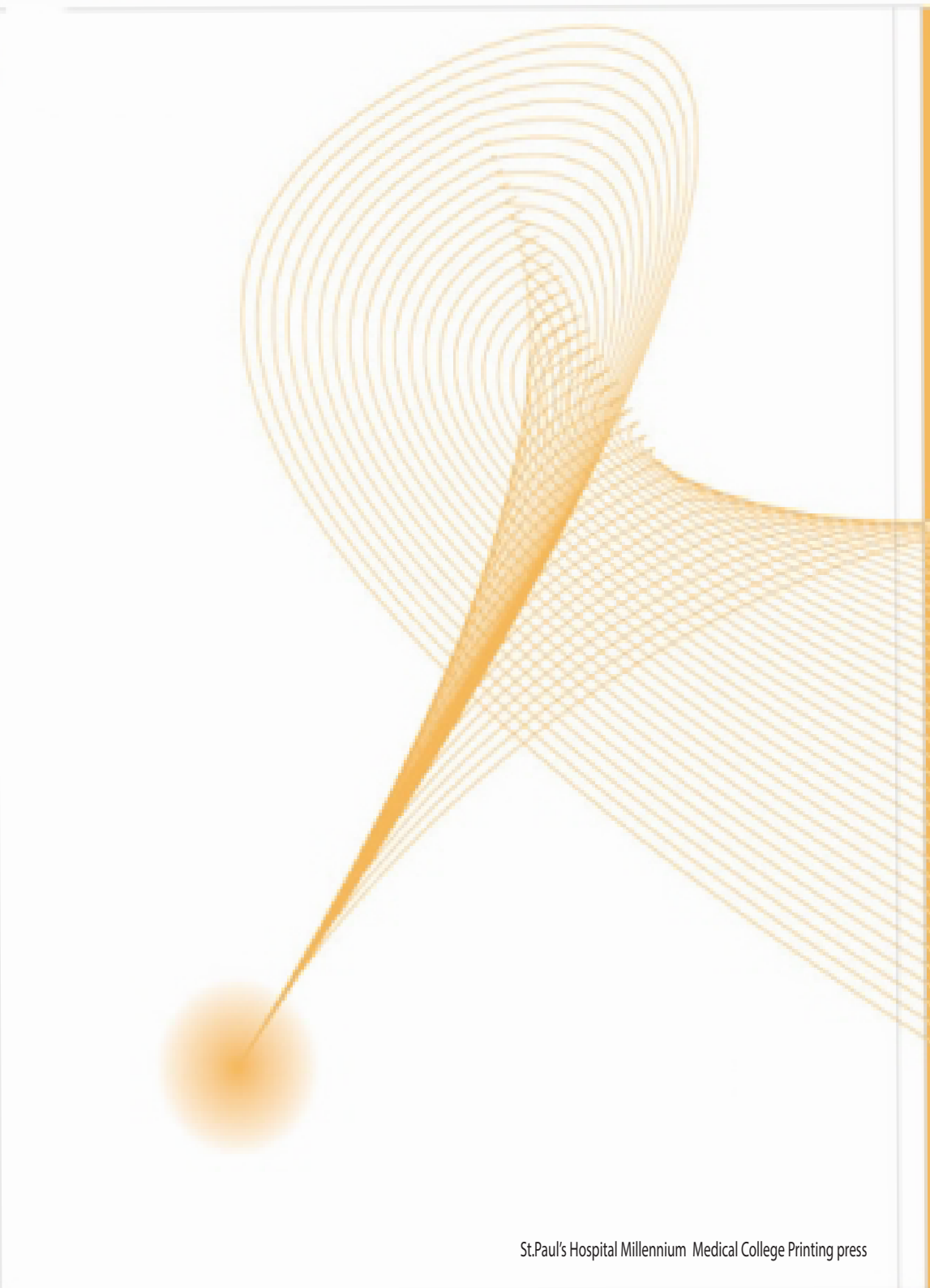

Federal Democratic Republic of Ethiopia
Ministry of Health

ICU Admission & Discharge Protocol

EMERGENCY AND CRITICAL CARE DIRECTORATE
May 2018

St.Paul's Hospital Millennium Medical College Printing press

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ACKNOWLEDGEMENTS

The Federal Ministry of Health would like to acknowledge the following individuals and organizations in technical working groups and for their contribution to the workshop and in order to the complete this protocol.

