the hospital shall be through the A & E unit. All patients will be triaged on arrival to the A & E unit. The maximum duration of stay of a patient in the A & E will be **4 hours** after which the patient will be admitted to a CONTINUUM CARE UNIT, the SHORT STAY UNIT (SSU) or an INTENSIVE CARE UNIT depending on care needs.

A specialist for the patient's long term continuum care must be identified and that specialist's team should be notified within **1hour** by the A & E team unless patient can be discharged from the A&E. No patient should be sent to an unmonitored continuum care bed if there are major safety concerns due to unstable vital signs. Such patients may remain in the observation area even if the patient is admitted under a continuum care physician for more than 4 hours, but not indefinitely without a plan of management.

**The Emergency Physician** will decide the appropriate consultant from the continuum care unit who will be responsible for the patient.

**Every patient should have an admission & care plan as soon as possible.**

### 2.2 MULTIDISCIPLINARY ACCIDENT AND EMERGENCY - SHORT STAY UNIT (SSU)

An A & E- SSU is a unit managed within and by the Emergency Department, unless **otherwise decided centrally or locally** and whose prime orientation is to manage acute problems for patients with an expected length of stay that will be less than 24 hours.

- An SSU shall only be established to complement busy Emergency Services
- The SSU shall be physically separate from the A & E acute assessment area

#### ➔ Admission Criteria to A & E SSU

- Patients admitted to an A&E SSU are under the care and management of the A&E or otherwise decided locally.
- Only the A&E Consultant or the A&E Senior Medical Officer (SMO) on duty shall approve admissions to the A&E SSU. After-hours approval shall be delegated to the A&E Medical Officer in charge of the shift.
  - The A&E Consultant or the A&E SMO shall approve admissions to the A&E SSU only if the patient has a specific diagnosis and plan of management to be achieved within 24 hours.
  - The A&E Consultant or the A&E SMO shall only approve admissions to the A&E SSU if the patient has an expected length of stay of less than 24 hours.
- The A&E Consultant or the A&E SMO shall ensure patients admitted to the A&E SSU:
  - receive ongoing observation and investigation
  - are medically reviewed every four hours, at a minimum, or more often if clinically indicated.

- Patients who deteriorate and require acute emergency intervention while admitted to the A&E SSU, shall be retransferred to the clinically appropriate area of the A&E to continue treatment.

➔ **Discharge Criteria from A & E SSU**

- The A&E Consultant or the A&E SMO or A&E Medical Officer in charge of shift after hours shall authorize all discharges from the A&E SSU.
- If discharge of a patient from the A&E SSU is within four hours of admission to the A&E SSU-
- Prior to authorization of discharge of a patient from the A&E/ SSU, the authorizing clinician shall update the patient's clinical records with details of the medical condition, treatment provided and follow up planned if indicated.
- For any patient who has been in a SSU for 24 hours, the A&E Consultant, A&E SMO or A&E Medical Officer in charge of shifts after hours shall review the patient, document the management plan and discharge from the SSU, or transfer the patient to the clinically appropriate unit.

**2.3 THE CARE RESPONSIBILITY OF THE PATIENT**

- Accident & Emergency Department will be managed by Emergency Physicians or specialists with emergency care training until Emergency Physicians are available in the country with the help of other teams where appropriate.
- Initial ownership of all un booked patients will rest with the A&E Consultant, the A&E SMO or ED Medical Officer in charge of shift after hours
- All booked admissions will be admitted under the relevant consultants.
- All booked transfers also will be admitted under the relevant consultants.
- Once the initial triage and resuscitation is done those who need admission will be informed to the relevant team of the continuum care department within 1 hour.
- Any patient once admitted to A & E needs to be assessed and stabilized by the A & E team (with expert opinion from other specialties as required eg: surgery, medicine, pediatrics, anesthesia, cardiology etc.)
- Once the patients care is accepted by the specialist team and the patient is stabilized the patient should be transferred to the relevant care facility (continuum care units / SSU/ ICU).
- Safe handing over of patients to continuum care must be ensured
- Any deterioration of the patient whilst in the A& E must be attended to by the A&E staff and managed accordingly. The relevant responsible specialist team needs to be informed about the incident if the patients care has been already accepted by a specialist team.
- Any patient with unstable vital signs should not be moved out from the A&E without stabilization, unless for a therapeutic procedure which is needed to stabilize the patient

and this procedure cannot be carried out in the A&E. (e.g. intervention radiology, coronary angioplasty, pacing)

- If a specialist team is not accepting the care of the patient upon initial referral the A&E Consultant, A&E SMO or the A&D Medical Officer in charge of shift after hours should convince the appropriate specialist team to accept the care of the patient. (A&E staff will not be routinely involved with referring to multiple teams unless there is a specific need).
- Poly trauma patients- The A&E Consultant, A&E SMO or the A&E Medical Officer in charge of shift will decide the most life threatening injury or the injury needing most attention and inform the relevant team, to whom the patient will then belong.

### 3. TRIAGE IN THE A&E DEPARTMENT;

**Triage:** A triage system is the basic structure in which all incoming patients are categorized into groups using a standard urgency rating scale or structure.

**Aims:**

- To ensure that patients are treated in the order of their clinical urgency
- To ensure that treatment is appropriately and timely.
- To allocate the patient to the most appropriate assessment and treatment area

**To get the right patient to the right resources at the right place and the right time**

**Triage system:** The process by which a clinician assesses a patient's clinical urgency.

**Urgency:** Urgency is determined according to the patient's clinical condition and is used to 'determine the speed of intervention that is necessary to achieve an optimal outcome'. Urgency is independent of the severity or complexity of an illness or injury.

**Process:** The first contact for all unbooked admissions is a trained **Triage nurse** who would be working under the direct supervision of a **Triage Medical Officer**. The triage officer performs a brief focused assessment not taking more than 2-5 minutes and assigns the patient to a triage acuity level. This roughly measures how long a patient can safely wait to seek medical treatment.

**Document details** of the triage assessment should include

- a) Patient demographics including Name, Age and Sex
- b) Date and time of assessment
- c) Chief presenting complaint(s)
- d) Relevant past medical/surgical history
- e) Relevant vital parameters
- f) Initial Triage category
- g) Name/signature of Triage officer(s)

## Design of the Triage area

Triage area should be located at the front of the patient entrance with easy accessibility

Its design should have

- a) Examination trolley with privacy
- b) Monitoring equipment –Multipara monitor, thermometer (tympanic)
- c) Communication device (intercom)
- e) Hand washing facilities
- f) Strategies to protect staff

## Triage tool

All A&E departments will use the 4 tier triage acuity scale based on the safe waiting time to initiate medical treatment. The designated patient treatment area is decided on the triage category of the patient. (Annexure1).

- Vital clinical parameters used in triage categorization are clearly defined to maintain an inter rater reliability. (Annexure 2)
- The process by which a clinician assesses a patient's clinical urgency

## PROCESS:

The first contact for all unbooked admissions is a trained **Triage nurse** who would be working under the direct supervision of a **Triage Medical Officer**. The triage officer performs a brief focused assessment not taking more than 2-5 minutes and assigns the patient to a triage acuity level.

(This roughly measures how long a patient can safely wait to seek medical treatment) Given above

Disease entities of each triage category are defined in detail to quickly establish a triage category even with a brief presenting complaint. (Annexure 3)

**Re-triage:** Clinical status is a dynamic state for all patients. If clinical status changes in a way that will impact upon the triage category, or if additional information becomes available that will influence urgency then re-triage must occur.

## Key points

1. The same standards for triage categorization should apply to all A&E Department settings. It should be remembered however that a symptom reported by an adult may be less significant than the same symptom found in a child and may render a child's urgency greater.
2. Victims of trauma should be allocated a triage category according to their objective clinical urgency. As with other clinical situations, this will include consideration of high-risk history as well as brief physical assessment (Annexure 4)
3. Patients presenting with mental health or behavioral problems should be triaged according to their clinical and situational urgency, as with other ED patients.(Annexure5)

4. Needs of children in the emergency room differ from the needs of adults, including:
- Different physiological and psychological responses to stressors.
  - More susceptibility to a range of conditions, such as viruses, dehydration, or radiation sickness.
  - Limited ability to communicate with care providers; thus harder to quickly and accurately assess.
  - Thus they would need a different vital parameter assessment from adults (Annexure 6) Paediatric Triage System



**ANNEXURE 1**

**TRIAGE CATEGORIES**

<b>TRIAGE CATEGORY</b>	<b>SEVERITY</b>	<b>ACUITY (Maximum waiting time)</b>
Category 1 ( Red) Immediate (Resuscitation)	Life threatening	Immediate
Category 2 ( orange) Emergency	Imminently Life threatening	10 minutes
Category 3 ( Yellow) Urgent	Potentially Life threatening	20 minutes
Category 4 ( green) Semi urgent ( standard)	Potentially serious	30 minutes

**ANNEXURE 2**

**ADULT MODIFIED TRIAGE SCALE**

		<b>CATEGORY 1</b>	<b>CATEGORY 2</b>	<b>CATEGORY 3</b>	<b>CATEGORY 4</b>
		<b>RED</b>	<b>ORANGE</b>	<b>YELLOW</b>	<b>GREEN</b>
<b>AIRWAY</b>		Obstructed Partially obstructed	Patent	Patent	Patent
<b>B R E A T H I N G</b>	Respiratory distress	Severe	Moderate	Mild	No
	Resp. Rate	≤8	9-11 or ≥40	21-39	12-20
	Sat% on air	≤80	81-89	90-95	>95
<b>C I R C U L A T I O N</b>	Haemodynamic compromise	Severe	Moderate	Mild	No
	SBP	<70	71-90	>200	91-150
	Pulse	≤40 >180	41-50 151-179	51 -60 101-150	61-100
<b>DISABILITY</b>	G C S	≤8	9-12	13-14	15

