

Annexure – B

**GOVERNMENT OF ODISHA
HEALTH AND FAMILY WELFARE DEPARTMENT**



FINAL RESOLUTION
FOR STANDARDISED PROCEDURE FOR OPERATION OF ICU & CCU
2025

(In obedience to the direction of Hon'ble Supreme Court passed in C.A. No.8402/2016 & MA Diary No. 30408/24 in the case of **Asit Baran Mandal & Anr. Vs Dr. Rita Sinha, MBBS MS** dated 19.08.2025 and 18.09.2025 respectively)

**DIRECTORATE OF MEDICAL EDUCATION & TRAINING, ODISHA,
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FOREWORD

Government Odisha is keen in providing all health care starting from primary to the tertiary level, free of cost and zero out of pocket expenditure. For these standard operating procedures have been defined. Intensive care is required for critically ill patient with life threatening issues. To provide the intensive care in a seamless manner and to have a rationalise use of the ICUs an SOP was notified by the State Government in 2018.

In obedience to the direction of Hon'ble Supreme Court, passed in C.A. No.8402/2016 & MA Diary No. 30408/24 in the case of Asit Baran Mandal & Anr. Vs Dr. Rita Sinha, MBBS MS dated 19.08.2025 and 18.09.2025 respectively a State Level Regional Conference on ICU/CCU was held on physical mode on 29.10.2025 10.30 AM in the IMA House Bhubaneswar, Odisha, for preparation of a Standardised Procedure for Operation of ICU/CCU in Odisha.

Many doctors and consultants with representatives of all the stakeholders i.e., the representatives from teaching/non-teaching hospitals, the Directors and Additional Directors from all Directorate of Health Sciences, like Directorate of Health Services, Directorate of Medical Education and Training, Directorate of Public Health, Directorate of Family Welfare, Directorate of Blood Safety, State Medical Council, Corporate-run Hospitals, and experts having vast experience of managing ICUs/CCUs/trauma centres and emergency medical services etc., attended the Conference. After a brainstorming discussion and deliberations a Final Resolution was prepared for greater benefit of patients.

As desired this will be submitted to the Hon'ble Supreme Court for formation of a final Guidelines which will definitely help the needy patients.

It is my proud privilege to thank the team of officials of Health & Family Welfare Department notably the DMET Odisha, (Prof. S K Mishra), Addl DMET Odisha cum State Nodal Officer for Trauma and Burn, (Prof. U K Satapathy), Joint DMET (Prof. Roma Rattan), allt he staff of DMEG Odisha, all the participants, senior Critical Care Specialist who made the discussions and deliberation vibrant to come to the stage of preparation of Final Resolution.

(Aswathy S)

-FINAL RESOLUTION-

STANDARDISED PROCEDURE FOR OPERATION OF ICUS/CCUS
GOVERNMENT OF ODISHA

A. INTRODUCTION:

This document is intended to apply to adult general intensive care units. These guidelines set out the main issues to be considered when deciding which patients should be admitted in Intensive Care Units or High Dependency Units and the discharge from such units. The aim is to make the decision making processes more explicit. This may make a scope for efficient use of resources by excluding patients who are not ill enough to be placed in intensive care or those unlikely to benefit because they are too ill. While deciding the need for the intensive care the patient and/ or the patient's relatives or friend must be fully consulted, informed and their written consent to be obtained. The ensuing financial implication for such care must be clearly explained to patients or its relatives and the willingness is to be obtained in writing.

The post operative patients recovering from anaesthesia are to be nursed in a fully equipped recovery room. Such post operative patients requiring ventilation assistance may be put to intensive care.

Intensive care is the most cost effective when given early enough to prevent the development of multi organ system failure. These guidelines must be widely circulated including the staff involved in the intensive care units or high dependency units to ensure that the severely ill patients are identified and put to intensive care or high dependency care early so that maximum benefit and minimum morbidity is achieved at low cost.

B. DEFINITIONS

Intensive care may be broadly defined as service for patients with potentially recoverable conditions, who can benefit from more detailed observation and invasive treatment that can be provided safely than in an ordinary ward or high dependency area. It is usually reserved for patients with threatened or established organ failure, often arising as a result or complication of an acute illness or trauma, or as a predictable phase in a planned treatment programme. Intensive care represents the highest level of continuing patient care and treatment. It is distinguished from the care and treatment pertaining to a special procedure of limited duration such as a surgical operation, plasma exchange or haemodialysis, although it may involve such procedures.

High Dependency Care provides a level of care, intermediate between that in a general ward and intensive care unit. High dependency care monitors and supports patients with, or likely to develop, acute or chronic organ failure. High dependency care is preferred to Intensive care in cases of chronic impairment of an organ system sufficient to restrict daily activities (co-morbidity). Such High Dependency Units are placed adjacent to the Intensive Care Units.

C. GOAL:

The primary objective of intensive care is to facilitate the recovery of the patient by delivering specialized care to patients with life threatening issues. The return of a patient to an intermediate care ward, such as a high dependency unit (HDU) is only the first step in this progression. Intensive care must involve continuing supervision, care and treatment by doctors, nurses, physiotherapists, technicians, dieticians and others using strict protocols to minimise infections, complications and ensure speedy recovery.

