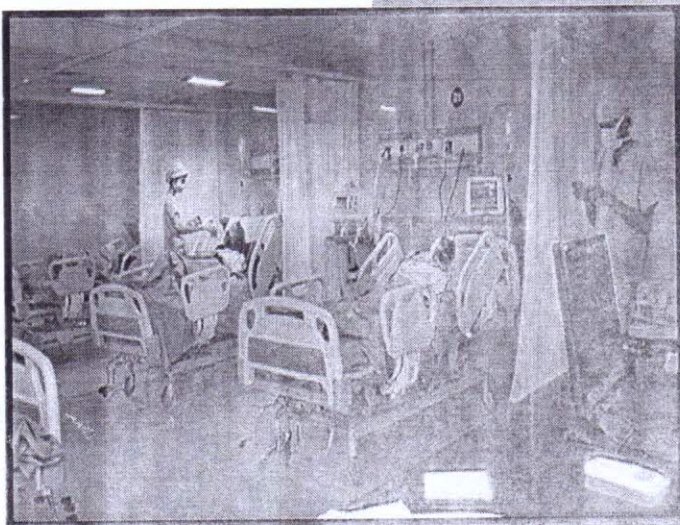




# Standard Operating Procedures for District Hospital- Uttar Pradesh

## SOP: Intensive Care Unit



Quality Assurance Division  
SPMU, NHM, Uttar Pradesh



## Objectives of Intensive Care Unit

1. To provide skilled, efficient & appropriate care to the patients admitted with human touch and personalized attention
2. Training & documentation of all Doctors, Intensivists & ICU Sisters.
3. Safe & effective Sterilization & Fumigation Procedure.
4. Improving coordination among the Doctors, nurses and the Intensivists.
5. Having control on the stock available in the ICU, by assigning the work to different people & verifying them at regular intervals.
6. Streamlining of various processes related to Consumable Procurement & Billing.
7. To reduce the rate of infection to the minimum possible.
8. To promote rational usage of drugs by following the antibiotic policy of the hospital.

## **SOP: Intensive Care Unit**

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### **1. Purpose:**

- To establish, implement & maintain a system for patient admission in order to provide Intensive care services in the hospital.
- To provide guidelines / instructions for General Nursing care with the aim that needs and expectations of patients are honoured.
- To develop an ICU, which can address all the requirement of a standardized ICU.
- To enhance patient satisfaction on continual basis. Also, the behaviour of the staff should be empathetic and courteous.

### **2. Scope:**

It covers all Intensive Care Patients admitted and receiving treatment in the Hospital.

### **3. Responsibility:**

- ICU In charge / Doctor (Physician / Anaesthetist).
- Matron / Sister In-charge
- Housekeeping supervisor.

### **4. Infrastructure**

- The facility displays the services and entitlements available in its departments.
- Important numbers including ambulance, blood bank and referral centres are displayed.
- User charges are displayed and communicated to patients effectively.
- Information is available in local language which is easy to understand.
- Availability of Wheel chair or stretcher for easy access to the ICU.
- Services to be provided in manners that are sensitive to gender.
- The unit is fully air-conditioned, although windows are openable when the system is non-operational.
- Security- The facility ensures safety of the seismic, fire, electrical establishment and physical condition of the infrastructure.
- The facility has adequate number of trained personnel, drugs, consumables and equipment.
- The facility provides safe, secure and comfortable environment to staff, patients and visitors. The facility ensures 24X7 water and power backup as per requirement of service delivery, and support service norms.
- Dietary services are available as per service provision and nutritional requirement of the patients.
- The facility ensures clean linen to the patients

## 5. Standard Procedures

Sl. No.	Activity	Responsibility	Reference Document / Record
1	<p><b>Procedure for admission:</b> There is established criteria for admission of patients.</p> <p><b>a.) PRIORITIZATION MODEL</b></p> <p>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.</p> <p><b>PRIORITY 1:</b></p> <p>These are critically ill, unstable patients in need of intensive treatment and monitoring that cannot be provided outside of the ICU. Usually, these treatments include ventilator support, continuous vasoactive drug infusions, etc. Priority 1 patients generally have no limits placed on the extent of therapy they are to receive.</p> <p>Examples of these patients may include post-operative/ trauma or acute respiratory failure patients requiring mechanical ventilatory support and hemodynamically unstable patients receiving invasive monitoring and/or vasoactive drugs.</p> <p><b>PRIORITY 2:</b></p> <p>These patients require intensive monitoring and may potentially need immediate intervention. No therapeutic limits are generally stipulated for these patients. Examples include patients with chronic comorbid conditions who develop acute severe medical or surgical illness.</p> <p><b>PRIORITY 3:</b></p> <p>These unstable patients are critically ill but have a reduced likelihood of recovery because of underlying disease or nature of their acute illness. Priority 3 patients may receive intensive treatment to relieve acute illness but limits on therapeutic efforts may be set such as no intubation or cardiopulmonary resuscitation.</p> <p>Examples include patients with metastatic malignancy complicated by infection, cardiac tamponade, or airway obstruction.</p>	ICU In charge / Sister In-charge	ICU Register/ BHT



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	<p><b>PRIORITY 4:</b></p> <p>These are patients who are generally not appropriate for ICU admission. Admission of these patients should be on an individual basis, under unusual circumstances and at the discretion of the ICU Director. These patients can be placed in the following categories:</p> <p>A. Little or no anticipated benefit from ICU care based on low risk of active intervention that could not safely be administered in a non-ICU setting (too well to benefit from ICU care).</p> <p>Examples include patients with peripheral vascular surgery, hemodynamically stable diabetic ketoacidosis, mild congestive heart failure, conscious drug overdose, etc.</p> <p>B. Patients with terminal and irreversible illness facing imminent death (too sick to benefit from ICU care). For example: severe irreversible brain damage, irreversible multi-organ system failure, metastatic cancer unresponsive to chemotherapy and/or radiation therapy (unless the patient is on a specific treatment protocol), patients with decision-making capacity who decline intensive care and/or invasive monitoring and who receive comfort care only, brain dead non-organ donors, patients in a persistent vegetative state, patients who are permanently unconscious, etc.</p> <p><b>b.) DIAGNOSIS MODEL</b></p> <p>This model uses specific conditions or diseases to determine appropriateness of ICU admission.</p> <p><b>A. Pulmonary System</b></p> <ul style="list-style-type: none"> <li>• Acute respiratory failure requiring ventilatory support. (Invasive/non-invasive)</li> <li>• Pulmonary emboli with hemodynamic instability</li> <li>• Patients in an intermediate care unit who are demonstrating respiratory deterioration</li> <li>• Need for nursing/respiratory care not available in lesser care areas such as floor or intermediate care unit</li> <li>• Respiratory failure with imminent intubation</li> </ul>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<p><b>B. Neurologic Disorders</b></p> <ul style="list-style-type: none"> <li>• Acute stroke with altered mental status</li> <li>• Coma: metabolic, toxic, or anoxic</li> <li>• Intracranial hemorrhage with potential for herniation</li> <li>• Acute subarachnoid hemorrhage</li> <li>• Meningitis with altered mental status or respiratory compromise</li> <li>• Central nervous system or neuromuscular disorders with deteriorating neurologic or pulmonary function</li> <li>• Status epilepticus</li> <li>• Vasospasm</li> <li>• Head injury patients with GCS &lt; 12</li> <li>• Severe head injured patients</li> </ul> <p><b>C. Drug Ingestion and Drug Overdose</b></p> <ul style="list-style-type: none"> <li>• Hemo-dynamically unstable drug ingestion</li> <li>• Drug ingestion with significantly altered mental status with inadequate airway protection</li> <li>• Seizures following drug ingestion</li> </ul> <p><b>D. Gastrointestinal Disorders</b></p> <ul style="list-style-type: none"> <li>• Life threatening gastrointestinal bleeding including hypotension, angina, continued bleeding, or with co morbid conditions</li> <li>• Fulminant hepatic failure</li> <li>• Severe pancreatitis</li> <li>• Esophageal perforation with or without mediastinitis</li> </ul> <p><b>E. Endocrine</b></p> <ul style="list-style-type: none"> <li>• Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status, respiratory insufficiency, or severe acidosis.</li> <li>• Thyroid storm or myxedema coma with hemodynamic instability.</li> <li>• Hyper-osmolar state with coma and/or hemodynamic instability</li> </ul>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<ul style="list-style-type: none"> <li>• Other endocrine problems such as adrenal crises with hemodynamic instability</li> <li>• Severe hyper-calcemia with altered mental status, requiring hemodynamic monitoring</li> <li>• Hypo or hype-natremia with seizures, altered mental status</li> <li>• Hypo or hyper-magnesemia with hemodynamic compromise or dysrhythmias</li> <li>• Hypo or hyper-kalemia with dysrhythmias or muscular weakness</li> <li>• Hypo-phosphatemia with muscular weakness.</li> <li>• Recurrent/ persistent hypoglycemia.</li> </ul> <p><b>F. Surgical</b></p> <ol style="list-style-type: none"> <li>1. Post-operative patients requiring hemodynamic monitoring/ventilatory support or extensive nursing care</li> </ol> <p><b>G. Miscellaneous</b></p> <ul style="list-style-type: none"> <li>• Septic shock with hemodynamic instability</li> <li>• Hemodynamic monitoring in any critically ill patient.</li> <li>• Clinical conditions requiring ICU level nursing care</li> <li>• Environmental injuries (lightning, near drowning, hypo/hyperthermia)</li> <li>• New/experimental therapies with potential for complications (after approval from Ethical Committee)</li> </ul> <p><b>c.) OBJECTIVE PARAMETERS MODEL</b></p> <p>Objective criteria listed, while arrived at by consensus, are ,by necessity, arbitrary. They may be modified based on local circumstances. Data demonstrating improved outcome using specific criteria levels are not available.</p> <p><b>Vital Signs</b></p> <p>Pulse &lt; 40 or &gt; 150 beats/minute</p> <p>Systolic arterial pressure &lt; 80 mm Hg or 20 mm Hg below the patient's usual pressure Mean arterial pressure &lt; 60 mm Hg</p> <p>Diastolic arterial pressure &gt; 120 mm Hg</p> <p>Respiratory rate &gt; 35 breaths/minute</p>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<p><b>Laboratory Values</b></p> <p>Serum sodium &lt; 120 mEq/L or &gt; 160 mEq/L</p> <p>Serum potassium &lt; 2.0 mEq/L or &gt; 6.0 mEq/L PaO<sub>2</sub> &lt; 60 mm Hg</p> <p>pH &lt; 7.1 or &gt; 7.7</p> <p>Serum glucose &gt; 800 mg/dl</p> <p>Serum calcium &gt; 15 mg/dl</p> <p>Toxic level of drug or other chemical substance in a hemodynamically or neurologically compromised patient</p> <p><b>Radiography/Ultrasonography/Tomography.</b></p> <p>Cerebral vascular hemorrhage, contusion or subarachnoid hemorrhage with altered mental status or focal neurological signs.</p> <p>Ruptured viscera, bladder, liver, esophageal varices or uterus with hemodynamic instability, Dissecting aortic aneurysm</p> <p><b>Electrocardiogram</b></p> <p>Myocardial infarction with complex arrhythmias, hemodynamic instability or congestive heart failure. Sustained ventricular tachycardia or ventricular fibrillation. Complete heart block with hemodynamic instability</p> <p><b>Physical Findings (acute onset)</b></p> <p>Unequal pupils in an unconscious patient</p> <p>Burns covering &gt; 10% BSA</p> <p>Anuria</p> <p>Airway obstruction</p> <p>Coma</p> <p>Continuous seizures</p>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<p>Cyanosis</p> <p>Cardiac tamponade</p> <p><b>Admission to ICU</b></p> <p>1.Setting up bed space for admission</p> <p>Housekeeping staff:</p> <p>a.Mops the floor thoroughly.</p> <p>b.Cleans bed from top to bottom and damp dust with 0.5% BACILLOCID solution.</p> <p>2.On confirmation of admission, the nurse proceeds to:</p> <ul style="list-style-type: none"> <li>• Check and switch on all the monitoring equipment with appropriate modules and accessories to ensure the monitoring system is in good working condition and leave on standby mode.</li> <li>• Check the gas, suction and vacuum supply and attach appropriate apparatus e.g. suction line to the vacuum outlet and O2 flow meter to the gas outlet.</li> <li>• Make up the ICU bed with a long fitted sheet over the mattress. A blanket is being folded into a pack and placed at the end of the bed. A pillow for the head end.</li> <li>• Patient's clinical folders, charts and admission record book placed on the table of the nurses' station.</li> <li>• All vacant ICU beds are set up at all times in readiness for any new admission.</li> <li>• A ventilator is always set up on standby (ventilator set up according to anesthetist's order).</li> </ul> <p><b>3.Routes of admission:</b></p> <p>a. ER.</p> <p>b. OR.</p> <p>c. OPD.</p> <p>d. Interdepartmental transfer.</p> <p>e. Other hospitals</p> <p><b>4. On admission:</b></p> <p>a. A brief history of patient is handed over from the accompanying nurse.</p> <p>b. The patient is transferred onto the ICU bed with roller by the staff making sure that patient is in a comfortable position.</p> <p>c. The nurse introduces herself to the patient and at the same</p>		