Name	Organization
1. Dr. Assefu W/Tsadik	AAU- Black lion hospital
2. Dr. Aklilu Azazh	AAU- Black lion hospital
3. Dr. Amsalu Bekele	AAU- Black lion hospital
4. Dr. Rediet Shimeles	Ethiopian society of Anesthesiologists Association
5. Dr. Yewondsone Tadesse	AAU- Black lion hospital
6. Dr. Tewodros Haile	AAU- Black lion hospital
7. Dr. Tigist Bacha	AAU- Black lion hospital
8. Dr. Ishmael Shemsdin	St. Paul Hospital
9. Dr. Tola Bayisa	St. Paul Hospital
10. Ato Tolosa Dida	St. Paul Hospital
11. Dr. Abraham Endeshaw	FMOH- MSD
12. Dr. Desalegn Tigabu	FMOH-MSD
13. Dr. Helena Hailu	FMOH- MSD
14. Dr. Feven Girma	FMOH-MSD
15. Sr. Emebet Teshager	FMOH-MSD
16. Sr. Fatuma Ibrahim	FMOH-MSD
17. Tenaye Demissie	FMOH-MSD
18. Dr. Nicola Ayers	FMOH- Clinical Service Directorate
19 . Yenegeta Walelign	FMOH-MSD
20. Fekadu Yadeta	FMOH-MSD

Contents

Annex- 3 ICU admission decision making consultation sheet

ICU Consultation

1. ☐ Reassess
2. ☐ Resuscitation
3. ☐ Trauma
4. ☐ Opinion

Location

1. ☐ Emergency
2. ☐ Elective
3. ☐ Ward
4. ☐ Other ICU same hospital
5. ☐ Other hospital
6. ☐ Other hospital ICU

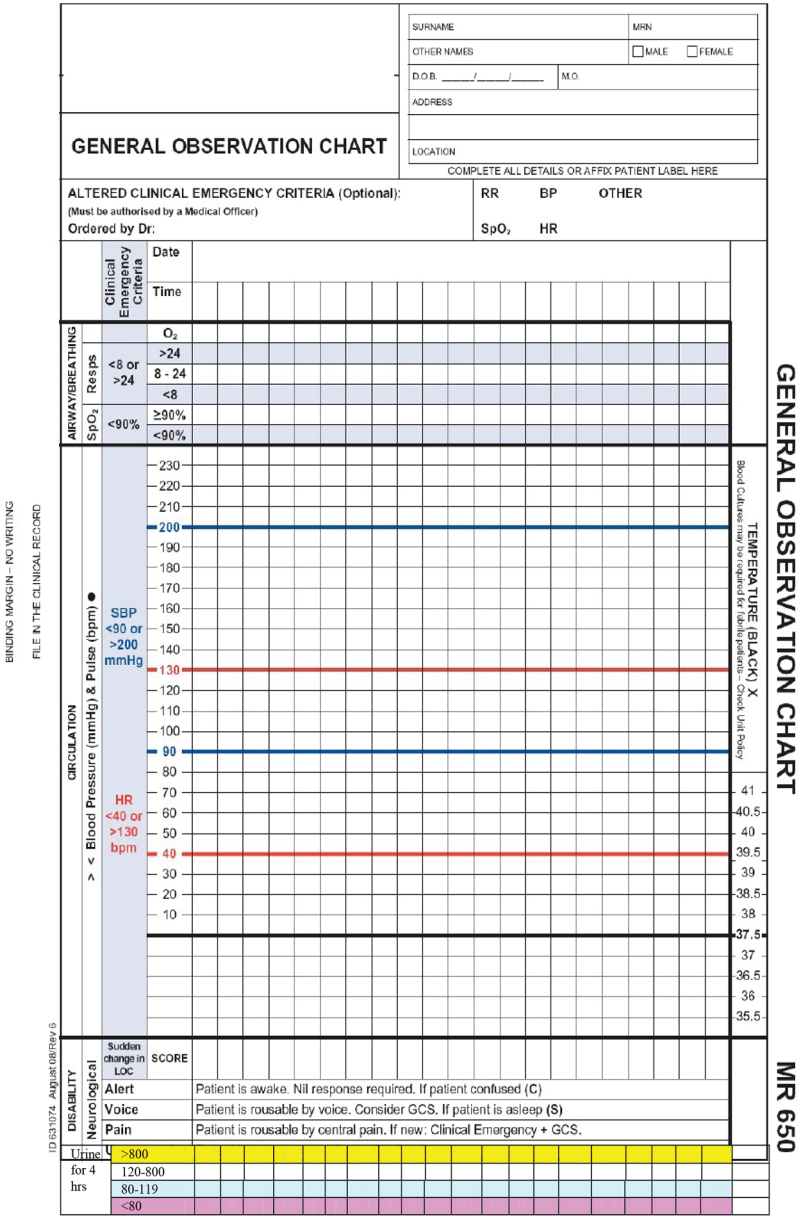
Premorbid 1. Dependent 2. Independent 3. Partial dependant Problems