D. ICU TEAM:

It comprises human resources who are dedicated, highly motivated and ready to work in stress situations for long periods of time. They must not only be qualified but also be adequately trained. The team shall consists of :

- Intensivist
- Resident doctors
- Nurses
- Respiratory therapists
- Nutritionist
- Physiotherapist
- Technicians (Dialysis, X-ray and computer)
- Biomedical Engineer
- Clinical Pharmacist
- Social worker or counselor
- Support staff like office clerk, cleaning staff (sweeper), Class IV (attendants) and security guards.
- Microbiologists (for Level III)

Eligibility for the Intensivist;

- i. Postgraduate qualification in Internal Medicine, Anaesthesia, Pulmonary Medicine, Emergency Medicine or General Surgery with either of the following:
- ii. An additional qualification in Intensive Care such as
 - a. DM Critical Care/Pulmonary Critical Care, or
DNB/FNB Critical Care (National Board of Examinations), or
Certificate Courses in Critical Care of the ISCCM (IDCCM and IFCCM), Post-Doctoral Fellowship in Critical Care (PDCC/Fellowship) from an NMC recognised University, or
equivalent qualifications from abroad such as the American Board Certification, Australian or New Zealand Fellowship (FANZCA or FFICANZCA), UK (CCT dual recognition), or equivalent from Canada
It may be optional for candidates of the ISCCM Certificate Course (CTCCM) who have been certified with a 3 year training programme in Intensive Care after M.B.B.S. to be recognised as Intensivists.
In addition, persons so qualified or trained must have at least two-years' experience in ICU (at least 50% time spent in the ICU).
 - b. In case of doctors not having the above-mentioned qualifications or training, they should have extensive experience in Intensive Care in India after M.B.B.S., quantified as at least three years' experience in ICU (at least 50% time spent in the ICU).

As per the load and severity of the ICU needs, the ICU is classified into Level I, Level II and Level III and the team (human resources) varies accordingly.

Level I ICU:—

- Ideal for District Head Quarter Hospitals and small Pvt. Nursing Homes.
- Bed strength 6-8
- ICU trained doctor-1 (preferably from Medicine, Pulmonary Medicine, Anaesthesiology or other surgical specialties who should have adequate training on Critical Care Medicine). He should be encouraged to do short training courses like FCCS (fundamental critical care support) or BASIC ICU Course.
- Resident doctors with **adequate training on Critical Care** : 1 (to work shift wise)
- Sister (ICU Trained) : 1 for 3 beds (to work shift wise)
- Computer person for Data Base : 1
- Cleaning staff : 1 (to work shift wise)
- Class IV (attendant) : 2 (to work shift wise)
- Security Guard : 1 (to work shift wise)
- Supported by clinical lab, imaging (X-ray and USG) backup, pharmacist and microbiological services to support.

Adequate training on critical care shall mean teaching on:

- Central Venous line and dialysis catheter insertion.
- Cardiopulmonary resuscitation
- Early recognition and intervention for Airway obstruction including endotracheal intubation.
- Early recognition and intervention for Circulatory instability
- General principles of intensive Care
- Prevention of Acute Life-Threatening Events in patients admitted in wards.
- Safe transfer of critically ill patients.

Level II ICU:—

- Ideal for Larger General Hospitals
- Bed strength 6-12
- Trained and Qualified Intensivists -1 (Designated as Director ICU) who spends more than 50% of his time in ICU.
- Resident doctors must be exposed to FCCS course /BASIC course/ Ventilation workshops and other updates : 1 (to work shift wise).
- Sister (ICU Trained) : 1 for 2 beds (to work shift wise).
- Computer person for Data Base : 1
- Cleaning staff : 2 (to work shift wise).
- Class IV (attendant) : 2 (to work shift wise).
- Security Guard : 1 (to work shift wise).
- Should be supported ideally by Cardiology and other super specialities of Medicine and Surgery.
- Microbiological services.

- Supported by clinical lab, imaging (X-ray, CT and MRI) backup, Blood bank (own/outsourced) and pharmacist support.

Level III ICU:—

- Ideal for Tertiary level hospitals (Medical Colleges and Teaching Hospitals) giving long term acute care of highest standard with intra and inter hospital transport facility available round 24 hours.
- Bed strength 10 to 16 or more with 1 or multiple ICUs as per requirement of the Institution.
- Professor (ICU In-charge) or Senior Consultant as Team Leader with adequate experience in ICU work and teaching.
- Associate Professor or Senior Consultant (doctor on 2nd call) with adequate experience in ICU work and teaching.
- Assistant Professors or Junior Consultant (doctor on 1st call) with adequate experience in ICU work and teaching: 1 for 10 beds (shift wise).
- Senior Residents (doctor on duty) with adequate experience in ICU work and teaching: 1 for 10 beds (shift wise).
- Junior Residents : 1 for 10 beds (shift wise) with 10% leave reserve.
- Sisters ICU Trained: 1 per 1 to work shift wise (in no circumstance the ratio should be <2 per 3).
- Nutritionist: 1
- Respiratory therapist :1
- Infection Control Nursing Officer: 1
- Physiotherapist: 1
- Biomedical engineers: 1
- X-ray Technician: 1 (to work shift wise)
- Dialysis technician: 1 (to work shift wise)
- Computer person for Data Base: 1
- Office Clerk : 1
- Cleaning staff : 2 (to work shift wise)
- Class IV (attendant): 2 (to work shift wise)
- Security Guard : 2 (to work shift wise)
- Should be supported ideally by Cardiology and other super specialties of Medicine and Surgery.
- Microbiological services through respective department.
- Supported by clinical lab, imaging (X-ray, CT and MRI must) backup, USG, 2D Eco Dialysis, Blood bank (own/outsourced) and pharmacist support.