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	<p>time reassures patient and explains about the procedures that follow.</p> <p>d. Patient is assisted to undress and wear gown if condition permits.</p> <ul style="list-style-type: none"> <li>• There is established policy of taking informed consent before treatment and procedures</li> <li>• Staff should be aware of Patient rights &amp; responsibilities</li> <li>• Information about the treatment is shared with patients or attendants, regularly</li> <li>• The facility has defined and established grievance redressal system in place</li> </ul>		
2	<p><b>Procedure for clinical assessment and reassessment of patient:</b></p> <ul style="list-style-type: none"> <li>• Initial assessment of the patient is done as per standard protocols by the Physician on duty.</li> <li>• Patient's History is taken and recorded.</li> <li>• Physical Examination is done and recorded.</li> <li>• Provisional Diagnosis is recorded.</li> <li>• SPO2 sensor, ECG Leads and NIBP cuff are attached.</li> <li>• Patient's baseline vital signs and cardiac rhythm are recorded and documented in patient's observation chart.</li> <li>• Patient's general condition is assessed i.e. if patient is in pain, pale, sweating then Oxygen is administered as instructed.</li> <li>• Patient's level of consciousness is assessed.</li> <li>• Doctor is notified of patient's arrival and any abnormality is reported.</li> <li>• IV cannulation is done and treatment is carried out as ordered.</li> <li>• Intubation is done and patient is placed on ventilator (for patient requiring respiratory support).</li> <li>• Other departments are notified of any stat diagnostic tests that have been ordered e.g. X-ray, ECG, blood tests and stat medication.</li> <li>• Necessary requisition slip for diagnostic tests are filled and samples are sent with the requisition slips to respective</li> </ul>	ICU In charge / Sister In charge	ICU Register/BHT



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	<p>diagnostics</p> <ul style="list-style-type: none"> <li>• Patient's relatives are requested to take valuables home. A careful check is done on the valuables for all unaccompanied patients.</li> <li>• Visiting privileges are explained to both patient and family that visiting is limited to twice a day and only one visitor is allowed for a patient.</li> <li>• Patient and patient's relative are explained on the facilities available in the unit, rules and regulations of the hospital e.g. no smoking within the hospital premises, charges for ICU stay etc. if any</li> <li>• For critical patients, reassessment is done as per need.</li> </ul>		
	<ul style="list-style-type: none"> <li>• There is a procedure for handover of patient, transferred from ICU to IPD / OT/ Emergency and vice versa.</li> <li>• Patients admitted to the hospital remain under the medical care of the admitting consultant.</li> <li>• New patients admitted to hospital by the Medical Officer is under the medical care of the consultant on call.</li> <li>• The primary consultant is to decide to call in any other specialist consultant to co-manage the patient.</li> <li>• The primary consultant refers the patient to the related consultant and speaks to the responsible consultant regarding cause or authorizes the nurse to do so.</li> <li>• A note of referral is written down by the primary consultant to the responsible consultant.</li> <li>• The primary consultant is responsible for the overall management of the patient.</li> <li>• Patient is referred with referral slip and safe transport.</li> <li>• There is a system of follow up of referred patients.</li> <li>• Patient condition is reviewed during hand over between duty doctors.</li> </ul>		BHT/ Referral register
	<p><b>The facility has defined and established procedures for nursing care</b></p> <ul style="list-style-type: none"> <li>• All registered nurses in critical care undergo unit orientation and adhere to the written guidelines and practices within the scope of responsibilities.</li> <li>• Nurses assigned to critical care areas show capability in arrhythmia identification.</li> <li>• Nurses in critical care areas are qualified to perform</li> </ul>	Staff Nurse on duty	ICU Register/BHT

Sl. No.	Activity	Responsibility	Reference Document / Record
	<p>treatment and procedures as outlined in their job description and procedure manual.</p> <ul style="list-style-type: none"> <li>• All procedures performed are initially evaluated and assessed as having been demonstrated with accuracy by the Charge nurse of critical care areas.</li> <li>• Nurses in critical care areas do not perform but only assist the following procedures:               <ul style="list-style-type: none"> <li>○ Intubation.</li> <li>○ Arterial puncture/ line placement (Cannulation).</li> <li>○ The nurse will not perform, but will assist the doctor with the following procedures:</li> <li>○ Pacemaker insertion.</li> <li>○ Chest tube insertion.</li> <li>○ Bone marrow aspiration.</li> <li>○ Paracentesis.</li> <li>○ Thoracentesis.</li> <li>○ Liver biopsy.</li> <li>○ Vaginal examination.</li> <li>○ Subclavian insertion.</li> <li>○ Cutdown.</li> <li>○ Tracheotomy or mini tracheostomy.</li> <li>○ Intubation.</li> <li>○ Removal of sutures/ chest drains</li> <li>○ The following medications will not be administered by the critical care areas trained nurses:</li> <li>○ Experimental medications.</li> <li>○ Intracardiac medications.</li> </ul> </li> <li>• Trained nurse in critical care areas may perform the following:               <ul style="list-style-type: none"> <li>○ Change irrigation solutions, tubing and dressings on arterial lines.</li> <li>○ Administer intravenous medications as ordered by attending doctor.</li> <li>○ May discontinue infusions on central venous line on the doctor's order but will not remove CVL</li> <li>○ Draw lab samples from indwelling arterial line.</li> <li>○ Draw lab samples from subclavian catheter with physician's order.</li> <li>○ Defibrillate patient in life threatening situations with</li> </ul> </li> </ul>		