Emergency & Trauma Care Adult Triage Form											
Date:.....		Time:.....		Age:.....		Gender:.....					
Name:.....											
Life Threatening (Vitals Not Mandatory)											
Cardiac arrest						Ongoing seizures					
Respiratory arrest						Intubated on Arrivals					
Reparatory distress with gasping type breathing											
Imminently life threatening (Vitals preferably needed)											
Acute Chest Pain most likely cardiac origin						Very severe pain of any cause					
Violent behaviour with danger to self & other						Evidence of severe envenomation					
Major Trauma requiring organised team approach						Conditions needing time critical management-acute MI/Stroke					
If non above C/O:.....											
Past medical history:											
DM		HTN		Dyslipidaemia		IHD		CVA		CKD	
Triage Scale		Category 1		Category 2		Category 3		Category 4			
Airway		Obstructed/partially obstructed		Patent		Patent		Patent			
Breathing	Respiratory distress		Severe		Moderate		Mild		No		
	Respirator rate		< 9		9-11/>40		21-39		12-20		
	saturation		<80		81-89		90-95		>95		
circulation	Haemodynamic compromise		severe		Moderate		Mild		No		
	S BP(mmHg)		<70		71-90		>200		91-199		
	Pulse/min		<40 >180		41-50 151-179		51-60 101-150		61-100		
Disability	GCS		<5		9-12		13-14		15		
	AVPU		U or P		v		A		A		
						Triage Category					

## ANNEXURE 3

### **Category 1- RED**

- Cardiac arrest
- Respiratory arrest
- Critically injured trauma patient who presents unresponsive
- Severe respiratory distress with agonal or gasping type respirations <8/min
- Chest pain, pale, diaphoretic, Systolic blood pressure <70 Hg mm
- Severe bradycardia(<40) or tachycardia (>180) with signs of hypo-perfusion
- Hypotension (SBP <70) with signs of hypo-perfusion
- Ongoing/prolonged seizure
- Baby who is flaccid
- Unresponsive/responds to pain only (GCS<9)
- Intubated on arrival
- Child who is unresponsive to painful stimuli following trauma

### **Category 2- ORANGE**

- Airway risk - severe stridor or drooling with distress
- Circulatory compromise
- Clammy or mottled skin, poor perfusion HR<50 or >150 (adult)
- Hypotension with haemodynamic effects
- Severe blood loss
- Very severe pain - any cause
- Chest Pain of likely cardiac nature
- Drowsy, decreased responsiveness any cause (GCS< 13)
- Acute hemiparesis/dysphasia
- Acid or alkali splash to eye - requiring irrigation
- Major multi trauma (requiring rapid organised team response) -Annexure 5
- Severe localised trauma - major fracture, amputation
- High-risk history:
  - Immediate threat to self or others
  - requires or has required restraint
- severe agitation or aggression
- Patients needing time critical management
- Thrombolysis/PCI in Acute MI ,Thrombolysis in Stroke

### **CATEGORY 3- YELLOW**

- Severe hypertension
- Moderate shortness of breath  $\text{O}_2$  SAO<sub>2</sub> 90 - 95%
- Seizure (now alert)
- Any fever of immunosuppressed eg oncology patient, steroid Rx
- Persistent vomiting
- Head injury with short LOC- now alert
- Moderately severe pain - any cause - requiring analgesia
- Patients needing time critical management
- Poisoning needing gastric decontamination/antidote

### **CATEGORY 4- GREEN**

- Mild haemorrhage
- Foreign body aspiration, no respiratory distress
- Chest injury without rib pain or respiratory distress
- Difficulty swallowing, no respiratory distress
- Minor head injury, no loss of consciousness
- History of fever with stable vitals
- Vomiting or diarrhoea without dehydration
- Eye inflammation or foreign body - normal vision
- Minor limb trauma - sprained ankle, possible fracture, uncomplicated laceration requiring investigation or intervention -
- Non-specific abdominal pain
- Minor symptoms of existing stable illness
- Minor symptoms of low-risk conditions

## **ANNEXURE 4**

### **TRAUMA TEAM ACTIVATION CRITERIA:**

#### **MECHANISM:**

- 1 Motor vehicle crash with ejection
- 2 Fatality in the same vehicle
- 3 Fall from height >6 meters (20 feet) or three times the height in children
- 4 Rollover with signs of impact
- 5 Pedestrian thrown (hit by a vehicle) or run over

#### **ANATOMICAL :**

- 1 Two or more proximal long bone fractures
- 2 Suspected spinal cord injury
- 3 Amputation proximal to wrist or ankles
- 4 Significant penetrating injury to head /neck/torso/proximal limb
- 6 Significant maxillofacial injury with airway compromise
- 7 Burns >20% BSA or facial burns

#### **PHYSIOLOGICAL:**

- 1 Systolic BP <90 with hypo-perfusion
- 2 Ventilatory compromise with resp. rate <10 or >30
- 3 GCS <12 with torso or extremity trauma
- 4 Pregnancy >24 week with torso injury
- 5 Age >70 years with chest injury

## ANNEXURE 5: Mental Health Triage Scale

Triage Category	Description	Typical presentation
1	Definite danger to life <ul style="list-style-type: none"> <li>● (self or others)</li> </ul>	<b>Observed</b> Violent behaviour Possession of a weapon Self-destructive behaviour in ED
2	Probable risk of danger to self or others <ul style="list-style-type: none"> <li>● Severe behavioural disturbance</li> </ul>	<b>Observed</b> Extreme agitation/restlessness Physically/verbally aggressive Confused/unable to cooperate Requires restraint
		<b>Reported</b> Attempt at self-harm/threat of self-harm Threat of harm to others
3	Possible danger to self or others <ul style="list-style-type: none"> <li>● Moderate behaviour disturbance</li> <li>● Severe distress</li> </ul>	<b>Observed</b> Agitation/restlessness Intrusive behaviour Bizarre/disorganized behaviour Confusion Withdrawn and uncommunicative Ambivalence about treatment
		<b>Reported</b> Suicidal ideation Presence of psychotic symptoms: Hallucinations Delusions Paranoid ideas Thought disorder Bizarre/agitated behaviour Presence of affective disturbance: Severe symptoms of depression/anxiety Elevated or irritable mood
4	Moderate Distress/Normal	<b>Observed</b> No agitation/restlessness Irritability without aggression Cooperative Gives coherent history
		<b>Reported</b> Symptoms of anxiety or depression without suicidal ideation

**ANNEXURE 6**

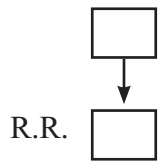
**Paediatric Triage System**

No Respirations/No heartbeat  → Red **Category - 1**

Unresponsive / Response only to pain  → Red **Category - 1**

Respiration irregular /gaspings / apnoea /stridor  → Red **Category - 1**

Respiration regular



Age	Green - Normal	Yellow	Red
<1		50-60	>60
1-2		30-40	>40
3-5		20-30	>30
5-12		20-25	>25
>12		15-20	>20

**Category - 2**

SPO<sub>2</sub> >92% <92% → **Category - 2**

Green Red

Heartbeat

Age	Green - Normal	Red	
<1	100-160	>160	<100
1-2	100-150	>150	
3-5	80-140	>140	<60
5-12	70-120	>120	<50
>12	60-100	>100	<50



Systolic BP Unrecordable → **Category 1**

Recordable

Age	Green	Red Hypotension	Hypertension
<1	80	65	100
1-2	85	70	101
3-5	100	80	105
5-12	110	90	110
>12	120	105	120

Category - 2

Level of consciousness

A	
V	Red
P	Category 1
U	Category 1

→ **Category - 2**

### Category 1

### Red

1. One of these signs presents
  01. No Respiration
  02. No heart beat
  03. Unresponsive / Response only to pain

Stop your assessment and send patient for immediate resuscitation

2. One of these preterminal signs presents
  01. Respiration irregular / gasping / apnoea / stridor
  02. Un recordable Blood Pressure
  03. Bradycardia

Stop your assessment and send patient for immediate resuscitation

### Category - 2

### Red

- 1 Patient has regular respiration, respiratory rate > upper limit of normal for the age or  
SPO<sub>2</sub> < 92% on air
2. Circulation  
Tachycardia for the age without fever or hypertension/ hypotension for the age.

#### 4. INFRASTRUCTURE DEVELOPMENT GUIDELINES;

Area	Level 1 A&E (Apex Centre)	Level 2 A&E	Level 3 A&E	Level 4 (ER)
Care model	Teaching Hospital / PGH	DGH	BH	Selected Hospitals*/ DH
Surface Area	20 000 sqm	15 000 sqm	12 500 sqm	500sqm
Ambulance Bay & Reception	X	X	X	X
Area for Admission & Registration	X	X	X	X
Triage	X	X	X.	X
Area / space for Disaster event	X	X	X	X
Visitors' area	X	X	X	N/E
Resuscitation area	X	X	X	Facilities +
Treatment area	X	X	X	X
Observation area	X	X	X	N/E
Bed Capacity	6R, 20(TA), 60(SS) = 86	5R, 15(TA), 40(SS) = 60	4R, 10(TA), 20(SS) = 34	3**
Short stay ward	X	X	X	N/E
Administration area- Deputy director /MO-I	X	X	Facilities +	N/E
Operation Theatres	3 (1 Orthopedic + 2 General casualty)	2 (1 Orthopedic + 1 General casualty)	1 General casualty	N/E
Nursing sister's room with Facilities for storage area for consumables & equipments	X	X	X	Facilities+
Poison treatment area	X	X	X	Facilities +
Isolation area	X	X	X	Facilities+
Family conference ( breaking bad news) room	X	X	X	N/E
Area to keep a dead body for 2hrs	X	X	Facilities +	Facilities +
Laboratory	X	X	X	Facilities +
Police post	X	X	X	N/E
Radiology (Separate USS & X-ray Room)	X (USS /2DE / CT/ Angiogram / MRI optional)	X(XR / USS)/ CT (Optional)	X(XR / USS)	Portable USS
ECG	X	X	X	X
Drug Store	X	X	X	Facilities +
Rest Rooms	X	X	Facilities +	Facilities +
Changing Rooms (Separate Male & Female rooms for Doctors, Nurses, Paramedics, Junior staff & Police, Overseer)				

**R** - Resuscitation Beds

**TA** - Treatment Area: observation beds- acute/sub acute area

SS - Short Stay Ward

X - Should Available

N/E -Availability is Not Essential

N/A Not Available

\*Selected hospitals - until fully fledged A & E units are developed.