E. POLICY:

1. Patients in need of emergency care are shifted to Intensive Care Unit and will depend upon the condition of cases. **This must exclude patients who are not ill enough to be placed in intensive care or those unlikely to benefit because they are too ill.**
2. It must be carefully judged by the referring consultant and the ICU doctor on the degree of possible benefit weighed against the risks of therapy and whether the patient has a reversible condition or not. Patients who can be expected to get substantial benefit from intensive care in terms of quality and length of life shall be admitted. When it is difficult to assess whether the patient will be benefited or not,

the patient can be admitted in ICU and condition of improvement is to be assessed continuously.

3. Patients in persistent vegetative state should be discouraged for admission in ICU. Interventional ventilation (elective ventilation) shall not be done in patients who are expected not to be benefited at all. Elective ventilation or mechanical ventilation for purpose of cadaveric organ transplantation is not permissible.
4. Patients with co-morbidity i.e. impairment of one or more organ systems lead to loss of physiological reserve. Such loss along with biological age makes recovery highly improbable as intensive care cannot replace the lost reserve and reverse the ill health. Hence before putting to intensive care the co-morbidity must be taken in to account.
5. Organ System support in ICU often defers death but does not always prevent death. Intensive care can infringe the dignity of the patient and where the outcome is poor; it increases the physical, mental and financial sufferings of the patient as well as the families. Hence these considerations must be well communicated to the patient/ patient's family, thoroughly discussed and willingness for continuation of the treatment in ICU must be obtained in writing with date and time.
6. Verbal or written statement of the patient or its relatives or friends against intensive care must be properly documented. The resulting outcome of improper resuscitation must be discussed with the patient's relatives. In cases where the wish of the patient is uncertain the treatment shall be provided instead of withholding treatment.
7. Patients with acutely life-threatening condition and with high dependency must be admitted to intensive care unit. The level of dependency may be quantified by Therapeutic Intervention Scoring System (TISS).
8. Visitors shall not be allowed in to ICU, except during visiting hours wherein restricted entry of one or two close relatives shall be permitted. In addition the near relative or attendant of the patient shall be briefed regarding the condition of the patient at regular intervals so that there will not be a feeling among the families that they are kept in dark.
9. Once the patients become normal, will be shifted to the wards and priority will be given to the new emergency patients. No patient once becomes stable shall be kept in ICU to reduce the unnecessary psychological and financial burden to the patient and families.
10. Regular infection control measures like cleaning of floors, work stations, etc to be done.
11. Periodical audit of the outcome of the intensive care must be done by estimating the Standard Mortality Ratio (SMR) i.e. the ratio of observed mortality and expected mortality before discharge from ICU. Intensive care units shall follow the quality assurance programme.
12. Patient shift should be accompanied by a doctor.

F. DIFFERENT ORGAN SYSTEM SUPPORTS THAT MAY BE PROVIDED:

1. Advanced Respiratory Support
 - a. Mechanical ventilator support excluding mask, continuous positive airways pressure (CPAP) or non-invasive (e.g. mask) ventilation.
 - b. Possibility of a sudden, precipitous deterioration in respiratory function requiring immediate tracheal intubation and mechanical ventilation.
2. Basic Respiratory Monitoring and Support for
 - a. The need for more than 40% oxygen via fixed performance mask.
 - b. The possibility of progressive deterioration to the point of needing advanced respiratory support.
 - c. The need for physiotherapy to clear secretions at least two-hourly, whether via a tracheostomy, a mini-tracheostomy, or in the absence of an artificial airway.
 - d. Patients recently extubated after a prolonged period of intubation and mechanical ventilation.
 - e. Patients who are intubated to protect the airway, but needing no ventilatory support and who are otherwise stable.
3. Circulatory Support
 - a. With vasoactive drugs to support arterial pressure or cardiac output.
 - b. For circulatory instability due to hypovolaemia from any cause and which is unresponsive to modest volume replacement. This will include, but not be limited to, post-surgical or gastrointestinal haemorrhage or haemorrhage related to a coagulopathy.
 - c. Patients resuscitated following cardiac arrest where intensive or high dependency care is considered appropriate.
4. Neurological Monitoring and Support
 - a. Central nervous system depression, from whatever cause, sufficient to prejudice the airway and protective reflexes.
 - b. Invasive neurological monitoring.
5. Renal Support
 - a. Acute renal replacement therapy (haemodialysis, haemofiltration, or haemodiafiltration).