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	<p>physicians order.</p> <ul style="list-style-type: none"> <li>○ Administer life saving intravenous medication in life threatening situations e.g. Atropine, Adrenaline or Xylocard.</li> <li>● The nursing documentation is integrated with medical record and clinical information, with specific application to the critical care management of the patient. The following documentation standard addresses a hospital information system. <ul style="list-style-type: none"> <li>○ All components of patient care process, plan of care, evaluation and outcomes is documented in patient's medical record.</li> <li>○ The integrating nursing documentation (nursing process) is used in the delivery of patient care and is evidence by the following: <ul style="list-style-type: none"> <li>○ Initial assessment (performed by SRN) and reassessments.</li> <li>○ Problem identified.</li> <li>○ Nursing interventions which are related to patient's problems identified.</li> <li>○ Nursing care provided to patient.</li> <li>○ Effectiveness / outcomes of nursing interventions.</li> <li>○ Discharge / transfer plan.</li> <li>○ Data collected of each caregiver is documented by that individual.</li> <li>○ Nurses in ICU document patient's information including changes in general condition, doctor's review and changes in patient's management, vital parameter and intake output flow sheet, medication served and procedure done closely.</li> <li>○ Documentation on the ICU BHT is continued as long as the patient is receiving IV drips / infusions that are being titrated according to vital parameter.</li> <li>○ The ICU flow sheet documentation is updated with current data prior to patient transfer to another patient care unit.</li> </ul> </li> </ul> </li> <li>● The staff on duty ensures the identification of the patients before any clinical procedure treatment chart is maintained.</li> <li>● Patient Vitals are monitored and recorded periodically.</li> </ul>		

Sl. No.	Activity	Responsibility	Reference Document / Record
	<ul style="list-style-type: none"> <li>Critical patients are monitored continually.</li> <li>High risk patients are identified and treatment given on priority</li> </ul>		
	<p><b>Procedure for Key Clinical Protocols:</b></p> <p>INDICATIONS FOR ENDOTRACHEAL INTUBATION'S INCLUDE:</p> <ol style="list-style-type: none"> <li>1) Depressed level of consciousness – GCS &lt; 8 because of head injury, any condition leading to coma, patient in GA.</li> <li>2) Hypoxemia – Causes include cervical spine injury, multiple fractures, Severe pneumonia, Acute exacerbation of COPD etc.)</li> <li>3) Airway obstruction – Foreign body, blunt / penetrating injury to face / neck with swelling, smoke inhalation injury, Burns, choked airway, sustained seizure, angioedema.</li> <li>4) As part of CPR</li> <li>5) Exhaustion with labored pattern of breathing.</li> <li>6) Manipulation of airway in some operations such as stenting of bronchi etc.</li> </ol> <p><b>CARE OF COMATOSE PATIENT</b></p> <ul style="list-style-type: none"> <li>Stabilization of ABC ( Air way, Breathing, Circulation)</li> <li>Feeding – What, Quantity, frequency, R/T or PEG tube, nutritional supplement.</li> <li>Analgesia.</li> <li>Sedation.</li> <li>Thromboprophylaxis: DVT pump, LMVH, Limb physiotherapy.</li> <li>Prevention and c/o bed sore: Keep HB 8.0g% <ul style="list-style-type: none"> <li>Proteins are kept at optimum level.</li> <li>Position is changed 2 Hourly.</li> <li>Onsite dressing is done on pressure sore prone areas.</li> <li>Care of back and care of pressure points is done.</li> <li>Air bed is used.</li> </ul> </li> </ul>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<ul style="list-style-type: none"> <li>▪ Glycemic control – Blood Sugar is kept &lt; 160mg%</li> <li>▪ Blood Sugar test is done at least twice a day</li> <li>▪ Head end is kept elevated to 30°</li> <li>▪ Stress ulcer prevention – Inj. Rantac / Pantoprazole, Syp. Sucralfate, Syp. Digene.</li> <li>▪ Respiratory therapy – Chest Physiotherapy</li> <li>▪ ETT Suction (Once in each shift).</li> <li>▪ Prevention of unintended fall and trauma to patient (side rails up and adequate and appropriate restraint used)</li> <li>▪ All infection control protocols are followed.</li> <li>▪ Care of hair (Oiling, Shampooing, Cleaning with anti lice treatment, hair cutting and combing).</li> <li>▪ Care of nails- Nails are cut regularly and kept clean.</li> <li>▪ Prevention of contractures by exercises of different muscle groups.</li> <li>▪ Care of bowel – laxative added to treatment.</li> <li>▪ Enema SOS</li> <li>▪ Monitoring of pupil size</li> <li>▪ Care of eyes – regular cleaning of eyes with wet gauge.</li> <li>▪ Aqua tear eyes drops.</li> <li>▪ Antibiotic eye drops as and when needed.</li> <li>▪ Care of mouth – Regular brushing of teeth.</li> <li>▪ Listerine Mouth wash</li> <li>▪ Care of IV cannula – Transparent dressing to be used, redness &amp; edema and other s/s of Thrombophlebitis are looked for and managed.</li> <li>▪ Care of Central line – Central line to be changed as per infection control protocol, transparent dressing to be used to check for s/s of infection, keep all ports patent by flushing with heparinised saline.</li> <li>▪ Care of endotracheal tube – pilot balloon is checked, ETT mark at lip is seen, ventilator screen changes of ET dressing is monitored daily, tracheostomy is considered if ETT stays &gt; 7 Days.</li> <li>▪ Care of Tracheostomy tube – Dressing of TT is changed daily, TT cuff is deflate for about 10 minute every 2 hours. TT suctioning is done once in each shift.</li> <li>▪ Care of Foley's Cath.</li> <li>▪ Bed area of Patient is kept clean.</li> </ul>		

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	<ul style="list-style-type: none"> <li>▪ Care of ear canal – daily cleaning.</li> <li>▪ Cleaning of nasal mucosa – by gauge soaked in water.</li> <li>▪ Personal hygiene (Cleaning of Private parts).</li> <li>▪ Hydration is maintained.</li> </ul> <p><b>MANAGEMENT OF ACUTE EXACERBATION OF COPD</b></p> <ol style="list-style-type: none"> <li>1. Diagnostic evaluation – <ul style="list-style-type: none"> <li>ABG</li> <li>Chest X-ray</li> <li>Sputum Staining and Culture Sensitivity</li> <li>Pulmonary function Test.</li> </ul> </li> <li>2. Broncho dilator given</li> <li>3. Steroids – Oral / IV for 10-14 days (blood sugar is monitored)</li> <li>4. Antibiotics</li> <li>5. Oxygen therapy – low flow Oxygen by nasal cannula to keep SPO<sub>2</sub> to 90 ± 2%. Oxygen is not withheld in the presence of hypercapnia.</li> <li>6. Secretion clearance techniques: - <ul style="list-style-type: none"> <li>Chest physiotherapy.</li> <li>Mucolytics nebulization</li> <li>Suctioning</li> <li>Bronchoscopy.</li> </ul> </li> <li>7. Others – Diuretics, Digoxin (in heart failure), pulmonary vasodilators, DVT prophylaxis, correction of electrolyte imbalance, low carbohydrate enteral feed, non invasive ventilation for respiratory failure, invasive ventilation if needed.</li> </ol> <p><b>GUIDELINES FOR TREATING ‘STROKE’ PATIENT</b></p> <ol style="list-style-type: none"> <li>1. Patient is treated in stroke unit.</li> <li>2. Neurological status and vital functions are monitored regularly.</li> <li>3. Airway is secured and adequate oxygen is provided.</li> </ol>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<p>4. Monitoring and correction of glucose and body temperature is done if elevated.</p> <p>5. Limb physiotherapy is done.</p> <p>6. Care of bed ridden patient.</p> <p><b>PREVENTION OF BED SORE</b></p> <ul style="list-style-type: none"> <li>• Position is changed every 2 hours.</li> <li>• Skin care – skin is cleaned with mild soap warm water and gently pat dry.</li> <li>• Regular inspection of body is done for early bed sore and its treatment.</li> <li>• Bed of the patient is <math>&gt; 30^\circ</math> to prevent shearing stress in skin.</li> <li>• Cushions are put between the knees, legs and heel. Patients are made to lie at a little angle to avoid bony prominence coming in contact.</li> <li>• Skin Protection – If moist <math>\rightarrow</math> powder is used</li> <li>• If dry <math>\rightarrow</math> lotion is used</li> <li>• Management of urine / stool incontinence by changing diaper, foley's catheterization, cleaning and making private area dry.</li> <li>• Good diet – with adequate protein, calories, vitamin, mineral.</li> <li>• Adequate hydration</li> <li>• Good physiotherapy</li> </ul> <p><b>DIABETIC KETOACIDOSIS (DKA)</b></p> <p>Four important points regarding management of DKA patient:</p> <ol style="list-style-type: none"> <li>1) Correction of fluid deficit by IV fluids.</li> <li>2) Correction of hyperglycemia with insulin.</li> <li>3) Correction of potassium loss.</li> <li>4) Treatment of infection, if any.</li> <li>5) Correction of acid base balance.</li> </ol>		