## 5 . STANDARD HUMAN RESOURCES AT EACH LEVEL;

Category	Dedicated cadre			
	Level 1 A&E Apex centre	Level 2A&E	Level 3 A&E	Level 4 ER
Emergency Physicians (Consultant In charge)	X (6)	X (4)	X(4)	N/E
General Surgeons	X(2)	service	service	N/E
Anaesthesiologists	service	service	service	N/E
Radiologists	X(1)	service	service	N/E
Pediatrician	X(2)	service	service	N/E
Orthopaedic surgeon	service	service	service	N/E
Neuro surgeon	service	service	service	N/E
Vascular Surgeon	service	service	service	N/E
Gastroenterologist	service	N/E	N/E	N/E
Nephrologist	service	N/E	N/E	N/E
Neurologist	service	N/E	N/E	N/E
Cardiologist	service	N/E	N/E	N/E
Obstetrician & Gynaecologist	service	N/E	N/E	N/E
Eye Surgeon	service	N/E	N/E	N/E
ENT surgeon	service	N/E	N/E	N/E
Respiratory physician	service	N/E	N/E	N/E
OMF Surgeon	service	N/E	N/E	N/E
Transfusion Medicine	service	service	service	N/E
Judicial Medical Officer	service	service	service	N/E
Other staff				
Deputy Director	X	service	service	N/E
MOIC	N/A	N/A	N/A	X
Medical officers (To be assessed)	X (50 + interns)	X(30 + interns)	X(20 + interns)	X
Nursing Sister	X	X	X	N/E
Nurses	X	X	X	X
Supportive staff	X	X	X	X
MLT	X	X	X	X
Radiographers	X	X	X	X
Physiotherapist	Service	Service	Service	N/E
ECG Technician	Service	Service	Service	N/E

## 6. STANDARD EQUIPMENT IN EACH LEVEL;

(taken from WHO Essential Emergency Equipment list and Infrastructure equipment and supplies list, part of the WHO IMEESC toolkit [www.who.int/surgery](http://www.who.int/surgery))

	Level 1 A&E (Apex Centre)	Level 2 A&E (DGH)	Level 3 A&E (BH)	Level 4 (ER) (DH)
Theater Tables	X	X	X	N/E
Anesthetic Machine	X	X	X	N/E
Blood Gas Analyzer	X	X	X	N/E
Multipara Monitors 5 channels for resuscitation & 3 channels for observation area	X	X	X	X
Nebulizers	X	X	X	X
Defibrillators with Pacing facilities	X	X	X	X
Ventilator (Transport)	X	X	X	N/E
NIV / CPAP	X	X	X	N/E
Portable X ray machines	X	X	X	N/E
USS machines	X	X	X	N/E
Hand-held Doppler scans	X	X	X	Optional
ECG Machines	X	X	X	X
Wall Oxygen Supply , wall gas and suction	X	X	Optional	N/E
Resuscitation Beds	X	X	X	X
Reclining chairs	X	X	X	N/E
Beds	X	X	X	X
Trolleys	X	X	X	X
CT Scanner	X	Optional	N/E	N/E
IVcanula/Infusion set	X	X	X	X
Suction Device	X	X	X	X
Oral.Nasal Airways/ET tubes	X	X	X	X
Cricothyroidotomy insertion sets	X	X	X	X
Cervical collar	X	X	X	X
Sterile dressings	X	X	X	X
Splinting materials	X	X	X	X
NG tubes	X	X	X	X
IC tubes	X	X	X	X
Pulse oxymeters	X	X	X	X
CVP lines	X	X	X	N/E
Spinal Boards	X	X	X	X
Multi Parameter Monitor	X	X	X	X
Endo: Tracheal Sets	X	X	X	X
CCU doom sets	X	X	N/E	N/E
Laryngoscope	X	X	X	X
Rapid Infusion Sets with blood Warmer	X	X	X	N/E
Thromboelastometry	X	X		
Ambu with Masks - Adult Paediatric	X	X	X	X
Venturi Masks	X	X	X	X
B.P. Apparatus (Non invasive)	X	X	X	X
Venus cut down set	X	X	X	X
Oxygen Cylinder with regulator	X	X	X	X
ET Tubes	X	X	X	X
Non Rebreathing Masks	X	X	X	X
Peak flow meter	X	X	X	X

## **7. STANDARD EQUIPMENT, FACILITIES AND CAPACITY BUILDING REQUIRED FOR AMBULANCES FOR INTER HOSPITAL TRANSFER OF PATIENTS;**

### **Standards for Ambulances;**

Equipment and supplies

Ambulances are divided into two categories, Basic Life Support (BLS) and Advanced Life Support (ALS) ambulances. ALS ambulances must have all of the equipment on the required BLS list as well as equipment on the required ALS list.

### **Basic Life Support Ambulances**

#### **A. Ventilation and Airway Equipment**

1. Portable and fixed suction apparatus with a regulator and a suitable suction tip
2. Portable and fixed oxygen apparatus capable of metered flow with adequate tubing
  - Variable flow regulator
3. Oxygen-administration equipment
  - Adequate-length tubing; transparent mask (adult and child sizes), both nonrebreathing and valveless; nasal cannulas (adult, child)
4. Bag-valve mask (manual resuscitator)
  - a. Hand-operated, self-reexpanding bag; adult (>1000 mL) and child (450–750 mL) sizes, with oxygen reservoir/accumulator; valve (clear, disposable, operable in hot and humid weather); and mask (adult, child, infant, and neonate sizes)
5. Airways
6. Laryngoscope handle with suitable adult and paediatric blades and extra batteries and bulbs
7. Endotracheal tubes, sizes 2.5–5.5 mm uncuffed and 6–8 mm cuffed (2 each), other sizes optional
8. Stylettes for endotracheal tubes, adult and pediatric
9. Magill (Rovenstein) forceps, adult and pediatric
10. Lubricating jelly (water soluble)
11. Pulse oximeter with pediatric and adult probes
12. Saline drops and bulb suction for infants

#### **B. Monitoring and Defibrillation**

All ambulances are to be equipped with an automated external defibrillator (AED) and a multi para monitor unless ambulance personnel are carrying a monitor/defibrillator. The AED should have pediatric capabilities, including child-sized pads and cables.

These equipment should be battery operated and be able to work with 12v DC power supply. Ambulance should have an inverter to power the 230v operated equipment.

### **C. Immobilization Devices**

1. Cervical collars
  - Rigid for children aged 2 years or older; child and adult sizes (small, medium, large, and other available sizes)
2. Head immobilization device (not sandbags)
  - Firm padding or commercial device
3. Lower extremity (femur) traction devices
  - Lower extremity limb-support slings, padded ankle hitch, padded pelvic support, traction strap (adult and child sizes)
4. Upper and lower extremity immobilization devices
5. Impervious backboards (long, short; radiolucent preferred) and extrication device
  - Short (extrication, head-to-pelvis length) and long (transport, head-to-feet length) with at least 3 appropriate restraint straps (chin strap alone should not be used for head immobilization) and with padding for children and handholds for moving patients

### **D. Bandages**

1. Pre packaged sterile gauze sheets
2. Triangular bandages
  - Minimum of 2 safety pins each
3. Dressings
  - Sterile multitrauma dressings (various large and small sizes)
  - Gauze rolls -Various sizes
4. Occlusive dressing or equivalent
5. Adhesive tape
6. Arterial tourniquet
- 7.

### **E. Communication**

Two-way communication device between provider, dispatcher, and central control room.  
GPS tracking system for monitoring.

### **F. Obstetrical Kit**

1. Kit (separate sterile kit)
- 2.

### **G. Miscellaneous**

1. Sphygmomanometer (pediatric and adult regular- and large-sized cuffs)- digital
2. Stethoscope

3. Length/weight-based tape or appropriate reference material for pediatric equipment sizing and drug dosing based on estimated or known weight
4. Thermometer with low temperature capability-digital
5. Heavy bandage or paramedic scissors for cutting clothing, belts, and boots
6. Cold packs
7. Sterile saline solution for irrigation (1-L bottles or bags)
8. Flashlights (2) with extra batteries and bulbs
9. Blankets
10. Sheets (minimum of 4), linen or paper, and pillows
11. Towels
12. Triage tags
13. Disposable emesis bags or basins
14. Disposable bedpan
15. Disposable urinal
16. Wheeled cot
17. Hight adjustable folding stretcher
18. Patient care charts/forms
19. Lubricating jelly (water soluble)

#### **H. Infection Control\***

1. Eye protection (full peripheral glasses or goggles, face shield)
2. Face protection (for example, surgical masks)
3. Gloves,- sterile and nonsterile)
4. Coveralls or gowns
5. Shoe covers
6. Waterless hand cleanser, commercial antimicrobial (towelette, spray, liquid)
7. Disinfectant solution for cleaning equipment
8. Standard sharps containers, fixed and portable
9. Disposable trash bags for disposing of biohazardous waste
10. Respiratory protection (for example, N95 or N100 mask—per applicable local guidance)
11. Water

#### **I. Injury-Prevention Equipment**

1. All individuals in an ambulance need to be restrained. Protective helmets where appropriate.

2. Fire extinguisher
3. Traffic-signaling devices (reflective material triangles or other reflective, nonigniting devices)
4. Reflective safety wear for each crew member

#### **J. Vascular Access**

1. Crystalloid solutions, such as Ringer's lactate or normal saline solution (1000-mL bags × 4); fluid must be in plastic containers; type of fluid may vary depending on local requirements
2. Antiseptic solution (alcohol wipes and povidone-iodine wipes preferred)
3. Intravenous-fluid pole or roof hook
4. Intravenous canulae, 14–24 gauge
5. Intraosseous needles or devices appropriate for children and adults
6. Venous tourniquet, rubber bands
7. Syringes of various sizes
8. Needles, various sizes (1 at least 1½ in for intramuscular injections)
9. Intravenous administration sets
10. Intravenous arm boards, adult and pediatric

#### **K. Other Equipment**

1. Nebulizer
2. Glucometer or blood glucose measuring device
3. Large-bore needle (should be at least 3.25 in long for needle chest decompression in large adults)

### **REQUIRED EQUIPMENT –ALS AMBULANCES**

This include all of the required equipment listed for the BLS ambulance, plus the following additional equipment and supplies from the following list, on the basis of local need and consideration of hospital characteristics and budget.