G. ADMISSION & DISCHARGE CRITERIA:

1. Source of patients:

The main source of patients for intensive care are Casualty & Trauma Care unit (on emergency and unplanned), different wards in the hospital, operation theatres, other ICUs where required facilities are not available (elective and planned).

2. ICU triage:

All the patients must be properly judged as to whether it can be admitted to ICU or not. Such decision must be transparent and unbiased regardless of ethnic and socio economic status. Over triage is preferred to under triage. The triage policy shall be:

- a. Patients would be admitted or discharged strictly on their potential to benefit from ICU care. In an environment where ICU admissions are

rigorously screened for benefit, and discharge is ongoing and continuous, the need for triage is minimized.

- b. When large number of patients arrives triaging must be carefully done to discriminate who requires immediate ICU and who can be managed in a HDU. If the availability of ICU is less in comparison to number of patients, such patients can be referred to some other ICU in the same hospital or other hospital after getting consent from patient relatives.
- c. When all ICUs and step-down units are filled, the ICU In-charge shall have the responsibility and authority to admit/discharge patients from these units.
- d. Ethnic origin, race, sex, social status, sexual preference or financial status should never be considered in triage decisions. Triage decisions may be made without patient or surrogate consent, and can be made despite an anticipated untoward outcome.

3. Communication to patients or patient relatives before admission to ICU:

When admission to ICU is required the patient and its family shall be communicated regarding:

- a. Reason for intensive care
- b. Plan of management
- c. Expected course of treatment in ICU
- d. Risks & outcome
- e. Anticipated expenses
- f. Possible complications.

A written document as to the above, explained to patient shall be obtained.

4. Principles for Admission to ICU:

The following patients shall be admitted to ICU:

- a. Patients requiring or likely to require intense monitoring and therapy and advanced respiratory support (e.g. Intermittent Positive Pressure Ventilation)
- b. Patients requiring support of two or more organ systems and situations of sepsis.
- c. Patients with chronic impairment of one or more systems i.e. multi organ dysfunction (MOD) or multi organ failure (MOF) sufficient to restrict daily activities (co-morbidity) and who require support for an acute reversible failure of another organ system
- d. Patients needing Renal Replacement Therapy, patients with GCS <8 and shock, can be admitted to ICU.
- e. Criteria for admitting a patient to ICU should be based on organ failure and need for organ support or in anticipation of deterioration in the medical condition.

- (i) Altered level of consciousness of recent onset
- (ii) Hemodynamic instability (e.g., clinical features of shock, arrhythmias)
- (iii) Need for respiratory support (e.g. escalating oxygen requirement, de-novo respiratory failure requiring non-invasive ventilation, invasive mechanical ventilation, etc.)
- (iv) Patients with severe acute (or acute-on-chronic) illness requiring intensive monitoring and/or organ support
- (v) Any medical condition or disease with anticipation of deterioration
- (vi) Patients who have experienced any major intraoperative complication (e.g. cardiovascular or respiratory instability)
- (vii) Patients who have undergone major surgery, (e.g. thoracic, thoraco-abdominal, upper abdominal operations, trauma who require intensive monitoring or at a high risk of developing postoperative complications).
- (viii) Situations where patients require extensive monitoring

5. Criteria for not to admit in ICU : The following Critically ill Patients should not be admitted to ICU:

- (i) Patient's or next-of-kin informed refusal to be admitted in ICU
- (ii) Any disease with a treatment limitation plan
- (iii) Anyone with a living will or advanced directive against ICU care
- (iv) Terminally ill patients with a medical judgement of futility
- (v) Low priority criteria in case of pandemic or disaster situation where there is resource limitation (e.g. bed, workforce, equipment).

6. The minimum monitoring of patients required while awaiting an ICU bed include the following:

- (i) Blood pressure (continuous/intermittent)
- (ii) Clinical monitoring (e.g., pulse rate, respiratory rate, breathing pattern, etc.)
- (iii) Heart rate (continuous/intermittent)
- (iv) Oxygen saturation - SpO2 (continuous/intermittent)
- (v) Capillary refill time
- (vi) Urine Output (continuous/intermittent)
- (vii) Neurological status e.g. Glasgow Coma Scale (GCS), Alert Verbal Pain Unresponsive (AVPU) scale etc.
- (viii) Intermittent temperature monitoring
- (ix) Blood sugar

7. Flow chart for decision for admission to ICU:

At all stages of decision, discussion with the patient or its relatives should be done and preferably recorded.

- a. Is the illness reversible? --- No --- Continue in Ward
- b. Yes
- c. Is there significant co-morbidity--- Yes --- Continue in Ward
- d. No
- e. Has the patient not preferred ICU --- Yes --- Continue in Ward
- f. No

- g. Does the patient need advanced respiratory support? --- Yes --- Put to Intensive care
- h. Does the patient need acute organ support? --- No –
- i. Does the patient need observation or monitoring in ward with safety? --- Yes Continue in Ward
- j. Does the patient need more than one organ support? --- No --- High dependency Care
- k. Yes --- Put to Intensive Care

8. Principles for Admission to HDU:

Management in a high dependency unit can reduce the stay in intensive care and reduce the mortality in general ward. The following patients can be admitted to HDU:

- a. Patients requiring support for a single failing organ system, but excluding those needing advanced respiratory support.
- b. Patients who can benefit from more detailed observation or monitoring than can safely be provided on a general ward.
- c. Patients no longer needing intensive care, but who are not yet well enough to be returned to a general ward.
- d. Post-operative patients who need close observation or monitoring for longer than a few hours.
- e. High dependency care may be given to a patient who is not undergoing medical intervention but needs close monitoring.