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	<ul style="list-style-type: none"> <li>- Patient may present with hyperkalemia, but with insulin, potassium decrease and treatment of hypokalemia is needed.</li> <li>- Insulin is given by IV infusion and if Blood Sugar &lt; 250mg % infusion of 10% Dextrose is started if patient is NPO.</li> </ul> <p><b>Endotracheal intubation – adult, maintenance / care of endotracheal tube</b></p> <ul style="list-style-type: none"> <li>• Patient / Relative is explained and reinforced consultant's explanation regarding the necessity of the procedure.</li> <li>• Patient is assessed for ventilatory efforts. If ventilatory efforts are insufficient or absent, the doctor will ventilate with bag-valve-mask unit. Oropharyngeal airway will be used to maintain airway patency during bag-valve-mask ventilation.</li> <li>• Administration of sedatives and / or analgesics intravenously as ordered by the anaesthetist. A muscle relaxant is administered intravenously as ordered by the anesthetist. In the setting of cardiac or respiratory arrest, this step is excluded.</li> <li>• Appropriate endotracheal tube size is determined by the doctor. The cuff is inflated by syringe and integrity is assessed. All the air is evacuated.</li> <li>• The distal end of the tube is lubricated with water soluble jelly.</li> <li>• The stylet is inserted (if required) into the endotracheal tube so that the distal end of the stylet is recessed 2 cm from tip of the ETT.</li> <li>• The desired blade is attached to the laryngoscope handle. The blade is chosen based on doctor's order.</li> <li>• The blade is elevated to a right angle to the handle and observed for proper functioning of the light source.</li> <li>• The patient is positioned in "sniffing" position. A folded towel or sheet is placed under the occiput. The patient's head is not allowed to hang over the edge of the bed. This is avoided in patient with C-spine injury.</li> <li>• The doctor performs the intubation either orally or nasally.</li> </ul>		



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	<ul style="list-style-type: none"> <li>• The stylet is removed once instructed by the doctor. The doctor stabilizes the ETT by his hand.</li> <li>• The cuff is inflated and the patient is ventilated with the bag-valve-tube unit.</li> <li>• Patient is assessed for chest expansion and auscultated for bilateral breath sounds.</li> <li>• Cricoid pressure is applied as ordered by the doctor during intubation to occlude the esophageal opening and vomiting and aspiration is prevented. Pressure is applied from point of administration of sedatives / relaxants till the inflation of the ET tube cuff.</li> <li>• Each attempt to intubate does not take more than 30 seconds. The doctors ventilate the patient with the bag-valve-mask unit and 100 percent Oxygen between each attempt.</li> <li>• ETT is attached to mechanical ventilator with setting as ordered by the doctor. A post intubation Chest X-Ray is ensured to verify proper ETT placement.</li> <li>• The ETT is secured with adhesive plaster and tape. The depth marking level of ETT is noted and verified and documented on nursing care plan and flow chart. Plastering is changed once a day and when necessary. The ETT depth marking level (the lip end line or nare) noted during each plaster changing and after each patient's positioning. ETT is connected to mechanical ventilator which has been set as anaesthesiologist's order.</li> <li>• Chest movement, respiratory rhythm and rate are assessed continuously. Auscultation to check for air entry to both lung is done in each shift and when necessary to verify ETT positioning and both lungs are ventilated.</li> <li>• Presence of humidified device is assessed to prevent drying of secretions within the tracheal tube.</li> <li>• Arterial blood gas level is checked daily and whenever patient's respiratory status changes.</li> <li>• Cuff is assessed for proper inflation.</li> <li>• Suctioning of the airway is done when needed. The color, amount, consistency and odor of secretions is noted. Findings are documented on medical record.</li> <li>• An oropharyngeal airway is used as a bite block to prevent occlusion of the tube.</li> </ul>		

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	<ul style="list-style-type: none"> <li>• Oral care is performed every 8 hours to prevent oral infections.</li> <li>• The mouth and lips or nares are assessed for skin break down or erosion due to tube pressure on the tissue.</li> <li>• Skin is assessed for breakdown due to the adhesive tape.               <ul style="list-style-type: none"> <li>▪ Traction is avoided on the tube from the ventilator tubing and nebulizer.</li> <li>▪ If the high pressure alarm sounds on the mechanical ventilator or if the spontaneously breathing patient suddenly develops dyspnea or apnea, tube is assessed for obstruction.</li> <li>▪ The conscious patient is provided an alternate means of communication.</li> <li>▪ Documentation of time, date and person performing intubation, intubation site, size of ETT and depth level marking, medications administered to facilitate intubation, suctioning frequency and results, oral care and assessment, occurrence of complications, mode of mechanical ventilation and setting in patient's medical record and / or flow sheet.</li> </ul> </li> </ul> <p><b>Endotracheal Extubation – ADULT, care and management</b></p> <ol style="list-style-type: none"> <li>a. Patient's respiratory status assessed.</li> <li>b. Patient's heart rate, blood pressure, skin perfusion and level of consciousness are assessed.</li> <li>c. Trends of ABG results, especially the partial pressure of carbon dioxide (PaCO<sub>2</sub>) are noted which reflects ventilation.</li> <li>d. The procedure is explained to the patient and reinforced doctor's explanations.</li> <li>e. The patient is positioned in semi-fowlers or high fowlers. Any feeding, if given, is withheld for 6-8 hours prior to extubation. If ryle's is present, RT suction is done .</li> <li>f. Just prior to extubation, suctioning of ETT and mouth is done.</li> <li>g. The adhesive tape is loosened securing the tube to the face. Hyper-oxygenate or oxygenate as ordered.</li> <li>h. The syringe is attached to the cuff inflation valve and all</li> </ol>		



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	<p>air is aspirated as instructed by the doctor.</p> <ol style="list-style-type: none"> <li>i. Patient is instructed to inhale and cough. The doctor quickly removes the ETT while the patient is coughing.</li> <li>j. Humidified Oxygen is applied via face mask. The concentration and flow rate is set as ordered by the doctor.</li> <li>k. The patient's ability to swallow, speak and cough is assessed. The patient is observed for the first 5 minutes post-extubation and monitored closely for the next 8 hours and ABG is checked as ordered. Any respiratory distress, stridor or hoarseness is noted.</li> <li>l. Chest physiotherapy is provided as ordered to prevent re-intubation.</li> <li>m. Instructions are given to patient on coughing and deep breathing techniques. Patient is encouraged to perform these measures every hour.</li> <li>n. Administration of Humidified Oxygen is continued to promote secretion mobilization.</li> <li>o. Documentation in patient's medical record and / or BHT is done of date, time and person performing the extubation, patient assessment before and after extubation, oxygen concentration and flow rate, effectiveness of coughing and deep breathing exercise, characteristics of secretions if present and effectiveness of chest physiotherapy and positioning.</li> </ol> <p><b>Abdominal Paracentesis / ascitic tapping</b></p> <ol style="list-style-type: none"> <li>a. The doctor scrubs hands, wears mask and gloves.</li> <li>b. Skin is cleaned with Povidone iodine and the abdomen is draped.</li> <li>c. Local anaesthesia is injected.</li> <li>d. A small incision is made with the scalpel and the pleurafix inserted or a large cannula is used, if needed.</li> <li>e. When the fluid is draining a receiver is placed near the abdomen to receive it.</li> <li>f. A dressing is placed around the cannula and fixed in position with Micropore.</li> <li>g. The fluid is allowed to flow into the receiver and emptied into drainage bag.</li> </ol>		

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	<p>h. The rate flow is controlled by clamp as ordered. Observe amount of total fluids removed.</p> <p>i. Drape is removed. Dry pressure dressing is applied.</p> <p><u>Care of patient</u></p> <p>a. The patient is made comfortable.</p> <p>b. The surrounding is cleared.</p> <p>c. The amount and characteristics of fluids are measured and recorded.</p> <p>d. Vital signs are observed.</p> <p>e. Pressure dressing is applied when cannula is removed.</p> <p>f. The condition of the patient is observed carefully.</p> <p><b>Bone Marrow aspiration / Biopsy</b></p> <p><u>Procedure</u></p> <p>a. Doctor scrubs hands, wears mask and gloves.</p> <p>b. Skin is cleansed with antiseptic and the site is draped with sterile drape.</p> <p>c. After injecting the local anaesthesia, the marrow puncture needle is carefully and slowly inserted. 2 to 3 ml of bone marrow is withdrawn into the syringe.</p> <p>d. Marrow fragments are removed and thin films are made on the slides with this material by laboratory staff.</p> <p>e. The marrow puncture needle is withdrawn.</p> <p>f. A collodion and dry dressing is applied to the puncture.</p> <p><u>Care of patient</u></p> <p>a. The patient is made comfortable.</p> <p>b. Patient is allowed to rest on bed for at least 1 hour or depend on doctor's order.</p> <p>c. Surrounding is tidied up.</p> <p>d. Specimen is sent to laboratory.</p> <p>e. Patient is observed for bleeding and vital sign as ordered.</p> <p>f. Dressing is kept dry for at least 1 day.</p>		



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	<p><b>Pleural Aspiration</b></p> <p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• The doctor scrubs hands, wears mask and gloves.</li> <li>• Skin is cleansed with antiseptic.</li> <li>• The site is draped.</li> <li>• Local anaesthesia is injected.</li> <li>• Patient is instructed not to cough or move during the procedure.</li> <li>• The aspirating needle is passed into the pleural space.</li> <li>• Trocar and cannula is used if the fluid is too thick to be aspirated by means of the needle.</li> <li>• The fluid is collected in the jug.</li> <li>• When no further fluid is withdrawn, the aspirating needle is removed.</li> <li>• Puncture is sealed with collodion dressing.</li> <li>• Elastoplast is applied over dressing.</li> <li>• Chest x-ray is performed to rule out pneumothorax.</li> </ul> <p><u>Care of patient</u></p> <ul style="list-style-type: none"> <li>• The patient is made comfortable.</li> <li>• The surroundings cleared.</li> <li>• The patient is made comfortable in semi-recumbent position.</li> <li>• The amount, color, the characteristics and any abnormalities of the aspirated fluid are observed, measured and recorded.</li> <li>• Vital signs, especially respiration and color are observed.</li> </ul> <p><b>Lumbar Puncture</b></p> <p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• The doctor scrubs his hands, wears mask and gloves.</li> <li>• The site is cleaned with antiseptic and draped.</li> <li>• Local anaesthesia is injected.</li> <li>• The lumbar puncture needle is then inserted between the 3rd and or 5th and 5th lumbar vertebra.</li> </ul>		