#### **A. Airway and Ventilation Equipment**

1. Transport ventilator

#### **B. Cardiac**

1. Portable, battery-operated monitor/defibrillator
  - With tape write-out/recorder, defibrillator pads, quick-look paddles or electrode, or hands-free patches, ECG leads, adult and pediatric chest attachment electrodes, adult and pediatric paddles



## C. Neonatal

### 1. Transport incubator

## E. Medications (Preloaded Syringes When Available)

- Cardiovascular medication such as 1:10000 epinephrine, atropine, antidysrhythmic agents (eg, adenosine and amiodarone), calcium-channel blockers,  $\beta$  blockers, nitroglycerin tablets, aspirin, vasopressor for infusion
- Cardiopulmonary/respiratory medications such as albuterol (or other inhaled  $\beta$  agonist) and ipratropium bromide, 1:1000 epinephrine, furosemide
- 50% dextrose solution (and sterile diluent or 25% dextrose solution for pediatrics)
- Analgesics, narcotic and nonnarcotic
- Antiepileptic medications such as diazepam or midazolam
- Sodium bicarbonate, magnesium sulfate, glucagon, naloxone hydrochloride, calcium chloride
- Distilled water for injection and sodium chloride for injection
- Additional medications as per local hospital director

## Extrication equipment (Optional)

- Wrenches (adjustable) ,Screwdrivers (flat and Phillips head),Pliers, Bolt cutter, Hammer, Spring-loaded center punch, Axes (pry, fire), Bars (wrecking, crow), Spreading tools, Hydraulic jack/spreader/cutter combination, Cutting tools, Saws (hacksaw, fire, windshield, pruning, reciprocating), Air-cutting gun kit, Pulling tools/devices, Ropes/chains, Come-along, Hydraulic truck jack, Air bags, Protective devices, Reflectors/flares, Hard hats, Safety goggles, Fireproof blanket, Leather gloves, Jackets/coats/boots, Patient-related devices, Stokes basket, Shovel, Lubricating oil ,Wood/wedges, Floodlights

Local extrication needs may necessitate additional equipment for water, aerial, or mountain rescue.

## Staff training

### Level 1

#### Course outline—the ambulance services proficiency certificate.

##### □ First aid;

- Induction systems of the body
- Injuries
- General

- Procedures
- Apparatus
- Maternity
- Medical nomenclature
- Transporting the critically ill
- Care of seriously ill patients, surgical and medical
- Precautions in handling infectious diseases patients
- Care of patients under drug treatment
- Care of mentally ill patients
- Ambulance work when under medical instruction or direct supervision

□ **Non-medical;**

- Information (ambulance service)
- Communications (telephone and radio)
- Equipment
- The patient (professional conduct and relationship with patients)
- The hospital (practice and procedure within hospital)
- Liaison (with hospital transport and other organizations)
- Lifting and carrying
- Light rescue
- Major accidents
- Special types of accidents
- Accidents and sudden illnesses (proceeding to the incident, procedure on arrival, gathering information)
- Infectious diseases
- Other forms of transport
- Removal of the dead
- Legal information
- Care and maintenance of vehicles
- Ambulance driving

Level 2

**Core syllabus for ambulance personnel**

Driving training (mainly non-emergency)

Advanced driving

**Ambulance attendant I;**

- BLS
- Introduction to the systems of the body
- Lifting, handling, and equipment
- Airway management and resuscitation
- Assisting the nurse
- Infants and children
- Wounds and bleeding
- Infectious diseases
- Law and ambulance staff
- Major incidents
- Poisoning
- Maternity

**Paediatric and obstetric emergency care;**

- Paediatric care
- Obstetrics and gynaecology

## 8. STANDARD DRUGS LIST FOR A&E CARE IN EACH LEVEL.

Drugs	Level 1	Level 2	Level 3	Level 4
<b>Drugs for Pain Management</b>				
1. Morphine IV , Tab	X	X	X	X
2. Pethidine	X	X	X	X
3. Codeine	X	X	X	N/E
4. Tramadol	X	X	X	X
5. Fentanyl IV	X	X	X	N/E
<b>Antiemetics</b>				
1. Prochlorperazine	X	X	N/E	N/E
2. Promethazine	X	X	X	X
3. Metachlopramide	X	X	X	X
4. Ondansetron	N/E	N/E	N/E	N/E
<b>Non Opioid agents</b>				
1. Paracetamol	X	X	X	X
2. Ibuprofen	X	X	X	X
3. Indomethacine	X	X	X	X
4. Ketarolac IV	X	X	N/E	N/E
5. Diclofenac Sodium ( Tab, Suppository)	X	X	X	X
<b>Drugs for Neuropathic pain</b>				
1. Amytryptalin	X	X	X	N/E
2. Carbemezapine	X	X	X	N/E
3. Gabapentine	X	X	N/E	N/E
<b>Anxiolytics</b>				
1. Midazolam	X	X	X	X
2. Diazepam	X	X	X	X
<b>Anaesthetic Agents</b>				
1. Midazolam	X	X	X	X
2. Propofol	X	X	X	N/E
3. Thiopentone Sodium	X	X	X	N/E
4. Atracurium	X	X	X	N/E
5. Suxamethonium	X	X	X	X
6. Lignocaine	X	X	X	X
7. Bupivacaine	X	X	X	N/E
8. Ketamine	X	X	X	N/E
9. Nitrous Oxide	X	X	X	N/E
10. Flumazani	X	X	X	X
11. Naloxone	X	X	X	X
<b>Haemostatic &amp; Anticoagulants &amp; Thrombolytic Agents</b>				
1. Heparine	X	X	X	N/E
2. Enoxheparin	X	X	X	N/E
3. Protamine Sulphate	X	X	X	N/E
4. Streptokinase	X	X	X	N/E
5. Tranexamic Acid	X	X	X	N/E
6. Warfarin	X	X	X	N/E

<b>Hemodynamic Drugs</b>					
1.	IV Dobatamine	X	X	X	X
2.	IV Dopamine	X	X	X	X
3.	IV Nitroglycerine	X	X	X	N/E
4.	IV Nitroprusside	X	X	N/E	N/E
5.	IV Noradrenalene	X	X	X	N/E
6.	IV Adrenalene	X	X	X	X
7.	Vasopressin	X	X	X	N/E
8.	IV Verapamil	X	X	X	N/E
9.	IV Adenosine	X	X	X	N/E
<b>Anti hypertensive</b>					
1.	Propanalol	X	X	X	X
2.	Atenalol	X	X	X	X
3.	Captopril	X	X	X	X
4.	Losarten Potassium	X	X	X	N/E
5.	Prasocin	X	X	X	N/E
6.	Nifedipine SR	X	X	X	X
<b>Hypoglycaemic Agents</b>					
1.	Insulin Short acting	X	X	X	X
2.	Long acting Insulin	X	X	X	X
3.	Metformin	X	X	X	N/E
4.	Glibenclamide	X	X	X	N/E
<b>Steroids</b>					
1.	Prednisolone	X	X	X	X
2.	Dexamethasone	X	X	X	X
3.	Hydrocortisone	X	X	X	X
<b>Other IV Preparations</b>					
4.	N Acetyl cysteine	X	X	X	N/E
5.	Glucagon	X	X	X	N/E
6.	Ca gluconate	X	X	X	X
7.	Sodium Bicarbonate	X	X	X	N/E
8.	Mg So4	X	X	X	X
9.	Manitol	X	X	X	N/E
10.	Hetastarch	X	X	X	X
11.	Dextran	X	X	X	N/E
12.	5%, 25% & 50 % Dextrose	X	X	X	X
13.	Normal Saline	X	X	X	X
14.	Hartmans Solution	X	X	X	X
<b>Respiratory Drugs</b>					
1.	Salbutamol	X	X	X	X
2.	Ipravent	X	X	X	X
3.	Theophyline(Tab)	X	X	X	X
4.	Aminophylline	X	X	N/E	N/E
<b>Antiepileptics</b>					
1.	Phenytoin IV oral	X	X	X	X
2.	Carbamazepine	X	X	X	X
3.	Sodium Valproate	X	X	X	X
4.	Phenobarbitone	X	X	N/E	N/E
5.	Lorazepam	X	X	N/E	N/E

## 9. STANDARD EMERGENCY TROLLEY REQUIREMENTS FOR A&E UNITS

### EMERGENCY RESUSCITATION TROLLEY

Every A & E department should have a resus trolley made according to the following guidelines and available at the resuscitation area.

ON TOP OF THE TROLLEY	2 <sup>ND</sup> DRAWER-CIRCULATION
Self-inflating reservoir bag/Amboo bag- both adult and paediatric sizes	Crystalloids-Normal saline, 0.45% saline, Hartmann's, 5% Dextrose,
Defibrillator and pads	Colloids-Hetastarch or other recommended
Multipara monitor (5 channel)	Cannula 14G, 16G, 17G, 18G, 20G, 22G
Stethoscope	Butterfly needles
Disposable & sterile gloves	IV infusion set
Sphygmomanometer-adult and pediatrics cuffs	3way taps
Torch	Syringes-1,3, 5,10, 20, 50mls
Scissors	Tourniquets
1 <sup>ST</sup> DRAWER- DRUGS	Sterile gauze
Adrenaline 1:1000	Alcohol wipes
Atropine	Syringe Pump extension cords
Ephedrine	Adhesive dressing
Amiodarone	Burette sets
Lignocaine	Intra Osseous Needle
Adenosine	Sterile Gauze Packs
Dobutamine	
Calcium gluconate	3 <sup>RD</sup> DRAWER-AIRWAY & BREATHING
Potassium chloride	Laryngoscopes-normal, short handle
Midazolam and Diazepam	Blades adult-short, medium, long, extra-long AND paediatrics sizes
Hydrocortisone	Face masks-Size 1-5
Dexamethasone	Laryngeal mask airways Size 1-5
Dextrose- 25%,50%	Endotracheal tubes Size 3.5-9mm
Naloxone	Gum elastic bougie
Sodium Bicarbonate	Oro pharyngeal airways
Magnesium Sulphate	Naso pharyngeal airways
Aspirin	ET tube introducer
GTN-IV and Sub lingual	Yankauer sucker handle and tubing
Mannitol	Magill's forceps
Phenytoin Na	NG tubes
Distilled water for injection	Nebulizers
	Nasal prongs
	Lignocaine Gel

## 10. INFORMATION SYSTEM FOR A & E

Emergency Department Information Systems (EDISs) are electronic health record systems designed specifically to manage data and workflow in support of Emergency Department patient care and operations.

EDIS should facilitate the delivery of patient care, improve quality and safety, conform to relevant data interoperability standards, and comply with applicable privacy and security concerns to ensure the secure availability of relevant healthcare information.

Functions of an EDIS

### Clinical functions:

These are functions that enable delivery of healthcare or offer clinical decision support.

This includes;

1. Patient care management
2. Clinical decision support
3. Operations management and communication

### Administrative functions:

These are functions that assist with the administrative and financial requirements associated with the delivery of care in A & E departments, provide support for medical research and public health, and improve the quality of healthcare.