9. Minimum stabilisation required before transferring a patient to ICU include the following:

- (i) Ensuring a secure airway (i.e., tracheal intubation if the patient has a GCS ≤ 8)
- (ii) Ensuring adequate oxygenation and ventilation.
- (iii) Stable haemodynamics, either with or without vasoactive drug infusion.
- (iv) Ongoing correction of hyperglycemia/ hypoglycemia and other life-threatening electrolyte/metabolic disturbances
- (v) Initiation of definitive therapy for life-threatening condition (e.g., external fixation of a fractured limb, administration of antiepileptics for recurrent seizures, antiarrhythmic drug infusion for unstable arrhythmias etc, intravenous antibiotics for sepsis)

10. Basis of Selection of patients for ICU:

Patients who meet any of the following criteria shall be admitted to the ICUs at the request of the Physician/ Surgeon. In addition in exceptional cases when the Physician / Surgeon clinically feel that a patient would benefit from close monitoring in the critical care unit even though not strictly meeting the criteria stated below can be

admitted in the ICU. Criteria for selection and admission in ICU can be on the basis of diagnosis, objective parameters or by priority:

a. DIAGNOSIS BASIS

(i) Respiratory:

- i.1. Acute respiratory failure ($\text{PaO}_2 < 60 \text{ mm Hg}$);
- i.2. Respiratory rate > 30 breaths/minute and < 8 breath/min;
- i.3. Patients requiring ventilator support (invasive or non- invasive);
- i.4. Pulmonary emboli with hemodynamic instability;
- i.5. Massive Haemoptysis;
- i.6. Pulmonary oedema
- i.7. Patients requiring respiratory support care not available in HDU;

(ii) Cardiac:

- ii.1. Acute myocardial infarction with complications;
- ii.2. Cardiogenic shock;
- ii.3. Complex arrhythmias requiring close monitoring and intervention;
- ii.4. Acute congestive heart failure with respiratory failure and/or requiring hemodynamic support;
- ii.5. Hypertensive emergencies;
- ii.6. Unstable angina, particularly with dysrhythmias, hemodynamic instability, or persistent chest pain;
- ii.7. Cardiac arrest;
- ii.8. Cardiac tamponade or constriction with hemodynamic instability
- ii.9. Dissecting aortic aneurysms;
- ii.10. Complete heart block.

(iii) Surgical:

- iii.1. Post-operative patients requiring hemodynamic monitoring, ventilator support or extensive nursing care;
- iii.2. Patients with surgical abdomen requiring preoperative fluid and/or electrolyte resuscitation;
- iii.3. Polytrauma with significant injury to thoracic / abdominal organs requiring surgical intervention.

(iv) Neurological / Neurosurgical Conditions / Disorders

- iv.1. Acute stroke with altered mental status;
- iv.2. Coma: metabolic, toxic, or anoxic;
- iv.3. Intracranial haemorrhage with potential for herniation;
- iv.4. Acute subarachnoid haemorrhage;
- iv.5. Meningitis with altered mental status or respiratory compromise;
- iv.6. Central nervous system or neuromuscular disorders with deteriorating neurologic or pulmonary function;
- iv.7. Status epilepticus;
- iv.8. Brain dead or potentially brain dead patients who are being aggressively managed while determining organ donation status;
- iv.9. Vasospasm;

iv.10. Severe head injured patients.

(v) Renal:

- v.1. Patient who has acute renal failure with accompanying respiratory or hemodynamic components require close monitoring & respiratory/ hemodynamic support;
- v.2. Significant acidosis or alkalosis;
- v.3. Hypo or hyperkalaemia with dysrhythmias or muscular weakness;
- v.4. Hypo or hypernatremia with seizures, altered mental status;
- v.5. Severe hypercalcemia with altered mental status, requiring close neurological monitoring;
- v.6. Hypo or hypermagnesemia with haemodynamic compromise or dysrhythmias or muscular weakness;

(vi) Gastrointestinal Disorders

- vi.1. Life threatening gastrointestinal bleeding including hypotension, angina, continued bleeding, or with comorbid conditions;
- vi.2. Fulminant hepatic failure;
- vi.3. Severe pancreatitis;
- vi.4. Esophageal perforation with or without mediastinitis.