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	<ul style="list-style-type: none"> <li>As the needle is being inserted, the nurse supports the patient in the position of extreme flexion and prevents him from making any sudden movement.</li> <li>A specimen of the cerebral spinal fluid is taken and the nurse keeps the bottles ready.</li> <li>The specimen is sent to the laboratory as soon as possible.</li> <li>After the lumbar puncture needle is withdrawn dry dressing is applied to the puncture.</li> </ul> <p><u>Care of patient</u></p> <ul style="list-style-type: none"> <li>The patient is instructed to lie in supine (flat) position without pillows for 4 – 6 hours.</li> <li>The leakage from the sites of lumbar puncture is observed.</li> <li>The patient's blood pressure, pulse and any complaint of headache are observed for 6 hours.</li> <li>The characteristics of cerebral spinal fluid are recorded.</li> </ul> <p><b>Supra pubic catheter insertion</b></p> <p>Procedure</p> <ul style="list-style-type: none"> <li>Routine cleaning of dressing trolley.</li> <li>Cytofix set is opened.</li> <li>Sterile gloves opened onto sterile set.</li> <li>Blade and ethilon are opened when ordered by doctor only.</li> <li>Doctor cleans abdomen with povidine and alcohol.</li> <li>10 cc syringe is opened onto trolley – offer green needle to doctor, or open onto trolley.</li> <li>The top of Lignocaine bottle is wiped with spirit swab and hold bottle with rubber bung top facing doctor for him to draw up the local anaesthesia.</li> <li>Blue needle is opened onto the trolley.</li> <li>Cystofix set is opened with open end facing doctor – on order only.</li> <li>Once Cystofix is inserted, urine bag is attached.</li> <li>Strapping up of dressing and ensuring that the cystofix is properly anchored. It is ensured that there is no 'kink' at tubing at all times. 'Kink' always occurs between cystofix</li> </ul>		



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	<p><b>Pleural Aspiration</b></p> <p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• The doctor scrubs hands, wears mask and gloves.</li> <li>• Skin is cleansed with antiseptic.</li> <li>• The site is draped.</li> <li>• Local anaesthesia is injected.</li> <li>• Patient is instructed not to cough or move during the procedure.</li> <li>• The aspirating needle is passed into the pleural space.</li> <li>• Trocar and cannula is used if the fluid is too thick to be aspirated by means of the needle.</li> <li>• The fluid is collected in the jug.</li> <li>• When no further fluid is withdrawn, the aspirating needle is removed.</li> <li>• Puncture is sealed with collodion dressing.</li> <li>• Elastoplast is applied over dressing.</li> <li>• Chest x-ray is performed to rule out pneumothorax.</li> </ul> <p><u>Care of patient</u></p> <ul style="list-style-type: none"> <li>• The patient is made comfortable.</li> <li>• The surroundings cleared.</li> <li>• The patient is made comfortable in semi-recumbent position.</li> <li>• The amount, color, the characteristics and any abnormalities of the aspirated fluid are observed, measured and recorded.</li> <li>• Vital signs, especially respiration and color are observed.</li> </ul> <p><b>Lumbar Puncture</b></p> <p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• The doctor scrubs his hands, wears mask and gloves.</li> <li>• The site is cleaned with antiseptic and draped.</li> <li>• Local anaesthesia is injected.</li> <li>• The lumbar puncture needle is then inserted between the 3rd and or 5th and 5th lumbar vertebra.</li> </ul>		

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	<p>tubing and connector. This region is strapped tightly.</p> <ul style="list-style-type: none"> <li>All action and changes in care plan are recorded and if any abnormalities the doctor is informed.</li> </ul> <p><b>Tracheostomy and its care</b></p> <p>Procedure</p> <ul style="list-style-type: none"> <li>Hands are washed.</li> <li>The patient is informed of the procedure, explaining that it may stimulate a cough reflex and choking feeling.</li> <li>The patient is positioned supine with the head of bed elevated to facilitate access to the tracheostomy.</li> <li>The patient is pre oxygenated and the airway is suctioned.</li> <li>With non-sterile gloves the dressing from the stoma is removed. The dressing is held in one hand and the glove is removed over the dressing. This encloses the dressing before being placed in the trash receptacle and decreased occurrence of cross-infection.</li> </ul> <p>For the patient receiving supplemental oxygen without mechanical ventilation, the following steps are performed:</p> <ul style="list-style-type: none"> <li>The oxygen source is disconnected.</li> <li>The inner cannula is removed and placed it in a container of hydrogen peroxide.</li> <li>The inner cannula is cleaned with hydrogen peroxide using a brush or pipe cleaner.</li> <li>The inner cannula is rinsed with sterile normal saline. The excess solution is gently tapped off the cannula.</li> <li>The inner cannula is reinserted into the tracheostomy and locked into place.</li> <li>The oxygen source is reconnected.</li> </ul> <p>For the patient receiving mechanical ventilation, perform the following steps:</p> <ul style="list-style-type: none"> <li>The mechanical ventilator is disconnected.</li> <li>The inner cannula is removed and replaced with the extra inner cannula.</li> <li>The mechanical ventilator is reconnected.</li> <li>The inner cannula is cleaned with hydrogen peroxide</li> </ul>		



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	<p>using a brush or pipe cleaner.</p> <ul style="list-style-type: none"> <li>○ The inner cannula is rinsed with sterile normal saline.</li> <li>○ The inner cannula is placed in a sterile container to be used in the next tracheostomy care procedure.</li> <li>○ If replacement of inner cannulas are not available, adequate airway humidification and suctioning is done to prevent encrustation of secretions in the inner cannula.</li> <li>○ The stoma is cleaned. 4 x 4 gauze sponges and cotton-tipped applicators are utilized. It is begun at the stomal edge and moved out away from the stoma.</li> <li>○ A sterile, precut gauze is placed with Flavine under the tube flanges. If the flanges are sutured to the skin, the gauze is not forced between the skin and flange.</li> <li>○ the stomal site is assessed for infection, erosion and skin breakdown.</li> <li>○ The tracheostomy tape is changed if it is soiled. The tube is secured with the new tape before removing the soiled tape. The tape is tied securely with a square knot that is loose enough to accommodate two fingers between the ties and skin.</li> <li>○ Suctioning of the airway is done again if necessary.</li> <li>● The oxygen source or mechanical ventilator is assessed every 2 to 4 hours for settings and functioning. The presence of humidified air is assured to prevent drying of secretions within the tracheostomy tube.</li> <li>● Tracheostomy care is performed when necessary; it is performed more often if the stoma is edematous and red or if secretions are copious, foul smelling, or yellow or green in color.</li> <li>● The tracheostomy dressing is changed whenever it becomes soiled.</li> <li>● Perform oral care every 8 hours.</li> <li>● An obturator and an extra tracheostomy tube are kept of the same size at the bedside.</li> <li>● 5 ml of normal saline is instilled into the airway and suction, if ordered. There may be a mucus plug obstructing the tube.</li> <li>● All actions taken are documented.</li> </ul>		

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	<ul style="list-style-type: none"> <li>• The patient is assessed before / during and after tracheostomy care.</li> </ul> <p><b>Chest tube insertion</b></p> <ul style="list-style-type: none"> <li>• Chest tube is inserted under local anesthesia</li> <li>• Intravenous access is established.</li> <li>• The patient's airway and respiratory status is continuously assessed.</li> <li>• The patient is laid down in Fowlers position with both arms resting on cardiac table.</li> <li>• Thoracostomy set is opened and added onto pack sterile gloves/surgical mask.</li> <li>• The skin over the area of insertion is first cleansed with antiseptic solution, such as iodine, before sterile drapes are placed around the area.</li> <li>• The sterile towels are opened.</li> <li>• Top of lignocaine 1% is cleaned with spirit swab to draw up local anaesthesia with 10cc syringe.</li> <li>• Size 11 blade is opened.</li> <li>• 3-'O' silk suture is added on cutting needle / gauze/ cotton.</li> <li>• Strips of 8" long 3" Elastoplast x 4 pcs. (2 strips to have key-hole) are cut ready.</li> <li>• The sterile water is carefully added into bottle till the correct marking, the water level is marked, ensuring glass tube is under water. (sterility at all times is Please ensured).</li> <li>• Chest tubes can also be placed using a trocar, which is a pointed metallic bar used to guide the tube through the chest wall. This method is less popular due to an increased risk of iatrogenic lung injury.</li> <li>• Chest tube trocar and cannula are unsealed with cap still on until ready to use.</li> <li>• Placement using the Seldinger technique, in which a blunt guidewire is passed through a needle (over which the chest tube is then inserted), is recommended.</li> <li>• Specimen bottle is kept ready to collect specimen from chest tube once it is in situ, if specimen is required.</li> <li>• Chest tube is clamped with Kellys clamps.</li> <li>• Chest tube is connected to under water seal bottle, making</li> </ul>		