ICU decision
1. ☐ Admit to ICU
2. ☐ Not for ICU admission, consult again if required
3. ☐ ICU admission inappropriate, unlikely to benefit
4. ☐ Other (details):----------

Triage priority
1. ☐ . Need ICU treatment
2. ☐ Need close monitoring
3. ☐ Poor prognosis
4. ☐ Stable
5. ☐ Treatment irreversible illness

Date:----------
Decision Time: ----------
Name: ----------
Senior:

Annex-2 General observation chart



Acronyms

AAU-FM	Addis Ababa University Faculty of Medicine
APH	Ante Partum Hemorrhage
ARDS	Acute Respiratory Distress Syndrome
CCANNI	Critical Care Network Northern Ireland
CICU	Common Intensive Care Unit
CVP	Central Venous Pressure
DIC	Disseminated Intravascular Coagulation
ECMO	Extra Corporeal Membrane Oxygenation
EMSS	Emergency Medical Service System
ERCP	Endoscopic Retrograde Cholangio Pancreatography
ESA A	Ethiopian society of Anesthesiologists Association
FMHACA	Food ,Medicine and Health care Adminstration and control Authorty
FMOH	Federal Ministry of Health
HSDP	Health System Development Program
HSTP	Health Sector Transformation Plan
ICU	Intensive Care Unit
ICP	Intra Cranial Pressure
NSTEMI	Non ST Segment Elevated Myocardial Infarction
PPH	Post Partum Hemorrhage
STEMI	ST Segment Elevated Myocardial Infarction
SOP	Standard Operational Procedure
V/S	Vital Sign

1.Introduction

An Intensive Care Unit (ICU) is a hospital facility for care of critically ill patients at a more intensive level than is needed by other patients. In many developed countries, it is usually staffed by specialized personnel & the unit also contains various kinds of monitors & life support equipment that can sustain life.

The patient population in ICU may present with a large variety of pathologies but shares the potential reversibility of one or more threatened vital functions.

Appropriate utilization of Intensive care unit (ICU) resources is an important issue in poor resource settings like our country where there is a national struggle to contain health expenditure.

Generally, ICU uses 8% of the total hospital budget, but in countries like USA it consumes14-20% of total hospital budget.

Due to the rapid urbanization, motorization, industrialization, and rapid population growth, the Ethiopia health sector is facing a double burden of diseases, although infectious diseases still account for the major part of the burden. Even though the medical care facilities are progressively growing in number and in capacity, obtaining timely and optimal emergency and critical care has been practically difficult. The Emergency Medical Service System (EMSS) as a system, and acute care medical practices, are found in rudimentary state. Due to this situation, patients with acute illness, mothers with complicated delivery and victims of different accidents have been managed sub-optimally. Due to such problems, morbidity and mortality associated with accidents, acute illnesses and a complicated delivery are high. To decrease such mortality and morbidities the FMOH has been in the process of strengthening EMSS and acute care units or intensive care units by providing necessary training, equipment, different operational guidelines and protocols.