(vii) Drug Ingestion and overdose:

- vii.1. Drug ingestion with significantly altered mental status & inadequate airway protection / hemodynamic instability;
- vii.2. Seizures following drug ingestion;

(viii) Endocrine:

- viii.1. Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status, respiratory insufficiency, or severe acidosis;
- viii.2. Thyroid storm or myxoedema coma with hemodynamic instability;
- viii.3. Other endocrine problems such as adrenal crisis with hemodynamic instability;
- viii.4. Non Ketotic hyperosmolar coma. Severe hypercalcemia with altered mental status, requiring hemodynamic monitoring;
- viii.5. Hypo or hypernatremia with seizures, altered mental status;
- viii.6. Hypo or hypermagnesemia with hemodynamic compromise or dysrhythmias;
- viii.7. Hypo or hyperkalaemia with dysrhythmias or muscular weakness;
- viii.8. Hypophosphatemia with muscular weakness;

(ix) Miscellaneous:

- ix.1. Partial hanging;
- ix.2. Drug overdoses;
- ix.3. Self-inflicted injuries;

- ix.4. Environmental injuries (lighting, near drowning, hyperthermia or hypothermia);
- ix.5. Any other clinical conditions requiring intensive care.

b. OBJECTIVE PARAMETER BASIS

(i) Vital Signs

- i.1. Acute respiratory failure ($\text{PaO}_2 < 60 \text{ mm Hg}$);
- i.2. Respiratory rate $> 30 \text{ breaths/minute}$ and $< 8 \text{ breath/min}$;
- i.3. Pulse < 40 or $> 150 \text{ beats/minute}$;
- i.4. Systolic arterial pressure $< 80 \text{ mm Hg}$;
- i.5. Mean arterial pressure $< 60 \text{ mm Hg}$;
- i.6. Diastolic arterial pressure $> 110 \text{ mm Hg}$;

(ii) Biochemical Values

- ii.1. Serum glucose $> 800 \text{ mg/dl}$;
- ii.2. Serum sodium $< 110 \text{ mEq/L}$ or $> 170 \text{ mEq/L}$;
- ii.3. Serum potassium $< 2.0 \text{ mEq/L}$ or $> 7.0 \text{ mEq/L}$;
- ii.4. Serum calcium $> 15 \text{ mg/dl}$;
- ii.5. pH < 7.1 or > 7.7 ;
- ii.6. Toxic level of drug or other chemical substance in a hemodynamically or neurologically compromised patient.

(iii) Imaging findings

- iii.1. Cerebral vascular hemorrhage, contusion or subarachnoid hemorrhage with altered mental status or focal neurological signs;
- iii.2. Ruptured viscera, bladder, liver, esophageal varices or uterus with hemodynamic instability;
- iii.3. Dissecting aneurysm of aorta.

(iv) Electrocardiographic findings

- iv.1. Complete heart block with hemodynamic instability;
- iv.2. Myocardial infarction with complex arrhythmias, congestive heart failure;
- iv.3. Ventricular tachycardia or fibrillation.

(v) Physical Findings

- v.1. Airway obstruction;
- v.2. Anuria;
- v.3. Burns covering $> 10\%$ body surface area;
- v.4. Cardiac tamponade;
- v.5. Coma;
- v.6. Cyanosis;
- v.7. Uncontrolled Seizures;
- v.8. Unequal pupils in an unconscious patient.

H. Discharge Criteria:

1. ICU Discharge Criteria

- (i) Return of physiological aberrations to near normal or baseline status
- (ii) Reasonable resolution and stability of the acute illness that necessitated ICU admission
- (iii) Patient/family agrees for ICU discharge for a treatment-limiting decision or palliative care.
- (iv) Based on lack of benefit from aggressive care (should be a medical decision, not obligating family agreement and as far as possible should not be based on economic constraints).
- (v) For infection control reasons with ensuring appropriate care of the given patient in a non ICU location
- (vi) Rationing (i.e., prioritisation in the face of a resource crunch). In this event there should be an explicit and transparent written rationing policy that should be fair, consistent and reasonable.

2. Other requirements for discharge

- (i) Patients shall be discharged from the intensive care when the condition which led to referral for intensive care has been adequately treated and reversed. No patient can be detained after reversal of condition for which he was admitted to intensive care. But discharge in odd hours shall preferably be avoided.
- (ii) When required the discharge of the patient from the intensive care shall be made to the high dependency unit.
- (iii) A decision to limit further treatment in intensive care shall be made after a thorough discussion of referring team, intensive care team and the patient or its family member.
- (iv) Only after obtaining a written discharge order by the attending physician, discharge can be done when:
 - iv.1. The patient is stabilised and no longer requires mechanical ventilation or active support for more than one organ.
 - iv.2. The patient is no more benefiting from the treatment available.
 - iv.3. The patient or family members give in writing to shift the patient from the intensive care to normal ward/cabin.
 - iv.4. The patient has entered to a persistent vegetative state.
- (v) **Special conditions for discharge from intensive care:**
 - v.1. A patient who has stayed in intensive care for longer period but clinically there is a minimal chance of survival, shall be considered for discharge after discussion of the team of doctors and the family members of the patient.

- v.2. When death is imminent it is appropriate to transfer the patient from the intensive care to ward or cabin so that the patient can die with dignity. But it must be discussed with the family members to reach a decision.
- v.3. Patients required to be transferred to another ICU with more facility available shall be done with close discussion with patient/ family and intensive care doctors of both units.
- v.4. Patients who have become permanently dependent on ventilator and are in end stage respiratory failure and cannot be moved to spontaneous ventilation, arrangement for the same may be made at home if agreed to by the family members.