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	<p>sure that it is very secured.</p> <ul style="list-style-type: none"> <li>• Kelly's tube clamps are released.</li> <li>• Type and quantity of drainage is assessed in the collection chamber.</li> <li>• Any air leak, along the tube and the water seal chamber, is checked for.</li> <li>• Once the tube is in place it is sutured to the skin with 3-'0' silk suture to prevent it falling out and a dressing is applied to the area</li> <li>• Chest drainage system is connected to suction (when ordered).</li> <li>• The site is pressed occlusively with gauze and elastoplast.</li> <li>• All tube connections are taped.</li> <li>• Once the drain is in place, a chest radiograph will be taken to check the location of the drain.</li> <li>• Chest X-ray is obtained immediately to assess the position of the chest tube and effectiveness of the procedure.</li> <li>• The tube stays in for as long as there is air or fluid to be removed, or risk of air gathering.</li> <li>• It is ensured that the patient is comfortable before leaving him / her.</li> <li>• Patient is observed for respiration, color and any complications e.g. surgical emphysema.</li> </ul> <p>Preparation of low suction pump</p> <ul style="list-style-type: none"> <li>• First it is ensured that the metal rod marker in glass chamber reaches the bottom of the chamber.</li> <li>• Glass chamber is filled with water up to marking 30 on the metal rod marker.</li> <li>• Metal rod marker is pulled upwards till marking 15 at water level.</li> <li>• Y connector is used for 2 drains and connector is straightened for single drain.</li> <li>• One end of connecting tubing is attached to connector and the other end to low suction pump.</li> <li>• The connector is attached to drainage tube / tubes from patient.</li> <li>• Main is plugged in and switched on.</li> </ul> <p><b>Removal of sutures/ clips</b></p>		

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	<p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• Trolley is cleaned.</li> <li>• Disposable bag is attached to trolley.</li> <li>• The equipment is placed on bottom shelves of trolley.</li> <li>• Trolley is taken to bedside.</li> <li>• Screen is used ensure privacy and procedure is explained to the patient.</li> <li>• Dressing edges are peeled off with un-sterile gloves.</li> <li>• Hands are washed.</li> <li>• Sterile field is created by opening suture set / clip remover onto top shelf of trolley.</li> <li>• Povidone iodine is poured into a gallipot.</li> <li>• Hands are washed.</li> <li>• Using sterile forceps dressing is removed and discarded into clinical bag; forceps are discarded into CSSD bag.</li> <li>• The suture line is cleaned.</li> <li>• The sterile gauze is placed on, beside suture line.</li> <li>• Using a forceps and suture scissors / clip remover, sutures / clips are removed.</li> <li>• Suture is cut as close to the skin as possible (to prevent contamination of wound) and pulled through from the wound.</li> <li>• Clips are depressed in the middle to open and removed from either side of the wound.</li> <li>• Removed suture / clip is placed on top of sterile gauze and continued down suture line.</li> <li>• The suture line is cleaned with povidone iodine and wound is dressed as necessary according to the physician's order.</li> <li>• The patient is made comfortable and the screen is removed.</li> <li>• The trolley is removed to utility room, clinical waste is discarded, CSSD bag is put in the appropriate container for CSSD collection.</li> <li>• Trolley is cleaned.</li> <li>• Hands are washed.</li> </ul> <p><b>Cannulation of Subclavian vein</b></p>		



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	<p>Procedures</p> <ul style="list-style-type: none"> <li>• Intravenous solution and tubing is prepared. The solution bag is labelled with date, time, solution and additives. The procedure is explained and the patient is reassured.</li> <li>• The sheet is placed and rolled underneath patient between the shoulder blades.</li> <li>• The patient's head is turned away from the intended inserted site.</li> <li>• All personnel, involved in the procedure, wear mask and gloves.</li> <li>• The doctor prepares intended site with Povidone-iodine solution and the solution is allowed to dry.</li> <li>• Patient is laid down in supine and Trendelenburg position to facilitate venous distention and assist in the prevention of air embolism.</li> <li>• The catheter insertion is performed by the doctor.</li> <li>• A sterile, transparent occlusive dressing is applied to the site along with the sliver impregnated graphalloy.</li> <li>• The patient is returned to the desired position. Documentation is done for date, time, location and by whom the catheter was inserted.</li> <li>• Breath sounds are auscultated for equality to assist in ruling out a pneumothorax or hemothorax.</li> <li>• A chest radiograph is obtained as ordered by the doctor to verify catheter placement and rule out pneumothorax or hemothorax.</li> </ul> <p><b>Guidelines for the use of multiple-lumen are as follows:</b></p> <ul style="list-style-type: none"> <li>• All lumens are used as a general access for administration of intravenous fluid.</li> <li>• Central venous pressure monitoring is performed through the distal lumen.</li> <li>• Blood products are administered through either the distal lumen or the proximal lumen.</li> <li>• Parenteral nutrition is administered through any lumen but preferably through the middle or distal lumens.</li> <li>• Blood sampling is obtained from the proximal lumen.</li> <li>• The catheter is assessed for patency and presence of blood</li> </ul>		

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	<p>return every shift and when necessary.</p> <ul style="list-style-type: none"> <li>• If a lumen is heparin-locked, patency is maintained by flushing with heparinized saline in every shift and when necessary.</li> <li>• Site dressing is changed every 24 hours and whenever necessary. The site for inflammation, discharge, edema and hematoma is assessed and documented. Catheter is assessed for kinks or loose sutures.</li> <li>• Central venous pressure readings are obtained as indicated.</li> <li>• Central lines are not used for blood sampling due to risk of line contamination unless all other methods of blood sampling are exhausted.</li> </ul> <p><b>Removal of Subclavian catheter</b></p> <ul style="list-style-type: none"> <li>• The dressing is removed.</li> <li>• The suture is removed with a suture-removal set.</li> <li>• A 4 x 4 gauze sponge is placed at the insertion site.</li> <li>• The catheter is gently pulled through insertion site.</li> <li>• Pressure placed immediately to the site with gauze sponge. Pressure is maintained for 3 to 5 minutes.</li> <li>• Povidine-iodine solution is applied to the site and a sterile dressing applied.</li> <li>• The site is assessed frequently for any discharge, edema or hematoma formation.</li> <li>• Documentation is done of date, time and by whom the catheter was removed.</li> </ul> <p><b>Arterial line insertion</b></p> <p><u>Procedure</u></p> <ul style="list-style-type: none"> <li>• The pressure transducer system is prepared and calibrated</li> <li>• The procedure is explained to the patient and the patient is reassured.</li> <li>• Allen test is performed to radial artery site.</li> <li>• The hand is supported and wrist is dorsiflexed. A roll of gauze or towel is placed behind the wrist for maximum dorsiflexion.</li> <li>• The site is prepared with Povidone-iodine solution for 3</li> </ul>		



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	<p>minutes and allowed to dry. The person performing the procedure wears a surgical mask and sterile gloves.</p> <ul style="list-style-type: none"> <li>• The doctor inserts the catheter into the artery at 45 degree angle after palpating the artery.</li> <li>• After arterial backflow is noticed, the catheter is thread over the needle and needle removed. The excessive backflow is prevented by occluding the catheter with a gloved finger.</li> <li>• The pressure tubing is connected to the catheter. The backflow is allowed and pressure tubing is flushed while connecting in order to prevent introduction of air into the system.</li> <li>• A crisp arterial tracing on the monitor is observed to indicate accurate placement.</li> <li>• If arterial pressure monitoring is not required by the doctor, the catheter is connected with pre-heparinised 3-way tape. The 3-way tape is flushed every 6 hours with heparinised saline to prevent arterial line blockage.</li> <li>• The insertion site is dressed with Povidone-iodine and transparent occlusive dressing.</li> <li>• The transducer is calibrated to ensure accuracy and maintain a pressurized heparin flush system. Documentation is done of date, time, size of catheter, location and by whom the catheter was inserted.</li> <li>• The arterial pressure is monitored hourly or more frequently if indicated.</li> <li>• The arterial waveform and presence of blood return is assessed for every 2 – 4 hours.</li> <li>• The correlation between the arterial line and cuff pressure is frequently checked and documented.</li> <li>• The dressing is changed every 24 hours and when necessary. Documentation of appearance, site and perfusion of the affected extremity is done.</li> <li>• Signs of infection are observed for.</li> <li>• Removal of the catheter is ordered by the doctor:</li> <li>• The dressing is removed.</li> <li>• The stopcock is closed closest to site.</li> <li>• The catheter is removed gently and firm pressure is applied to the site for 5 minutes.</li> <li>• The pressure dressing is applied.</li> </ul>		