EDIS should provide following monthly indicators;

1. Number of patients attend A & E department (according to Triage categories if possible)
2. Number of patients discharged from A & E department
3. Number of patients admitted to the hospital
4. Number of patients transferred to other hospitals for further treatment
5. Number of patients seen with in the clinically recommended time
6. Number of patients who did not wait for treatment
7. Median waiting time for treatment
8. Number of patients discharged from A & E within four hours
9. Number of patients seen by relevant consultant with in four hours
10. Number of deaths in the A & E according to following criteria;

Category 1	Anticipated death: 1a: due to terminal illness (anticipated by clinicians and family at the time). 1b: following cardiac or respiratory arrest before arriving at the hospital.
Category 2	Not unexpected death, which occurred despite the hospital/health service taking preventative measures.
Category 3	Unexpected death, which was not reasonably preventable with medical intervention.
Category 4	Preventable death where steps may not have been taken to prevent it.
Category 5	Unexpected death resulting from a medical intervention.

## 11. GUIDELINES FOR IMPROVEMENT OF QUALITY IN THE A & E UNIT

### Quality in the Accident and Emergency Unit:

- “The quality measures include structure and process measures, but should evolve toward outcome measures over time and should be nationally standardized so that comparisons can be made. “Measures should evaluate the performance of individual providers within the system, as well as that of the system as a whole and be sensitive to the interdependence among the components of the system.”
- “Performance data should be collected on a regular basis from all of the emergency care units, analysed and then publicly disseminated. (Adopted from IOM Committee on the Future of Emergency Care in the United States Health System (2007)
- Dimensions of Quality Applicable to A & E Unit

Domain	Application to the A & E
Safe	High-risk, high-stress environment “fraught with opportunities for error”... frequent interruptions and distractions, crowding, need for rapid decision-making with incomplete information, barriers to effective communication and teamwork, difficulty obtaining timely diagnostic tests
Effective	Limited by deficiencies in pre-hospital care, unavailability of trained specialists, lack of access to patients’ prior medical records, poor primary care follow-up, inability to coordinate care across settings
Patient-centered	Crowding, long wait times, design emphasis on visibility and monitoring rather than privacy
Timely	Designed to provide timely care for emergent medical problems, but often overwhelmed by the demand for their services...
Efficient	Frequently asked to provide care for which it is not the most efficient setting... primary care, urgent care for minor complaints, and inpatient care to admitted patients compromises efficiency
Equitable	The government expects EDs to treat all patients equitably... (but) variation in resources and personnel across communities may create inequities in how patients in different EDs are treated

### **Application of Conceptual Framework (Adopted from; Conceptual framework for prioritization: Institute of Medicine, 2007)**

	Structure	Process	Outcome
<b>Effective</b>	Nurse staffing and skill mix (RN/total) in ED	<b>Aspirin at arrival for AMI</b>	AMI patients get thrombolysis treatment within 40 minutes after admission
<b>Patient Centered</b>	Use of survey data in PDSA cycles to improve patient centered care in ED	Percentage of patients undergoing painful procedures who have pain score documentation	<b>Percentage of patients leaving ED without being seen by a physician (proxy outcome).</b>
<b>Timely</b>	ED triage policies to ensure timely evaluation of high-acuity patients	<b>Median time from ED arrival to ED departure for admitted ED patients</b>	Percentage of orthopedic pain patients with 3-point reduction in pain score within 60 minutes



	Structure	Process	Outcome
<b>Safe</b>	Computerized physician order entry with decision support tools to detect medication errors	Previous records retrieved electronically	Readmission due to medication errors minimized.
<b>Efficient</b>	Availability of laboratory and radiologic support to facilitate rapid evaluation and disposition in ED	Percentage of low back pain patients with appropriate diagnostic test utilization	Cost for a episode of low back pain evaluated in the ED
<b>Equitable</b>	Availability of A & E units at all levels of healthcare.	Percentage of hospitals with A & E units	All admissions are coming through A & E Units.

## 12. A&E CLINICAL QUALITY INDICATORS

### The A&E clinical quality indicators to be introduced;

- Create a more balanced view of performance that measures patient safety and clinical effectiveness as well as time measures
- Encourage a spirit of continuous improvement with better information leading to better clinical outcomes and patient experience
- Provide information that is easier to understand for patients
- The five A&E clinical quality indicators
- Indicator 1: Unplanned re-attendance rate
- Indicator 2: Total time in the emergency department
- Indicator 3: Left without being seen rate
- Indicator 4: Time to initial assessment
- Indicator 5: Time to treatment

### Description of A&E clinical quality indicators;

- Indicator 1: Unplanned re-attendance rate  
Patients who return to the same A&E unit or a health facility within seven days of the original attendance are known as an ‘unplanned reattender’. Patients are encouraged to return if their condition gets worse. .
- Indicator 2: Total time in the emergency department  
This is measured from the time of arrival and registration on the hospital information system to the time that the patient leaves the department to return home or to be admitted to the ward bed (including the A&E department observation beds).
- Indicator 3: Left without being seen rate  
Patients may sometimes leave the department without waiting to be seen – particularly if there is a long wait for a doctor or if the patient has been advised on alternative sources of care.

- Indicator 4: Time to initial assessment  
This is measured from the time of arrival and registration on the hospital information system to the time of initial assessment as indicated in the triage.
- Indicator 5: Time to treatment  
Measured for all patients, this is the time from arrival to seeing a doctor who will start the treatment for the patient's condition.

**This document has reference to following documents;**

1. IOM Committee on the Future of Emergency Care in the United States Health System (2007)
2. **Conceptual framework for prioritization: Institute of Medicine, 2007)**
3. NHS Outcomes framework 2011/2012

### **13. CAPACITY BUILDING FOR HUMAN RESOURCES WITHIN THE A&E UNITS**

Accident and Emergency care is a new system change which differs from the traditional patient care services in which admissions go directly to the wards. Patients admitted to the A&E undergo triage on arrival to decide how long each patient can safely wait for medical attention. The A&E is divided into three areas to manage patients according to the severity of their illness. All emergencies (except obstetric) are managed in one place in order to provide efficient emergency care services without undue delays.

To achieve this objective, staff categories working in emergency care units should be skill full in managing all emergencies. Capacity building of all staff through Accident and Emergency training is mandatory in this new field and system change. Capacity building in Emergency care of all staff categories will be planned in the following ways.

Emergency care specialists – initiated to be developed by PGIM as 6 year MD programme

Medical Officers working in Accident and Emergency units will be trained in central level at newly established simulation centre at Colombo East base hospital as well as in provincial centres. This will be based on common training curriculum will shared responsibilities by respective colleges.

Nurses and other relevant staff (Minor staff and drivers) will be trained in control level as well as provincial levels.

In addition to the local training, standard Emergency care training with foreign exposure will be planned to be provided for selected number of staff categories as master trainers with motivational non-financial incentive.

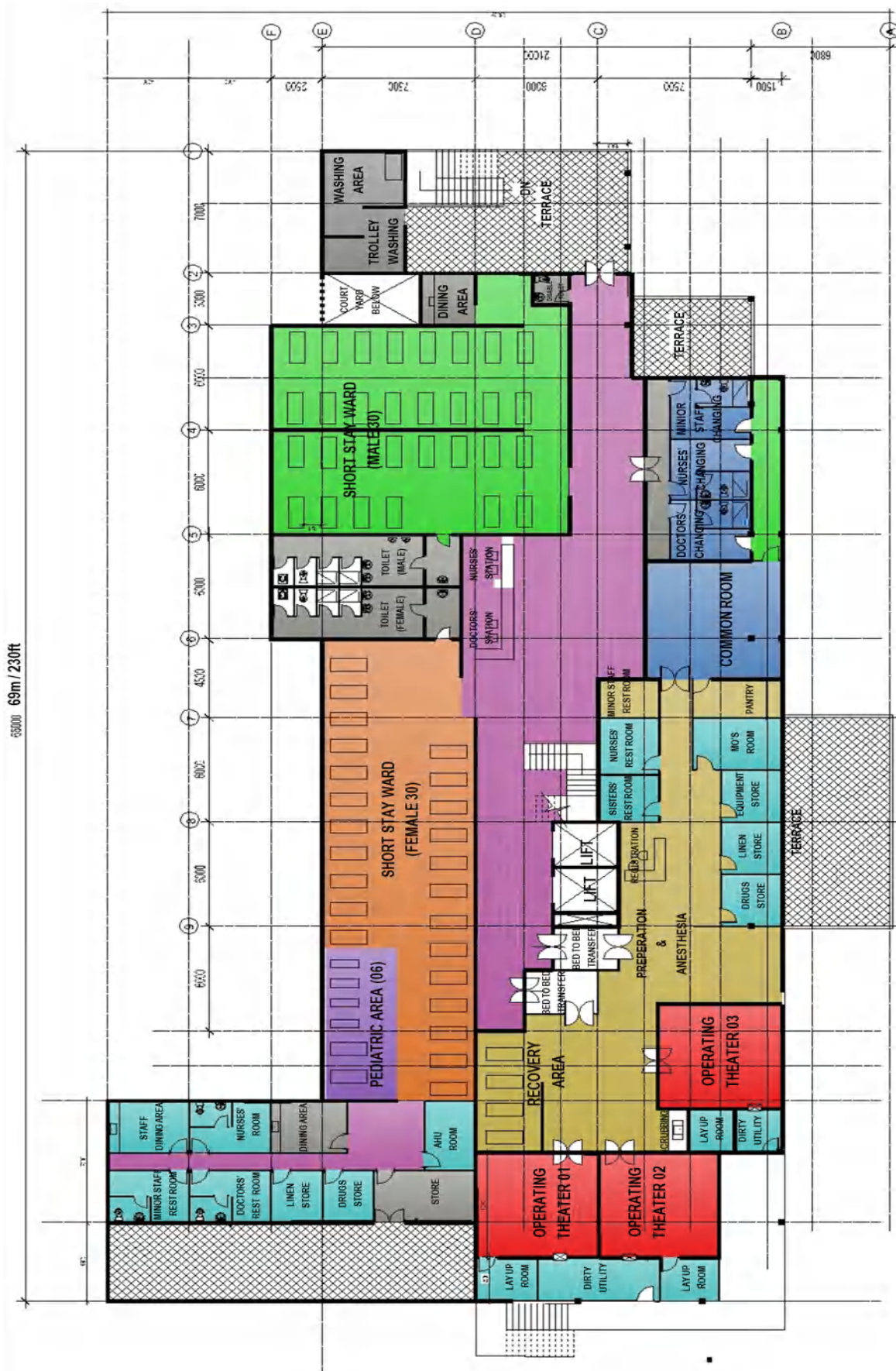
**Accident & Emergency Complex,  
TYPE PLAN**