3. **Minimum monitoring required for transferring a critically ill patient (inter-facility transfer to hospital/ICU):**

- (i) Blood pressure (continuous/intermittent)
- (ii) Clinical monitoring (pulse rate, respiratory rate, breathing pattern, etc.)
- (iii) Continuous Heart rate
- (iv) Continuous SpO2
- (v) Neurological status (AVPU, GCS, etc.)

I. PROCEDURE FOR ICU:

a. General Procedures to be followed:

- 1. The admission of a patient to these units shall be done by the request of the treating Physician or Surgeon in Wards /Operation Theatres /Casualty and Trauma Care units. The patient shall be handed over to the ICU doctor in-charge who is trained to handle emergency care in Intensive Care Units (Intensivist).
- 2. The ICU doctor shall give legibly written instructions to trained nursing staff outlining the management and treatment of a particular patient in such units.
- 3. Each patient shall be under the care of a particular nurse. The patient to nurse ratio must be ensured by ICU doctor in-charge.
- 4. Emergency medicines with resuscitative equipments shall always be kept ready for use.
- 5. The ICU in-charge along with other staff must give rounds in morning and evening. Additional round can be made according to the type and condition of patients.
- 6. Specialized life support equipments like, ventilators, defibrillators, infusion pumps, central oxygen supply and suction, etc. must be readily available for use by the staff on duty to handle and use this highly technical equipment

properly and at the right time. Evaluation must be done every one hour interval if the intensive care support is successful or not.

7. Paralysing the patients for giving life support like ventilators shall be avoided unless otherwise so indicated.
8. Weaning of the ventilators whether pressure support or through T' piece may be as per Rapid Shallow Breathing Index guidelines
9. All staff shall be trained periodically on how to handle critical care equipments so as to minimize break down and loss.
10. Staff in charge of these units shall check that these equipments are kept in proper working condition at all times. The department of Bio-Medical Engineering shall on a daily basis check the equipments of the intensive care units, and maintain log book and shall also take care of the maintenance and calibration of equipments of the intensive care units. This shall be reviewed by the head nurse of the intensive care units and Intensivist.
11. In the event of a large number of patients arriving to these units which exceed the capacity of the established beds, the Nursing Superintendent/Matron shall be contacted and she shall arrange for extra beds to be placed in the areas and provide more staff to meet the demand.
12. Sterility of these units shall be strictly maintained. Floor, workstation should be cleaned with Hydrogen peroxide + Ammonium nitrate composition disinfectant or as may be hospital protocol.
13. Restricted entry of one or two close relatives shall be permitted during visiting hours only. Whenever such visitors are allowed inside, measures shall be taken to maintain the sterility of the area. Foot wear shall not be allowed, and they shall wear only the foot wears provided for exclusive use inside the area. Cap, masks, shoe covers are also to be worn by the visitor/relative and proper hand wash must be done. The near relative or attendant of the patient shall be briefed regarding the condition of the patient at regular intervals.
14. Transfer of the patients to the normal ward or the patient's home shall be done after the treating doctor gives specific orders for the same and should be accompanied by a doctor.
15. Proper instructions on further treatment, advice on preventive aspects and follow up are given to the patient / attendee by the doctor or senior staff nurse.

16. In order to maintain the quality of care in these departments, the recipients of these services are interviewed from time to time and their satisfaction in the treatment provided is assessed.
17. When a patient is discharged, details about the investigation, treatment given, condition on discharge, advice on discharge, medications, diet, exercise, follow up, when and how to seek care in case of emergency and details of visit schedule shall be written in the discharge card duly named, signed, dated with time by the treating doctor.
18. A copy of all reports shall be given to the patient along with the discharge summary if demanded.
19. Isolation of Infectious cases shall be done before treatment and should be treated in a separate unit.

b. Handling shortage of beds:

1. In case of bed shortages, this information is given to the Medical Superintendent immediately.
2. All stable patients will be transferred to other wards and the same will be intimated to the patient attendant.
3. If the patient is stable and there is no bed available, he will be transferred to other hospital of patient's choices.
4. Unstable patients will be stabilized and transferred with the help of hospital ambulance to such hospital.
5. At the time of transfer, transfer protocol is to be followed.

c. Quality Assurance in ICU:

S.No	Quality Objective	Performance indicator	Responsibility	Measurement Criteria	
				Criteria	Frequency
1.	Service Quality	Staff availability-doctors, nurses and support staff nurses patient ratio 2:1	ICU in-charge staff	ICU in-charge staff	Monthly
		Bed Availability and turnaround time for making bed	ICU in-charge staff	Ward census book, front office	Monthly