13. Annexed

Annex.1- ICU colour coded ICU triage

	1 Red resuscitation (0 min)	2 Orange Urgent (15 min)	3 Yellow less Urgent (60 min)	4 green not urgent (180 min)
A	Obstructed airway stridor	Threatened airway		
B	SPO2 <80 RR>35 or <8	SPO2: 80-90 RR:31-35	SPO2: 90-94 RR: 26-30	SPO2: >95 RR: 26-30
C	HR>130 BPsys <80	HR; 121-130 HR<40 BTsys: 80-89	HR; 111-120 HR:40 -49	HR; 50-110
	GCS ≤8	GCS: 9-13	GCS= 14	GCS= 15
		Tp>40 Tp<32	Tp: 38.1-40.0 Tp: 32-34	Tp: 34.1-38.0

12. SUMMARY

The Intensive Care Unit can provide efficient and effective care to the critically ill patients by implementing well thought out admission and discharge criteria and procedures. Not all hospitals will develop their ICU facilities in the same way, with the same competencies and identical structures and equipment; nevertheless they have to fulfill the minimum national standards and operate based on national adm ission and discharge criteria.

All facilities should develop their own standard operational procedures (SOP) for smooth and efficient management process of critically ill patients after involving all concerned departments, liaison office, inpatient section head, matron, emergency services directorate and other concerned bodies.

The success in this strategic theme will be measured by increased Knowledge, Attitude & Practice of the community including utilization of services; According to the national regulatory standards for general and specialized hospitals, a general hospital should have a well-staffed and equipped ICU set-up which addreses the needs of the patients. FMHCA has also standardized number and qualification of staff in ICU as well as the necessary equipment required.

The current challenge of not having an admission and discharge criteria protocol, lead to unnecessary or inappropriate admissions and to the ICUS Having. Critical patients' admission and discharge criteria is crucial for an efficient of useing ICU. Admission and discharge criteria should also recognize patient's autonomy, including advanced directives, living wills, or durable powers of attorney for health care decisions. It also should indicate who can admit patients to the ICU. Specification credentialing procedures should be in place.

Through well-organized Emergeng units for early recognition and timely effective intervention, and through well prepared and equipped ICU or acute care units with basic equipment and by appropriate utilization of Intensive care unit (ICU), the critically ill patients survival rate will be improved The protocol proposed here provides models which ICUs may use in formulating admission and discharge criteria.

2.Definition

An Intensive Care Unit (ICU) is a specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management and monitoring of patients with life threatening conditions. It provides special expertise and the facilities for the support of vital functions and uses the skills of medical, nursing and other personnel experienced in the management of these problems. It encompasses all areas that provide Level 2 (high dependency) and/or Level 3 (intensive care) care as defined by the Intensive Care Society document Levels of Critical Care for Adult Patients (2009).

Multidisciplinary rounds are a patient-centered model of care, emphasizing safety and Efficiency, that enables all members of the team caring for patients to offer individual expertise and contribute to patient care in a concerted fashion.

3.Scope

This protocol provides guide for all health professionals who play a role in the admission and discharge of patients from intensive care units.

4.Rationale

Admissions to critical care unit are often unplanned. Immediate access to resuscitation and critical care is fundamental in the management of many life threatening disease conditions. Delayed admission to intensive care is associated with a significant increase in mortality. Lack of access to critical care management has been identified as a major contributor to post surgical mortality.

Any patient in hospital may become high risk for suden deterioration However, the recognition of acute illness may be delayed or its subsequent management may be inappropriate. This may result in late referral and/or avoidable admissions to critical care, and may lead to prolonged critical care stay and increased morbidity and mortality. Patients in the ICU will be evaluated and considered for discharge based on the reversal of the disease process or resolution of the unstable physiologic condition that prompted admission to the unit.