# 14. COMMON PLAN OF THE ACCIDENT AND EMERGENCY UNITS

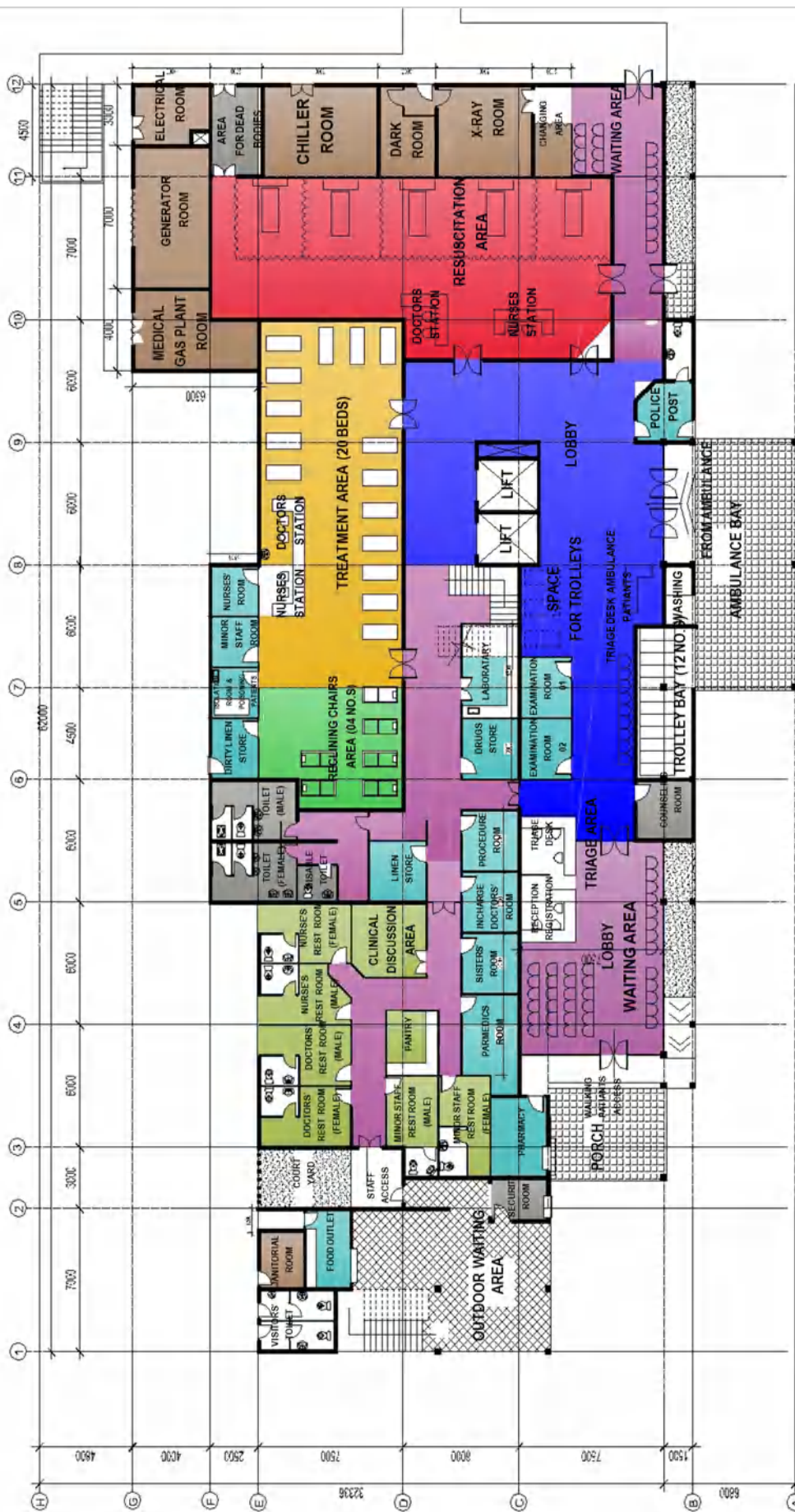


Level 01 Ground Floor



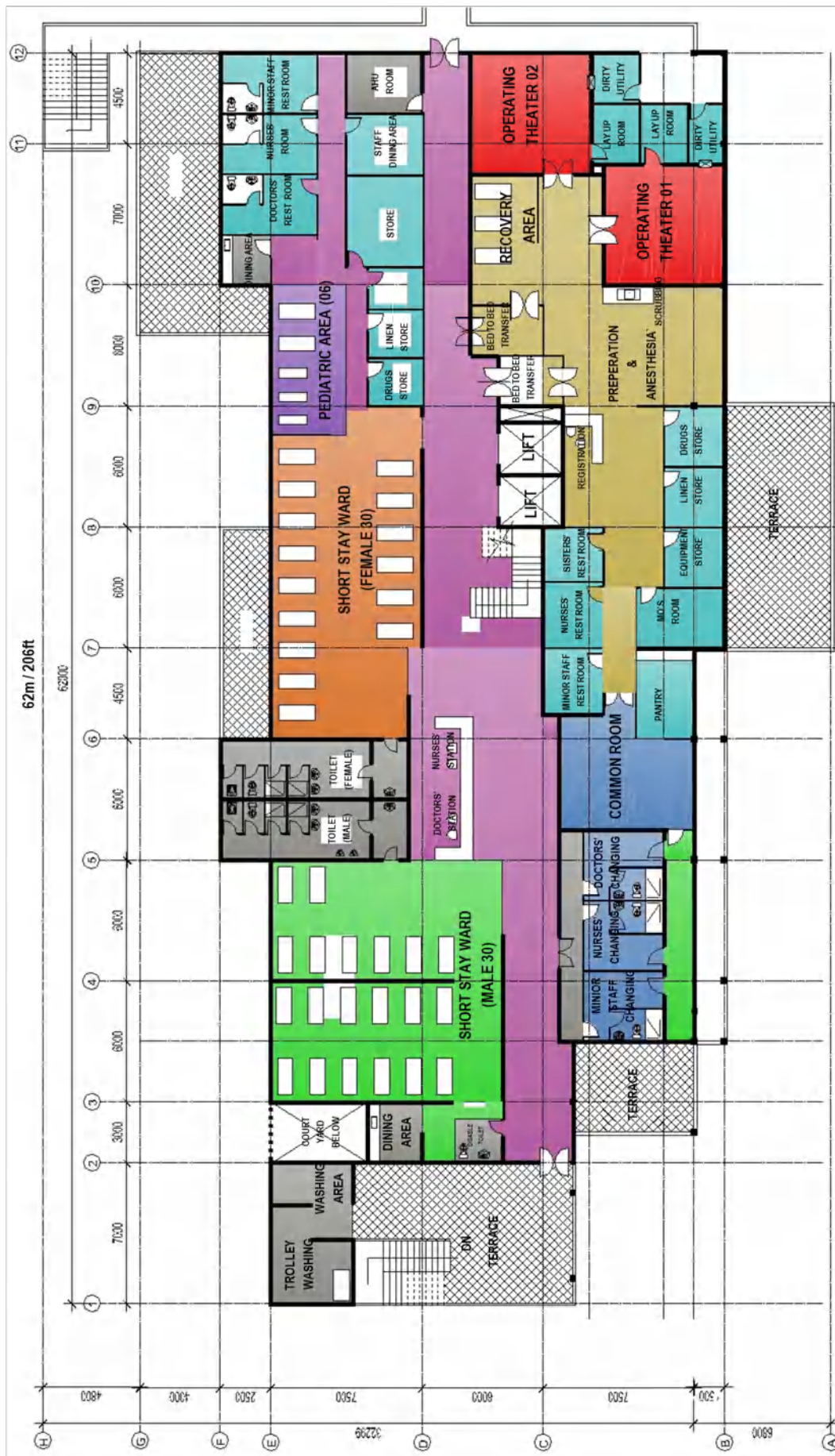


Level 01 Upper Floor

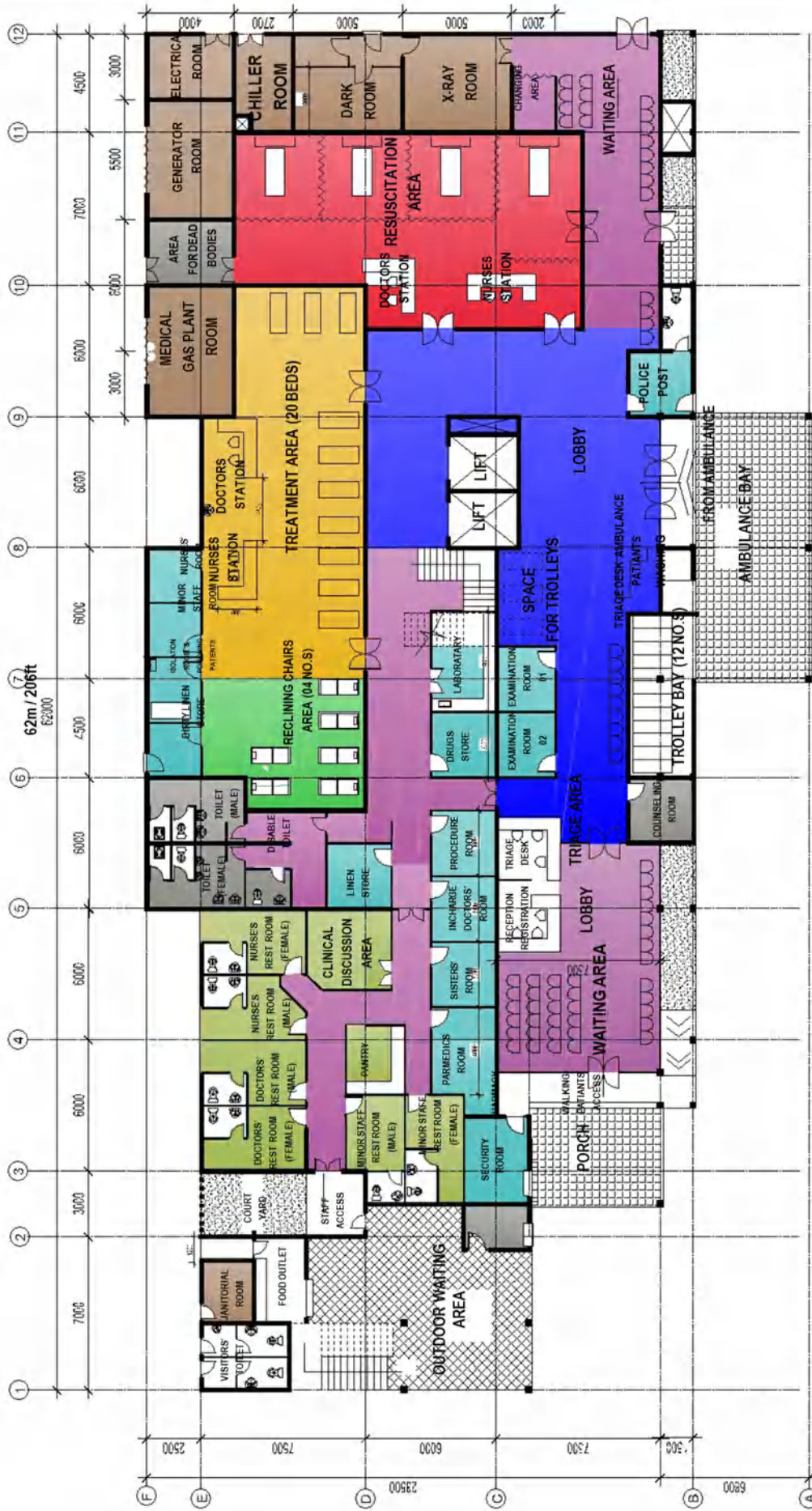


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Level 02 Upper Floor



Level 03 Ground Floor





## 15. STRATEGIC OBJECTIVES

1. Island wide establishment or update of A&E services appropriate to levels of care in government sector health service
2. Enhancement of private sector involvement and improving the standards on A&E care in private sector hospitals
3. Development and defining of standards on A&E services for each level of care
4. Improving the capacity of relevant staff on A&E care
5. Establishing pre hospital care services in each district as part of Accident and Emergency Care Management System
6. Enhancement of public awareness and commitment towards successful utilization of A&E services and empowerment of public on prevention of trauma
7. Enhancement of patients' and public satisfaction on quality improvement of A&E care service
8. Monitoring the implementation of developed Accident and Emergency Care Management System in the country through establishment of management information system related to A&E services
9. Enhancing the researches on Accident and Emergency Care

**Strategic Objective I:**

Island wide establishment and upgrading of A&E services in a cost effective manner appropriate to levels of care in government sector health services

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Planning to improve A&E care services island wide by newly establishing or upgrading existing facilities	Defining the facilities to be available in each level of care	Defined norms for facilities at each level of care	Prompt & efficient A&E care service leading to reduced unnecessary admissions (work load / ward congestion)	Completion of activity	100% completion before 31 <sup>st</sup> August 2013	MOH
	Conducting a national survey to assess the current situation of Accident and Emergency Care and to identify the gaps /differences in infrastructure / staff / instrument and equipment island wide in all levels	Completed national survey		Completion of activity	100% completion before May 2017	MOH
	Preparation of a development plan for each institution for implementation in stages	Prepared development plans		Completion of activity	Completion before Primary care institution plans- 31 <sup>st</sup> March 2017 (Provincial) Secondary and Tertiary care institution plans - 30 <sup>st</sup> June 2017 complete of central Ministry Institution	MOH Head of the institutes Provincial health authorities

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Developing facilities of Accident and Emergency units with island wide coverage	Costing the development plans	Completed cost estimate for each development plan	Prompt & efficient A&E care service leading to reduced unnecessary admissions (work load / ward congestion)	Completion of activity	Completion before Primary care institutions- 31 <sup>st</sup> March 2017 Secondary and Tertiary care institutions- 30 <sup>st</sup> June 2017	MOH Head of the institutes Provincial health authorities
	Identification of a suitable source of funding.	Identified agreed donors/ funding agencies		Completion of activity	31 <sup>st</sup> July 2014	MOH DDG (MS II) DDG (P)
	Implementation of the Development plans in pre determined stages	Implemented plans		Completion of activity at each stage	100% completion before 31 <sup>st</sup> December 2017	MOH DDG (MS II) Head of the institutes Provincial health authorities
	M & E of implementation of Development plans	Completed reviews		Monthly reviews	Up to date completion of Monthly reviews	MOH DDG (MS II)/ DDG (P) Head of the institutes Provincial health authorities
Ensuring cost minimization through A&E care service	Introducing cost effective technologies and methods and mechanisms in Emergency Health Care services	Introduced cost effective technologies and methods in A&E care	Health care cost reduction	Periodic reviews with international experiences	Up to date conduction of audits	MOH DDG (MS II)/ DDG (P) Head of the institutes Provincial health authorities
	Assessment of cost minimization through the result of cost studies based on calculated unit cost per cost centers and unit cost per patient	Completed cost studies		No of cost studies in hospitals	100% completion of hospital cost studies before 31 <sup>st</sup> December 2017	MOH DDG (ET&R) DDG (MS II)/ DDG (P) SLMA PGIM
	Conduction of cost benefit analysis	Completed cost benefit analysis		No of cost benefit analysis	At least one cost benefit analysis per year	MoH DDG (ET&R) DDG (MS II)/ DDG (P) SLMA PGIM

\*\*\*Accident and Emergency centers comprising a ambulance bay, reception and a triage area, patients registration desk, resuscitation bay, short stay HDU, treatment area, short stay observational unit with operation theatre facilities, police post, small laboratory, separate radiology department, isolation area, toxicology management area and a recreation area including areas for the staff, dispensary/ pharmacy and a patients waiting area and a visitors waiting area in all hospitals above BHs (The facilities may change at different levels of A & E s)

<b>Strategic Objective II:</b>						
Enhancement of private sector involvement and improving the standards on A&E care in private sector hospitals						
Strategy	Activity	Expected Out-puts	Expected Out-come	Indicator	Target	Responsibility