		Reporting time of investigations	ICU in-charge staff	HMS investigations/register	Monthly
		Medication administration(route, dose and frequency)	ICU in-charge staff	Drug chart	Once in two months
		Coordination between staff in ICU	ICU in-charge staff	Feedback form	Monthly
2	Hospital Infection Control	Infection rates	Hospital infection control committee	UTI, Intra Vascular Device related Infection, Respiratory Tract Infections, Surgical Site Infections , Ventilator Associated Pneumonia	Monthly

d. Infection Controls

1. Infection control protocols pertaining to a wide spectrum of interventions & as have been developed jointly with intensivists & anaesthetists shall be followed as ICUs are high risk areas for patient where life threatening mistakes & omissions in care can occur.
2. Infection control protocol shall be strictly followed in critically ill patients highly vulnerable to health care associated infection, resulting in significant morbidity & prolonged length of hospital stay.
3. It is the responsibility of every member of the health care team to ensure compliance with hospital and ICU infection control policies - like hand-washing before & after examining a patient; use of alcohol hand rubs; use of sterile barriers & disposable gloves; safe disposal of all sharp objects & patient consumables; & traffic control.
4. Checklist of care should be addressed daily.
5. Bedside Analysis - checklist use, reduces average length of stay (ALOS) & improves infection control indices.

e. Clinical Handovers

Standardised procedure for clinical handover shall be maintained which will help in:

- (i) enhancing patient's safety by providing vital information at a glance to the care providers

- (ii) enhancing ability of attending staff member to identify potential source of problem.
- (iii) transfer of care from physician to physician or nurse to nurse in case of change of location or change of shifts.
- (iv) obtaining accurate information about patient's care, treatment and services, verbal order, test results, current condition, recent or anticipated changes.

J. END OF LIFE CARE:

a. General policy:

- 1. Admission to the ICU is often a therapeutic trial. Only when the trial fails the patients and families consider a change from restorative care to palliative care. This change is a transition from cure to comfort.
- 2. Two factors make this transition difficult. First is the widespread and deeply held desire not to be dead. Second is inability of science to predict the future, and to give patients precise information about when death will come. If death is the alternative, many patients who have only a small amount of hope are inclined to pay a high price to continue the struggle.
- 3. Using medical resources in order to prolong life with no chance of recovery in a final and irreversible phase of the disease are inhumane and hurt human dignity. This must be avoided.
- 4. Patients and families must be given sufficient time to reach decisions at the end of life, and information should be delivered according to the patient's cultural, religious, and language needs regarding the shifting the treatment from intensive care to palliative care. Emphasis must be given on shared decision making and the importance of caring for patients' families.
- 5. ICU in-charge must play a key role to make recommendations and guide families in ways that accord with their decision-making preferences for continuance or to forgo life-sustaining treatment. The goal of care and what can actually be achieved must be clearly communicated to patient's relatives. There should not be any difference between withholding treatment and withdrawing treatment.
- 6. While declaring death plain language like dead, dying, death, and die may be used which are rarely misunderstood. Family members must be reassured that everything appropriate was done to help the patient. News of a patient's death should be given in person, whenever possible. When families must be contacted by telephone, special care should be taken how the information is to be disclosed.
- 7. If the patient had pledged for organ donation or had a wish for organ donation then it must be discussed with the patient relative at the time of Brain Death. In all cases written consent must be obtained.

b. Procedures to be followed:

1. Identify situations when EOL support needs to be initiated.
2. Discuss with other team members including nurses regarding EOL decision.
3. Identify a surrogate decision maker.
4. Understand ethical principles about withdrawing life-support measures in ICU.
5. Initiate discussion on EOL with surrogate decision maker.
 - a. Intensivist should initiate in an empathic and unhurried way
 - b. Senior nurse or family doctor or other family members may be present
 - c. In a simple language, understanding the disease process, expectations, range of therapeutic interventions available and likely outcome.
 - d. Pain free palliative care.
6. Hold multiple counseling sessions. Family should be given adequate time and opportunity to ask questions and to express views.
7. Reach a consensus and discuss modalities of palliative care.
 - a. Do Not Intubate/ Do Not Resuscitate
 - b. Do not escalate life support modalities
 - c. Withdrawal of life support- dialysis, ventilators.
8. Document discussion in case notes details of proceedings of the counseling sessions.
9. Institute palliative care with proper sedation, analgesia and throat suction.
10. Resolve areas of conflict by second opinion from another physician, multiple counseling sessions with help of the hospital administration and setting up of a committee and judicial review. Must follow the legal directions in this regard.

K. COMMUNICATION POLICY:

1. Communication must always be made quickly after resuscitation, when there is turn of events, every morning after rounds, when an important investigation is contemplated.
2. It is the primary responsibility of Primary physician, ICU doctor, attending nurse, attending resident psychologist, medical social worker & administrator to communicate in due time.
3. All the issues related to patient, plan of management, expected course of treatment, probable risks & outcome, days that may be needed to recover, anticipated expenses, probable complications must be communicated.

L. TRAINING

There shall be at least:

- a. Monthly meeting on Clinical updates / Sensitisation of all staff of ICU organized by the ICU in-charge for better preparedness and efficiency for management in emergency.
- b. Bi-monthly mortality review meeting.
- c. Quarterly inter-departmental or inter-unit meeting / reviews /seminars for deciding the best steps of management / methodology for best outcome of treatment. Such methodologies shall be recorded and to be circulated amongst all staff of ICU and all concerned departments.

REFERENCES:

1. *Guidelines for ICU admission discharge & triage, Society of Critical Care Medicine.*
2. *Policies and Procedures on Care of patients in ICU/ HDU, Indira Gandhi Institute of Medical Science.*
3. *Standards for Intensive Care Unit, Intensive care Society.*

Addl. DMET Odisha

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