Therefore, a protocol for admitting and subsequently discharging critically ill patients is essential. In addition for continuous developments in critical care, periodic review of these criteria is necessary.

5.Objectives

5.1 The general objectives of this protocol are:

to ensure quality of care for acute critical conditions, through appropriate, transparent and timely admission and discharge of patients to or from critical care, and to bring accountability for the system and to facilitate the proper utilization of limited resources

9. Chronically mechanically ventilated patients whose critical illness has been reversed or resolved and who are other wise stable may be discharged to a designated patient care unit that routinely manages chronically ventilated patients, when applicable, or to home;
10. Routine peritoneal or hemodialysis with resolution of critical illness not exceeding general patient care unit guidelines;
11. Patients with mature artificial airways (tracheostomies) who no longer require excessive suctioning;
12. Patient is vegetative or neurological recovery is not expected soon, but maintains his/her airway
13. The health care team and the patient's family, after careful assessment, determine that there is no benefit in keeping the patient in the ICU or that the course of treatment is medically futile.

11.Remark

- Cases to be admitted for the medico-legal issues and out of the protocols should be done only in consultation with ICU consultant and/ pertinent unit consultant.
- Any kind of feedback can be given to the director of ICU.
- Each Institution develops their own ICU SOP.

10.2 Discharge policy:

a) All discharges must be approved by the ICU consultant/ICU responsible physician.
b) A discharge summary must be completed in the case notes prior to discharge.
c) At discharge from ICU the patient (must) be immediately accepted by the ward treating team.
d) Primary/parent teams must be informed of all patient discharges and any potential or continuing problems.
e) If appropriate, limitation/non-escalation of treatment must be clearly documented and discussed with the parent/ primary team prior to discharge.

10.3 Transfer/Discharge Criteria:

Transfer/discharge will be based on the following criteria:

1. Stable hemodynamic parameters;
2. Stable respiratory status (patient extubated with stable VS, AND arterial blood gases if available) and airway patency;
3. Minimal oxygen requirements that do not exceed patient care unit guidelines;
4. Intravenous inotropic support, vasodilators, and anti arrhythmic drugs are no longer required or, when applicable, low doses of these medications can be administered safely in otherwise stable patients in a designated patient care unit;
5. Cardiac dysrhythmias are controlled;
6. Intracranial pressure monitoring equipment has been removed;
7. Neurologic stability with control of seizures;
8. Removal of all hemodynamic monitoring catheters;

5.2 The Specific Objectives of this Protocolare:

to aid physicians and nursing staff in determining patient appropriateness for Adult ICU admission and discharge.
to decrease significant delayed admission to intensive care.
to admit patients to the intensive care units based on clinically based criteria.
to improve ICU bed utilization by addressing overflow placement of ICU patients.
to coordinate appropriate patient discharge from the ICU with relevant units.

6.ICU Setting

ICU should be organized in health institutions based on their capacity, human resources, facility and equipment as FMHACA standards;

1. ICU should be organized in a health institution that could provide the necessary services and it should be located so it is easily accessible to all departments and laboratory, with adequate spaces, and outlet.
2. Health institution/hospitals that provide general service may have one or more ICU with different levels of care depending on the facilities, at least one of which must be a common ICU. Specialized hospitals on the other hand can have specialized ICU, human resources and equipments available at the institution.
3. The ICU system may be open or closed depending on institutional capacity and preference.
4. The ICUs may be common or specialized, depending on institutional need and capacity. Common ICUs are recommended for most of the general hospitals.
5. A physician director must be appointed, who can give clinical, administrative and educational direction to the ICU. The physician director could be an intensivist, pulmonary critical care specialist, anesthesiologist, emergency medicine specialist or a physician

trained in providing critical care. The director should assume responsibility for ensuring quality, safety, and appropriateness of care in the ICU. The ultimate authority for admission, discharge and triage rests with the ICU director or delegated consultant in charge.