Sl. No.	Activity	Responsibility	Reference Document / Record
	<ul style="list-style-type: none"> <li>• The circulation to affected extremity is assessed.</li> <li>• Documentation of removal of catheter, with description of site and length of time pressure applied, is done.</li> </ul> <p><b>Sedation in ICU</b></p> <ul style="list-style-type: none"> <li>• All patients admitted in ICU are sedated in such a manner that               <ol style="list-style-type: none"> <li>a. enables tolerance of endotracheal intubation.</li> <li>b. enables tolerance of mechanical ventilation.</li> <li>c. enables pain relief in such a way that they are calm and yet arousable.</li> <li>d. ensures that the patient is not aware of any procedures done.</li> </ol> </li> </ul> <p>All patient on endotracheal intubation and mechanical ventilation are managed as follows</p> <ol style="list-style-type: none"> <li>a) <b>Inj. Midazolam</b> 2mg slow IV as initial bolus followed by 1mg IV every hour. The dosage is reduced over a period of time. During procedures a bolus of 2 mg is administered.</li> <li>b) <b>Inj. Morphine</b> 4mg slow IV followed by continuous infusion @ 1.2 mg/hr is done if the patient is restless, struggling with the ventilator or markedly hyperventilating.</li> <li>c) <b>Infusion of Morphine</b> is stopped between 06:00 to 09:00 hrs every day for neurological assessment.</li> <li>d) If the patient continues to resist the ventilator then Inj propofol 1% IV infusion is given.</li> <li>e) <b>Muscle Relaxant-</b> Inj. Vecuronium 6mg slow IV bolus (0.1 mg/kg), followed by 1mg every hr is the last resort.</li> <li>f) A combined infusion of midazolam 40mg and vecuronium 40 mg in 50 ml volume is used for a patient who has to be kept paralysed and sedated at a rate of 3-4 ml/hour.</li> <li>g) Inj. Butorphanol is used as an alternative to morphine at a dose of 1mg 4 hourly.</li> </ol>		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<b>Facility follows standard treatment guidelines for prescription and administration of drugs...</b> <ul style="list-style-type: none"> <li>The Doctor on duty should ensure that drugs are prescribed under generic name.</li> <li>The staff nurse on duty should ensure that right doses of high alert drugs are given.</li> <li>Drugs are checked for expiry date.</li> <li>Single dose vial are not used for more than one dose.</li> <li>Separate sterile needle is used every time.</li> <li>If a sample (blood/urine/mouth swab etc.) is collected, the container is labeled properly by the staff on duty. ICU has critical values of various lab tests.</li> </ul>	Doctor/Staff Nurse on duty	ICU Register/BHT
	<b>Patient record Maintenance</b> <ul style="list-style-type: none"> <li>Patient progress is recorded as per defined assessment/ treatment plan.</li> <li>Orders are written on BHT.</li> <li>Maintenance of treatment is recorded on BHT.</li> <li>Records are maintained as per guidelines. All register/records are identified and numbered for Safe keeping.</li> </ul>	Doctor/ Staff Nurse on duty	ICU Register/BHT
	<b>The facility has defined and established procedures for discharge of patient.</b> <ul style="list-style-type: none"> <li>Assessment is done before discharging patient. Discharge is done by an authorised doctor.</li> <li>Patient / attendants are consulted before discharge.</li> <li>Discharge summary should adequately mention patient's clinical condition, treatment given and follow up.</li> <li>Discharge summary is given to the patient/attendant.</li> <li>LAMA/Referred out Patient is counseled before discharge and the consequences are explained.</li> </ul>		ICU Register/BHT
	<b>The facility has defined and established procedures for intensive care.</b> <ul style="list-style-type: none"> <li>ICU has protocol for step down/ pain management /sedation/ Starting Central lines/ parenteral nutrition/Care of unconscious paraplegic patients/anaphylactic shock / non invasive ventilation etc.</li> <li>In case of respiratory failure, ICU has protocols for care and Monitoring of patient on ventilator.</li> </ul>		ICU Register/BHT
	<b>The facility has defined and established procedures for</b>	Doctor / Staff	BHT

Sl. No.	Activity	Responsibility	Reference Document / Record
	<b>Blood Bank / Storage Management and Transfusion.</b> <ul style="list-style-type: none"> <li>• Consent is taken before transfusion.</li> <li>• Patient's identification is verified before transfusion.</li> <li>• Blood is kept at optimum temperature before transfusion.</li> <li>• Blood transfusion is monitored and regulated by doctor/staff nurse on duty.</li> <li>• Blood transfusion note is written in patient record.</li> <li>• Any major or minor transfusion reaction is managed, recorded and reported to SIC / CMS and the blood bank In charge.</li> </ul>	Nurse on duty / Blood Bank officials	
	<b>Facility has established procedures for Anaesthesia Services</b> <ul style="list-style-type: none"> <li>• Pre anaesthesia, check up is conducted for elective / planned surgeries</li> </ul>	Anesthetist	
	<b>The facility has defined and established procedures for end of life care and death</b>		
	<ul style="list-style-type: none"> <li>• ICU has procedure to inform patient's relatives about the poor prognostic status.</li> <li>• ICU has system for conducting grievance counseling of patient's relatives in case of mortality.</li> <li>• Death note is written on patient's BHT including efforts done for resuscitation.</li> <li>• Death summary is given to patient attendant quoting the immediate and underlying cause.</li> <li>• There is a standard procedure of removal of life sustaining treatment as per law.</li> <li>• The doctor/staff nurse on duty should allow patient relative/next of Kin to observe patient in last hours.</li> </ul>	Doctor/Staff Nurse on duty	
	<b>Infection control management including hand hygiene and use of personal protective equipments.</b> <ul style="list-style-type: none"> <li>• There is procedure for immunization of the staff Periodic medical checkups of the staff.</li> <li>• Surface and environment samples are taken for microbiological surveillance.</li> <li>• There is procedure to report cases of Hospital acquired infection.</li> <li>• Regular monitoring of infection control practices by the sister in charge by the ICU.</li> <li>• Doctor/staff should wash hands after each procedure or handling of the patient.</li> </ul>	Doctor/Staff Nurse on duty	



Sl. No.	Activity	Responsibility	Reference Document / Record
	<ul style="list-style-type: none"> <li>• Availability of Clean water and soap/Antiseptic Solution to be ensured by Sister Incharge.</li> <li>• Proper cleaning of procedure site with antiseptic solution to be done regularly.</li> <li>• Availability of Clean gloves, Mask, shoe cover, Caps, Personal protective kit, aprons etc. should be ensured.</li> </ul>		
	<p><b>INVENTORYING EQUIPMENT:</b></p> <p>Once the equipment is supplied, it is unpacked for inspection for any damages, breakage and for completeness. All accessories, software CDs/ DVDs, user manuals, instruction leaflets, spares etc are also checked. The relevant quality conformance certificates/ marks along with the manufacturer factory test certificate are retained as part of documentation for all equipment. Then the equipment is checked for functioning and operations.</p> <p>After satisfying on above issues, the equipment is taken in the stock and its inventory number is issued. An inventory sticker is placed on the equipment with all details of the equipment and inventory. Also its history sheet and log book is initiated. These are then handed over to the user department after formally issuing them the equipment.</p>		
	<p><b>PROCEDURE FOR PREVENTIVE-BREAK DOWN MAINTENANCE AND CALIBRATION OF EQUIPMENTS</b></p> <p>For each of the equipment there is a documented operational and maintenance plan that is a part of the history sheet of the equipment. The manufacturer's instruction manual is there that contains this plan. The operator is trained in handling the equipment. There is a preventive maintenance tracker for every equipment</p> <p><b>Maintaining equipment history sheets and log books:</b></p> <p>It is the duty of the user department to maintain and up-date the history sheet and log book of the equipment that is issued to them or is working in their department or unit. The</p>		

Sl. No.	Activity	Responsibility	Reference Document / Record
	All records of calibration and inspection are maintained by the user department as well as by the administrative/hospital engineering department.		
<b>1.0</b>	<b>In puts for Maintenance</b>		
1.1	<p>A comprehensive list of Facilities/ instruments/ devices (unit wise)– containing all different types of instruments/ devices used/ available with details such as:</p> <ul style="list-style-type: none"> <li>• Their Identification</li> <li>• Location</li> <li>• Range of Operation, and</li> <li>• Maintenance &amp; calibration requirements</li> </ul>	Concerned Engineer/ Technician	
1.2	The maintenance and calibration requirements are normally identified using the operational & maintenance manuals. Where maintenance manuals are not available, these are based on knowledge and experience. For all new procured instruments/ devices, it is ensured that these manuals are controlled through the control of External Original Documents	Concerned Engineer/ Technician	
1.3	When any instrument/ device break down, Engineering Services Dept. is informed. Engineer log the requirement of maintenance.	Concerned Engineer/ Technician	
<b>2.0</b>	<b>Maintenance Process</b>		
2.1	<b>Preventive Maintenance</b> (Refer ANNEXURE-5 for Workflow)		
2.1.1	Preventive maintenance schedules are prepared based on manufacturers' recommendations/ review of Preventive Maintenance record. The intimation of preventive maintenance is communicated in advance to the various departments for release of equipment.	Concerned Engineer/ Technician	
2.1.2	Preventive maintenance is carried out as per Maintenance Schedule and Records using format .The concerned engineer checks the maintenance activities regularly.	Concerned Engineer/ Technician	
2.1.3	All preventive maintenance jobs done are recorded in History Card maintained for each equipment/ device (unit wise) using format.	Concerned Engineer/ Technician	
2.2	<b>Breakdown Maintenance</b> (Refer ANNEXURE-4 for workflow)		



Sl. No.	Activity	Responsibility	Reference Document / Record
	<p>departmental head keeps a folder in the department that contains files for all equipment containing their history sheets and log books. The whole idea is to track the performance of the equipment and to keep a record of its functioning. This also helps in timely preventive maintenance and calibration of the equipment as per its requirements and renewal of CMC/ AMC before it expires.</p> <p><b>Equipment inspection and calibration:</b></p> <p>All equipment is periodically inspected by the hospital engineering services department and where need be by the bio-medical engineering personnel in case of clinical equipment. Bio-medical equipment is also calibrated periodically as per the equipment requirements and criticality of operations. The organization has developed weekly, monthly, annual schedules of inspection and calibration of equipment. This ensures measurement and maintenance of these equipment in appropriate manner. Record of all such inspections and corrective and preventive measures taken are maintained.</p> <p>Calibration of the bio-medical equipment and other critical equipment is undertaken with fixed periodicity as well as on need base priority. For equipment under CMC/ AMC calibration is done by the vendor as a package for preventive and breakdown maintenance and such calibration is ensured by the user department as well as by the bio-medical personnel and records of such calibrations are maintained in the history sheets of the respective equipments.</p> <p>For the equipment not under CMC/ AMC the hospital gets the same calibrated by identified vendors and agencies that are experts in the field. The periodicity of such calibration is pre-decided for each equipment as per the manufacturer specifications.</p> <p>Additionally in-house calibration of some equipment like that of medical laboratory etc. is undertaken by the technicians, operators as per the equipment and expertise available.</p>		