Improving A&E care service in the private sector	Assessment of number of emergencies handled by the private sector versus government sector	Completed assessment in current services	Motivated private health institution authorities	Completion of study	Completion before 2017	MOH DDG (MS II) DDG (ET&R) D(PHSD) PHSRC SLMA
	Assessment of the existing models of care in A&E delivered by the private health care institutions through an island wide survey	Completed assessment on current models		Completion of study	Completion before 2017	MOH DDG (MSII) DDG (ET&R) D(PHSD) PHSRC SLMA
	Advocacy to private health institution authorities on improving A&E care	Completed advocacy		Completion of task	Completion before December 2017	MOH DDG (MSII) D(PHSD) PHSRC
	Monitoring and Supervision of the emergency care services provided by the private health sector and to take corrective measures whenever necessary	Regular clinical audit in private sector	Minimized mortality due to trauma in private sector institutions	Regular clinical audit	Biannually clinical audits	MOH DDG (MS) D(PHSD) PHSRC
Improving the standards on A&E care in private sector hospitals	Adherence of the private health care institutions to the National Emergency Policy Guidelines and Manual	Prompt and efficient A&E care services in private sector institutions	Quality emergency care service based on selected criteria and patient satisfaction in private sector institutions	% of adherence to protocols and SOPs	100% adherence up to 31 <sup>st</sup> December 2017	MOH DDG (MS) D(PHSD) PHSRC
	Organizing training facilities/ programs for the relevant private sector staff	Skilled, efficient emergency care staff in private sector institutions for better emergency care management.		Completion of task	100% completion of training programmes on A&E care for private sector staff before 2017	MOH DDG (MS) D(PHSD) PHSRC

<b>Strategic Objective III:</b>						
<b>Development and defining of standards on A&amp;E services</b>						
<b>Strategy</b>	<b>Activity</b>	<b>Expected Outputs</b>	<b>Expected Outcome</b>	<b>Indicator</b>	<b>Target</b>	<b>Responsibility</b>
Development of a operational framework which results in better patient care model on A&E care	Consultative meetings with local experts to review of A&E systems in other (developed ) countries	Completed consultative meetings with revision of systems	Stand or dised system & operational .....	Completion of activity	Completion before 30 <sup>th</sup> JUNE 2013	MOH DDG (MS II)/D(MS) Academic bodies
	<b>Defining of standards on A&amp;E services</b> in each level of care	Defined acceptable standards on A&E for each level		Completion of activity	Completion before 31 <sup>st</sup> August 2013	MOH DDG (MS II)/ D (MS) Academic bodies
	Preparation and finalizing the policy and strategic frame work on A&E care	Finalized policy and strategic frame work on A&E care		Completion of activity	Completion before 31 <sup>st</sup> December 2013	MOH DDG (MS II)/ D (MS) Academic bodies
Development of protocols with SOPs for management in A&E care service	Consultative meetings with local experts to review of A&E care management in other (developed ) countries	Completed consultative meetings with defined protocols and SOPs		Completion of activity	Completion before 31 <sup>st</sup> August 2013	MOH DDG (MS II)/ D (MS) Academic bodies
	Development of manual with protocols and SOPs	Developed manual		Completion of activity	Completion before 31 <sup>st</sup> September 2013	MOH DDG (MS II)/ D (MS) Academic bodies

## Strategic Objective IV:

Improving the capacity of relevant staff on A&E care

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Capacity building (improving knowledge and skills) on A&E of relevant staff involved in A&E care service	Conducting a training need analysis for all categories of involved staff	Completed training need analysis	Skilled, dedicated emergency care staff for better emergency management	Completion of activity	Completion before 31 <sup>st</sup> August 2013	MOH DDG (MS II)/ D (MS) Academic bodies
	Designing of suitable standard training programme inclusive of courses with curriculum and training materials based on information from training need analysis	Designed standard training programme		Completion of activity	Completion before 31 <sup>st</sup> October 2013	MOH DDG (MS II)/ D (MS) Academic bodies
	Development of a training plan for five years and a training calendar	Developed training plan and calendar		Completion of activity	Completion before 31 <sup>st</sup> October 2013	MOH DDG (MS II)/ D (MS) DDG (ET&R) KDU National Institute of Emergency Medicine with simulation centre (proposed) with central Simulation Centre and 9 provincial centers
	Costing the training plan and identification of probable resources	Completed cost estimate and identified funding resources		Completion of activity	Completion before 31 <sup>st</sup> November 2013	MOH DDG (ET&R) DDG (MS II) / D (MS)
	Conduction of island wide training programmes for consultants, medical officers, nursing officers and paramedics in collaboration with recognized institutions	Conducted island wide training programmes		Completion of activity	Up to date completion according to the planned calendar	MOH DDG (ET&R) DDG (MS II)/ D (MS) National Institute of Emergency Medicine with simulation centre (proposed)
	Arranging suitable international trainings for relevant staff selected based on defined criteria	Trained staff on Emergency Care of comparable international standards		Completion of activity	Up to date completion according to the planned calendar	MOH National Institute of Emergency Medicine (proposed)



Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Establishment and improving facilities for capacity building of relevant staff	Establishing the National Institute of Emergency Medicine”	Established National Institute of Emergency Medicine”	Developed Specialized carder in E- care	Completion of activity	31 <sup>st</sup> December 2017	MOH DDG (ET&R) DDG (MS II)
	Establishing a Simulation Centre	Established Simulation Centre		Completion of activity	31 <sup>st</sup> December 2017	MOH DDG (ET&R) DDG (MS II)
Development of a production plan for relevant A&E staff cadre	Preparation of a production plan for training of Emergency Physicians as a long term measure and to train existing relevant Specialists in trauma care as short term measure	Produced Emergency Care Physicians		Completion of activity	Up to date completion according to the planned schedule	MOH PGIM
	Preparation of a certificate or diploma level postgraduate training for all MOs involved in Emergency Care	Produced Diploma holders in Emergency care.	Highly skilled relevant staff ()	Completion of activity	Up to date completion according to the planned schedule	MOH PGIM (Prepared) National Institution of E.M.
	Training of other health care categories on similar basis in proportion	Trained Para Medical & Nursing staff		Completion of activity	Up to date completion according to the planned schedule	MOH (Prepared) National Institution of E.M.
Ensuring developed skills on A&E care of all medical officers	Incorporating concepts of Emergency Medicine to medical curriculum in view of providing basic emergency medicine training for all undergraduates	Introduced Emergency Medicine modules in medical curriculum		Completion of activity	Completion before 31 <sup>st</sup> October 2014	MOH Medical Faculties of all Universities
	Training all pre-interns on A&E care prior to recruitment				2014	National Institute of E.M. DDG (ET&R) DDG (MS II)
Ensuring developed skilling on A&R Care of all nursing officers.	Training all nursing officers on A& E care prepared to recruitments				2017	Nursing school D/Nursing DDG ET&R



**Strategic Objective V:**

Establishing pre hospital care services in each district as part of Accident and Emergency Care Management System

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Planning for a standard efficient pre-hospital care service	Selection of a suitable pre hospital care model for Sri Lanka based on results of pilot projects and expert group opinions	Designed pre-hospital care model		Completion of task	December 2017	DDG (MS) D (MS) Working group DDG (P)
	Developing a plan for the identified institutions / areas	Developed plans on pre-hospital care service		Completion of task	December 2017	DDG (P) DDG (MS) D (MS) Relevant heads of institutions
	Costing for the developed plans	Budgeted developed plans		Completion of task	31 <sup>st</sup> December 2013	DDG (ET&R) DDG (MS) D (MS) Relevant heads of institutions
Implementing pre-hospital care service through relevant sectors; relevant hospitals	Development of hospital based pre-hospital and retrieval teams based on international standards in stages	Developed hospital based pre-hospital care teams / retrieval teams		Completion of task	25% completion before 2017	Ministry of Health Relevant other authorities such as Armed Forces Police Fire Brigade SLRC/ ST JOHNS AMBULANCE
	Providing infrastructure / staff for such teams	Provided infrastructure / staff based on need		Completion of task	25% completion before 2017	MOH Relevant other authorities
	Conducting regional training programmes on pre hospital care service for relevant staff	Conducted regional training programmes		Completion of task	100% completion before 31. 12. 2014	MOH DDG (ET&R)/ DDG (MSII) Relevant other authorities
Implementing pre-hospital care service through	Advocacy for and coordination with relevant other authorities	Completed advocacy programmes		Number of districts covered	100% completion before 2017	MOH DDG (MS), D (MS) DDG (P)

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
relevant other organizations; municipalities Armed forces / Fire Brigade etc						
	Conducting training programmes on pre hospital care service for relevant staff	Conducted training programmes		Number of districts covered	100% completion before 2017	MOH DDG (MS), D (MS) DDG (ET&R) DDG (P) Relevant other authorities
	Provision of possible facilities and support for other organizations on PHC service	Provided facilities		Number of districts covered	100% completion 2017	MOH Relevant other authorities
Island wide implementation of PHC model	Establishment of at least retrieval teams covering island wide	Teams developed island wide	Successfully operating PHC service with island wide coverage	Number of districts covered	100% completion December 2017	MOH Relevant other authorities
	Monitoring through periodic reviews	Conducted reviews		Number of districts covered	100% completion December 2017	MOH Relevant other authorities

**Strategic Objective VI:**

Enhancement of public awareness and commitment towards successful utilization of A&E services and empowerment of public on prevention of trauma

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Enhancement of public awareness and commitment towards successful utilization of A&E services	Development of a communication strategy on A & E services for public specially for target groups; school children, occupational groups and others using all selected methods	Developed communication strategy		Completion of the task	Completion before December 2017	MOH DDG (MS)/D (MS) DDG (PHS I) DDG (NCD)
	Costing of the communication strategy	Finalized cost estimate		Completion of the task	Completion before December 2017	MOH DDG (MS) DDG (PHS I) DDG (NCD) D (MS) D (HEB)
	Identification of a suitable source of funding.	Identified source of funds		Completion of the task	Completion before December 2017	MOH DDG (PHS I) DDG (NCD) DDG (MS) D (MS)/D (HEB)
	Implementation of the communication strategy island wide in stages for all relevant categories of public	Implemented communication strategy		Completion of the task	Up to date completion of the schedule	MOH DDG (MS) DDG (PHS I) DDG (NCD) D (MS) /D (HEB)
Introducing measures for community empowerment	Incorporating basic concepts of emergency medicine and First aids in school curriculum	Introduced basic A&E modules in school curriculum		Completion of the task	Completion before December 2017	MOH DDG (MS) DDG (PHS I) DDG (NCD) D (MS) /D (HEB) D (FHB) Ministry of Education

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Introducing measures for community empowerment	Incorporating basic concepts of emergency medicine and First aids in school curriculum	Introduced basic A&E modules in school curriculum		Completion of the task	Completion before December 2017	MOH DDG (MS) DDG (PHS I) DDG (NCD) D (MS) /D (HEB) D (FHB) Ministry of Education
	Improving knowledge of public on first aids through mass media training programme	Medicine and First aids Developed mass media training programme		Completion of the task	Completion before December 2017	MOH DDG (MS) DDG (PHS I) D(MS) DDG (WCD) D (HEB)

#### Strategic Objective VII:

Enhancement of patients' and public satisfaction through quality improvement of A&E care service

Strategy	Activity	Expected Outputs	Expected Outcome	Indicator	Target	Responsibility
Development and implementation of a quality assurance programme on A&E as a part of the National Health Excellency Programme	Introduction of set of technical and service quality indicators	Introduced quality assurance programme with set of indicators	Patient and public satisfaction  Minimized mortality in Emergency care	Completion of task	Completion before  December 2017	MoH  Relevant other authorities D/ Quality & safety  DDG (MS)
	Introduction of benchmarking through liaison with advanced center of excellence in the world	Introduced benchmark	Quality improvement through benchmark	Completion of task	Completion before  2017	MoH  Relevant other authorities D/ Quality & safety  DDG (MS)
	Introduction of monitoring mechanism for quality improvement	Achieved criteria	Improved quality	Efficiency of quality audit	Regular audit	MoH  Relevant other authorities D/ Quality & safety  DDG (MS)

**Strategic Objective VIII:**

Monitoring the implementation of developed Accident and Emergency Care Management System in the country through establishment of management information system related to A&E services

Strategy	Activity	Expected Out-puts	Expected Out-come	Indicator	Target	Responsibility
Establishment of management information system on A&E	Developing of a comprehensive web based data base and populated from each institutional level	Established database		Completion of the task	Completion before 30 <sup>th</sup> April 2014	MoH DDG (MS) D (MS) DDG (P) D (INF)
	Establishment of networking of all institutions	Established institutional network		Completion of the task	Completion before 30 <sup>th</sup> April 2017	MoH DDG (MS) DDG (P) D (MS) D (INF)
Monitoring and evaluation of the Accident and Emergency Care system in the country	Development of indicators for monitoring of A&E service at institutional level	Institutional reviews		Periodic review	Regular monthly review	Heads of Institutions
	Development of suitable M&E Plan with monitoring tools and indicators	Developed M&E plan		Completion of the task	Completion before 31 <sup>st</sup> December 2017	MoH DDG (MS) DDG (P) D (MS) D (INF)
	Conduction of Biannual review of A & E system in the country.	National review according to the M&E plan		Periodic review	Regular quarterly review	MoH DDG (MS) DDG (P) D (MS) D (INF) Heads of Institutions
	Provision of feed back based on information of review	Successful timely feed back		Efficiency of feed back	Regular feed back	MoH DDG (MS) DDG (P) D (MS) D (INF) Heads of Institutions

**Strategic Objective IX:**

Enhancing the researches on Accident and Emergency Care

Strategy	Activity	Expected Out-puts	Expected Out-come	Indicator	Target	Responsibility
Promotion of researches on A&E care	Defining areas on which need researches on A&E	Defined research agenda	Development of research culture  Evidence based A&E care service improvement	Completion of activity	Completion before 31 <sup>st</sup> August 2017	MoH D (Research) DDG (MS) DDG (ET&R) Academic bodies
	Facilitating researchers who conduct studies in A&E	Motivated researchers		No of researches facilitated per year		MoH D (Research) DDG (MS) DDG (ET&R)
	Coordination for funding agencies	Coordinated funding sources		No of researchers coordinated per year		MoH D (R) DDG (MS) DDG (ET&R)
	Planning and conducting research activities at each level institutions	Conducted researches as planned		No of researchers conducted per year in each level		MoH DDG (MS) DDG (ET&R) Heads of Institutions
Promotion of researches on A&E through other institutions	Promotion through PGIM	Researches promoted through PGIM		No of researchers promoted per year		MoH DDG (MS) D (R) DDG (ET&R) PGIM
	Facilitating researchers who conduct studies in A&E	Motivated researchers		No of researchers facilitated per year		MoH DDG (MS) D (R) DDG (ET&R) PGIM D(MRI)