6. There should be a multi professional ICU team/ committee. The team should meet on a regular basis to identify and solve problems through quality assurance and continuous quality improvement activities. The team shall comprise representative from the departments, ICU director, head nurse, pharmacist, dietitian, CEO, and hospital director. The committee will be chaired by hospital director and the ICU director will be the secretary.
7. ICU should be staffed with appropriately trained and skilled staff and might include intensivists, pulmonary critical care specialists, emergency specialists, trained physicians and nurses, physiotherapists and clinical pharmacists.

8. A national ICU training curriculum for physicians and nurses should be developed and delivered intensively.

9. ICU should have a regular performance review.

A. the performance evaluation and review should include its admission, and discharge guidelines. It should be done by a multi professional ICU committee.

B. A database to track admissions, outcomes and other variables should be established.

C. A mechanism to review requested admissions that were denied should be in place to assure the appropriateness of both guidelines and decision making process.

5. Burns covering >10% of body surface (institutions with burn units only; institutions without such units will have transfer policy to cover such patients)

6. Anaphylaxis

8.6.12 Obstetric

1. Medical conditions complicating pregnancy
2. Severe pregnancy induced hypertension/eclampsia
3. Obstetric hemorrhage with severe hemodynamic instability (APH, PPH)
4. Amniotic fluid embolism
5. Septic abortion with severe hemodynamic instability.

9.Special Intensive Technologic Needs

Conditions that necessitate the application of special technologic needs, monitoring, complex intervention, or treatment including medications associated with the disease that exceed individual patient care unit policy limitations.

10. DISCHARGE

10.1 DISCHARGE/TRANSFER POLICY

Patients in the ICU will be evaluated and considered for discharge based on the reversal of the indication for admission disease or resolution of the unstable physiologic condition that prompted admission to the unit, and it is determined that the need for complex intervention exceeding general patient care unit capabilities is no longer needed.

8.6.9 Acute poisoning

(With altered mental status, systemic complications or/&deranged vital signs)

1. Insecticide poisoning e.g. organophosphate poisoning
2. Snake bite poisoning (if antivenom is available)
3. Carbon monoxide poisoning
4. Drug overdose (e.g. phenobarbitone poisoning, antidepressant poisoning etc.)

8.6.10 Surgical

1. High risk patients in the peri-operative period
2. Post-operative patients requiring continuous hemodynamic monitoring/ ventilator support, usually following:

o Vascular surgery
o Thoracic surgery
o Airway surgery
o Craniofacial surgery
o Major orthopedic and spine surgery
o General surgery with major blood loss/ fluid shift
o Neurosurgical procedures

3. Post organ transplant

8.6.11 Multisystem and Other

Patients with life-threatening or unstable multisystem disease; Conditions include, but are not limited to:

1. Toxic ingestions and drug overdose with potential acute decomposition of major organ systems;
2. Multiple organ dysfunction syndrome;
3. Suspected or documented malignant hyperthermia;
4. Electrical or other household or environmental (e.g., lightning) injuries;

7. Category of ICU Care

7.1 Level of care I (LOC-I):/ICU care in Emergency Department

- Are where close monitoring, resuscitation, and short term ventilation for(less than) (<)24hrs has to be performed. Can be organized in emergency departments to resuscitate and monitor patients till proper referral/transfer for definitive care and specialist care is arranged.

- Minimum requirement:

- Human resources:

➢ Trained physician and nurses. Nurse: patient ratio should be 1:1

- Medical equipment:

➢ Oxygen sources, oxygen regulators, chest tube set, pig tails, tracheotomy sets, cardiac monitors, suction machines, Non invasive ventilators, intubation kits, different masks, cardio verter , defibrillator, nebulizer, infusion pumps, ECG machine, pulse oxymeters, LP set, X-ray view box, blood warmer, suture set, dressing set, glucometer

7.2 Level OF Care II (LOC-II): Can be located in general hospital ICU

- Undertake more prolonged ventilation. Must have senior specialists, general practitioners and emergency and critical care trained nurses, biomedical technicians and a dietician. Have access to pathology, radiology, etc.

- Minimum requirement:

-Human resources:

Anesthesiologist or intensivists or pulmonary critical care or emergency medicine specialist or trained physician and nurses, Nurse: patient ratio should be 1:1

- Medical equipment:
  - All of the LOC 1 equipment and ventilators, portable X-ray, telemetry, central monitors, ultrasound with Doppler and cardiac probes, capnometer, ABG analyzer, ICU beds, glidioscope , Pericardiocentesis set, other consumables

7.3 Level OF CARE III (LOC-III): Located in a major tertiary hospital

It should provide all aspects of intensive care required. All complex procedures should be undertaken. Specialist intensivist or physician anesthesiologist, Pulmonary & critical care specialist, nurses, therapists, support of complex investigations and specialists from other disciplines Should be available at all times.

Minimum requirement:

- Human resources

➢ Anesthesiologist, intensivists, pulmonary critical care, emergency medicine specialist, trained physician and nurses plus physiotherapist, clinical pharmacist, nutritionist , Nurse: patient ratio should be 1:1

- Medical equipment:
  - All of LOC 1 and 2 plus special care ECMO (optional), renal replacement therapy, bronchoscope, esophageal tubes (Minnesota and Black More tubes), intracranial monitors, CVP catheter, arterial lines, feeding tubes.

8. Admission

8.1 General principle of ICU admission

- ICU beds are very few in number in any country. However, the number of patients who compete for ICU admission & care is very high. For this reason, admission of patients to the ICU must be based on a guideline.

8.6.5 Hematology

1. Severe coagulopathy and/ or bleeding diasthesis
2. Severe anemia resulting in haemodynamic and/or respiratory compromise
3. Tumors or masses compressing or threatening to compress vital vessels, organs, or airway
4. Disseminated Intravascular Coagulation (DIC)

8.6.6 Endocrine

1. Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status

2. Severe metabolic acidotic states
3. Thyroid storm or myxedema coma with haemodynamic instability
4. Hyperosmolar state with coma and/or haemodynamic instability
5. Adrenal crises with haemodynamic instability
6. Pituitary apoplexy with neurohemodynamic instability
7. Other severe electrolyte abnormalities, such as:

- Hypo or hyperkalemia with dysrhythmias or muscular weakness
- Severe hypo or hypernatremia with seizures, altered mental status
- Severe hypercalcemia with altered mental status, requiring haemodynamic monitoring.

8.6.7 Gastrointestinal

1. Life threatening gastrointestinal bleeding
2. Acute hepatic failure leading to coma, haemodynamic instability
3. Severe acute pancreatitis
4. After emergency/Elective procedure, Endoscopy/Colonoscopy/ERCP patient arrest

8.6.8 Renal

1. Acute renal failure
2. Requirement for acute renal replacement therapies in an unstable patient
3. Acute rhabdomyolysis with renal insufficiency

5. Upper airway obstruction
6. after emergency/Elective procedure, Bronchoscopy patient arrest

8.6.2 Cardiovascular

1. Shock states
2. Life-threatening dysrhythmias
3. Dissecting aortic aneurysms
4. Hypertensive emergencies
5. Acute Coronary Syndrome (Unstable angina, NSTEMI, STEMI)
6. Acute pulmonary edema
7. Acute congestive heart failure with respiratory failure and/or requiring hemodynamic support
8. Post cardiac arrest
9. Cardiac tamponade or constriction with hemodynamic instability
10. Complete heart block
11. Need for continuous invasive monitoring of cardiovascular system (arterial pressure, central venous pressure, cardiac output)

8.6.3 Infectious diseases

1. Complicated falciparum malaria
2. Relapsing fever with severe complication
3. Severe tetanus
4. Severe sepsis with multi-organ failure.

8.6.4 Neurological

1. Severe head trauma
2. Status epilepticus
3. Meningitis with altered mental status or respiratory compromise
4. Acutely altered sensorium with the potential for airway compromise
5. Progressive neuromuscular dysfunction requiring respiratory support and / or cardiovascular monitoring (myasthenia gravis, Gullain-Barre syndrome)
6. Acute spinal cord compression or impending compression;
7. Acute subarachnoid hemorrhage
8. Acute stroke with raised ICP
9. Coma: metabolic, toxic, or anoxic

- Rigid rules to determine admission to ICU are destined to fail because every case must be evaluated on its own merits. Nevertheless, broad guidelines are required to avoid unnecessary suffering in the ICU & the waste of valuable resources caused by admitting patients who have nothing to gain from ICU care because they either are well, have no realistic prospect of recovery or the required treatment is not available.
- The existence of an empty bed doesn't justify admission of any patient to the ICU.

- Admission should be allowed for those who have a realistic prospect of recovery & are likely t o have a post-recovery quality of life that can be valued by the patient or relatives. The wishes of the patient (if known) or relatives should also be respected.

- If the appropriateness of admission remains uncertain, the patient should be given the benefit of the doubt & the indication for continuing treatment at the ICU must be reviewed through time. In our setup the following condition should be considered before we admit a patient to ICU (policy statement)

➢ Since the hospital has limited beds and ventilator machines candidates for admission should be with reversible/treatable underlining disease.

➢ The state of acute illness during the request for admission has to be potentially reversible.

8.2 Source of Admission to ICU

Patients who are critically ill may be admitted to the ICU from;

➢ Emergency department,
➢ Operating Theater and Procedure room
➢ In-Patient Wards
➢ Labor ward

➢ Other department of the hospital or other hospital for better care with appropriate communication with ICU director.

8.3 Admission Policy

Admission of a patient to the ICU must be decided by ICU Director/Consultant in Charge/Physician in charge on duty. If the case is difficult to make a decision by Physician in Charge,ICU director will decide the admission. If a decision is made to admit a patient to the ICU, the nurses must be informed beforehand to get prepared. Before accepting referral for admission to ICU from other hospital, there should be early communication and once decision is made, the liaison office should be informed for facilitation to transfer. If many patients are competing for admission to the ICU, the following five questions must always be addressed so that one may make an appropriate decision.

Factors that must be considered in the assessment of a possible admission to the ICU:

1. Primary diagnosis & the other active medical problems
2. Prognosis of the underlying condition/ is recovery still possible?
3. Age, life expectancy & expected quality of life post discharge
4. Wishes of the patient &/ or relatives
5. Availability of the required treatment, technology & professiona

8.4 Admission Criteria

The ICU admission decision may be based on two models utilizing prioritizing and diagnosis. These admission criteria are meant to guide the physician and does not replace the physician's judgment.

8.5 Prioritization Model for ICU Admission

This system defines those that will benefit most from the ICU (Priority 1) to those that will not benefit at all (Priority 4) from ICU admission.

8.5.1 Priority 1 – Unstable

Requires intensive treatment and monitoring that cannot be provided outside of the Critical care unit. E.g. Respiratory support, continuous vasoactive drug infusions, etc. Admission should take place as soon as possible.

8.5.2 Priority 2 – High risk of sudden deterioration.

Requires invasive monitoring and may potentially need immediate intervention. E.g. a patient with chronic co-morbid conditions who develops acute severe medical or surgical illness.

8.5.3 Priority 3 – Reduced likelihood for recovery due to underlying illness.

May receive intensive treatment to relieve acute illness but limits on therapeutic intervention may be set, such as no intubation or cardiopulmonary resuscitation.

8.5.4 Priority 4 – Little or no anticipated benefit (too well to benefit)

from critical care or patients with terminal and irreversible illness (too sick to benefit from ICU care) facing imminent death.
Required care and monitoring can be administered in a ward setting. Admission of this type of patient to the ICU is generally not considered appropriate.

8.6 Diagnosis Model for ICU Admission

This model uses specific conditions or diseases to determine appropriateness of ICU admission. Patients with the following conditions are candidates for admission to the ICU. The following conditions include, but are not limited to:

8.6.1 Respiratory

1. Acute respiratory failure requiring ventilatory support e.g. ARDS
2. Acute pulmonary embolism with haemodynamic instability
3. Massive haemoptysis
4. Pneumothorax (with hemodynamic instability)