Sl. No.	Activity	Responsibility	Reference Document / Record
2.2.1	Breakdown of an equipment or device is reported to the engineering services dept. The requisition for such repairs is sent on the Breakdown repair form (Refer Annexure-1). The concerned Engineer logs the requirement of maintenance / repair in format of Breakdown.	Concerned Engineer/ Technician	
2.2.2	All preventive maintenance jobs done are recorded in History Card maintained for each equipment / devices using format.	Concerned Engineer/ Technician	
2.2.3	Instruments/ devices which are given in AMC (Annual Maintenance Contract) are given to AMC Company for maintenance. A report of failure/ break down is taken from company for monitoring purposes.	Concerned Engineer/ Technician	
<b>3.0</b>	<b>Calibration of Devices/ Equipments</b>		
3.1	A list of all instrument / equipment/ devices requiring calibration is prepared and maintained. The list identifies the measurement instruments by name, type, serial number, location, applicable calibration requirements, date of calibration done and calibration due date. The calibration status is updated continuously.	Concerned Engineer/ Technician	
3.2	This list also indicates, whether calibration is done in house or through external sources. Calibration requiring an outside agency - a contract or purchase order is issued.	Concerned Engineer/ Technician	
3.3	Where required Calibration agency is provided with necessary facilities and support to carry out calibration in the hospital itself.	Concerned Engineer/ Technician	
3.4	Such instruments that are to be calibrated at an outside location are collected and sent to the identified calibration agency.	Concerned Engineer/ Technician	
3.5	The following is checked when calibration is done - <ul style="list-style-type: none"> <li>Physical condition of instrument / test equipment</li> <li>Calibration report verification</li> <li>Calibration certificate to be obtained from calibration agency and after verification marked as O.K. / Not O.K.</li> <li>Sticking of calibration sticker</li> </ul>	Concerned Engineer/ Technician	
3.6	Calibration history is maintained using format F03/BMD (HC) and calibration certificates filed.	Concerned Engineer/ Technician	



Sl. No.	Activity	Responsibility	Reference Document / Record
3.7	Maintenance preserves the machine's accuracy and fitness for use. If equipment is out of calibration or is otherwise not fit for use, it should be withdrawn from use.	Concerned Engineer/ Technician	
3.8	Accessories associated with Test instruments are identified and calibrated along with Test Instruments.	Concerned Engineer/ Technician	
3.9	In case an instrument has an error – the materials already checked by this instrument are quarantined. This lot is re-checked with other instruments which are in order/the same instrument after its re-calibration.	Concerned Engineer/ Technician	
3.10	Persons using instruments are trained on aspects like Do's, Don'ts, handling, storage, safety, preventive maintenance.	Concerned Engineer/ Technician	
	<b>Physical layout and environmental control of the patient care areas to ensure infection prevention</b> <ul style="list-style-type: none"> <li>Floors and wall surfaces of ICU are easily cleanable. Availability of disinfectant/cleaning agent to be ensured.</li> <li>Staff is trained for spill management (blood/mercury) etc.</li> <li>Staff is trained for preparing cleaning solution as per standard procedure. Cleaning of patient care area with detergent solution.</li> <li>Standard practice of mopping and scrubbing are followed. Cleaning equipments like broom are not used in patient care areas.</li> <li>Use of three bucket system for mopping</li> <li>Fumigation/carbonization as per schedule.</li> <li>Personal foot wears to be restricted. Adequate number of rubber slippers should be available.</li> </ul>	Sister In charge ICU	
	<b>Facility has defined and established procedures for segregation, collection, treatment and disposal of Bio Medical and hazardous Waste.</b> <ul style="list-style-type: none"> <li>Availability of colour coded bins and colour coded plastic bags should be used.</li> <li>Segregation of different category of waste at the point of generation to be done as per guidelines.</li> <li>Display of work instructions for segregation and handling of biomedical waste.</li> <li>Infectious and general waste should be segregated.</li> <li>Availability of functional needle cutters and puncture proof</li> </ul>		

Sl. No.	Activity	Responsibility	Reference Document / Record
	<p>box should be ensured.</p> <ul style="list-style-type: none"> <li>Disinfection of sharps before disposal, availability of post exposure prophylaxis for staff in case of needle sticks injury.</li> <li>Check that bins are not overfilled.</li> <li>Disinfection of liquid waste before disposal.</li> <li>Transportation of bio medical waste should be in close container/trolley.</li> </ul>		
	<p><b>The facility has established organizational framework for quality improvement</b></p> <ul style="list-style-type: none"> <li>There is a designated departmental nodal person for coordinating Quality Assurance activities</li> <li>There is a system of daily round by Hospital Superintendent / Hospital Manager / Matron in charge for monitoring of services.</li> </ul>		
	<p><b>The facility has established system of periodic review, medical, death and prescription audit</b></p> <ul style="list-style-type: none"> <li>There is procedure to conduct Medical Audit, Prescription audit; Death audit and preventive action taken. There is procedure that Non Compliance are enumerated</li> </ul>		
	<p><b>The facility has defined and established Quality Policy &amp; Quality Objectives</b></p> <ul style="list-style-type: none"> <li>Quality objective for ICU are defined.</li> <li>Staff should be aware of quality policy and objectives</li> <li>Quality objectives are monitored and reviewed periodically.</li> </ul>	ICU In charge	
	<p><b>The facility measures Clinical Care &amp; Safety Indicators and tries to reach State/National benchmark</b></p> <ul style="list-style-type: none"> <li>Average length of stay.</li> <li>Adjusted Mortality Rate/Standard Mortality Rate.</li> <li>No of Pressure Ulcer developed per thousand cases.</li> <li>No of adverse events per thousand patients.</li> <li>UTI rate.</li> <li>Re-intubation Rate</li> <li>Culture Surveillance sterility rate</li> <li>Bed Occupancy Rate Proportion of BPL patients admitted.</li> <li>LAMA Rate</li> <li>Patient Satisfaction Score</li> </ul>		



### Infection Control

With the concurrence of the consultant microbiologist and infection control team, infection control procedures are agreed upon and enforced regarding:

- a) Antibiotic policy
- b) Dress code Policy of staff and visitors
- c) hand washing
- d) sterilization
- e) aseptic precautions for invasive procedures
- f) use of disposables
- g) filtering of patients' respired air
- h) changing of catheters, humidifiers, ventilator tubing and other equipment
- i) Isolation of at-risk or infected patients
- j) cleaning of the unit

Where possible, policies follow those laid down in hospital procedures (e.g. lumbar puncture, dressing of wounds and intravenous cannular sites). Many procedures are unique to ICUs, such as tracheal suction, care of vascular catheters and extracorporeal circuits, changing of oxygen masks, humidifiers and ventilator circuits. Local procedures are agreed and documented.

In control of infection, discipline and behaviour is more important than design. Design is such as to encourage discipline and appropriate behaviour: an absence of sink reduces the possibility of hand washing, but an abundance of sinks does not necessarily ensure that this behaviour is adopted.

### ANNEXURE-1

Equipment Breakdown Repair Requisition Form		
Breakdown Slip No.	Department:	Date: Time:
Equipment/ Instrument Name		
Equipment/ Instrument Code No.		
Equipment/ Instrument Location		
Nature of Breakdown		
Time Required / Due Date		

Actual Time Consumed	
Signature of concerned Head	
Date :	Received Signature of Maintenance concerned Section Head
Remarks:	
Time	Signature of concerned Section Head /In-charge



**ANNEXURE-2**

**HISTORY SHEET OF EQUIPMENT**

Location where installed:

<b>Unit Name:</b>		<b>Make:</b>		<b>Model:</b>		<b>Equipment Code:</b>	
<b>Supplier:</b>		<b>Service Provider</b> (Name, Address & Phone No.)		<b>AMC</b>		<b>AMC Valid up to:</b>	
				<b>Yes</b>	<b>No</b>		
<b>Date</b>	<b>Operator's Name</b>	<b>Maintenance / Breakdown Details</b>	<b>Maintenance Done</b>	<b>Spares Changes</b>		<b>Next Due date for Service</b>	<b>Remarks &amp; Sig. of I / C</b>

Annexure 3

Departmental/Unit Equipment Inventory						
Department:				Month/Year:		
S.N.	Equipment Name	Make	Date of Purchase	Date of Calibration	Due date of next Calibration	Equipment No.
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						



<b>Departmental/Unit Equipment Inventory</b>						
Department:					Month/Year:	
S.N.	Equipment Name	Make	Date of Purchase	Date of Calibration	Due date of next Calibration	Equipment No.
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						
34.						
35.						
36.						

**Departmental/Unit Equipment Inventory**

Department:

Month/Year:

S.N.	Equipment Name	Make	Date of Purchase	Date of Calibration	Due date of next Calibration	Equipment No.
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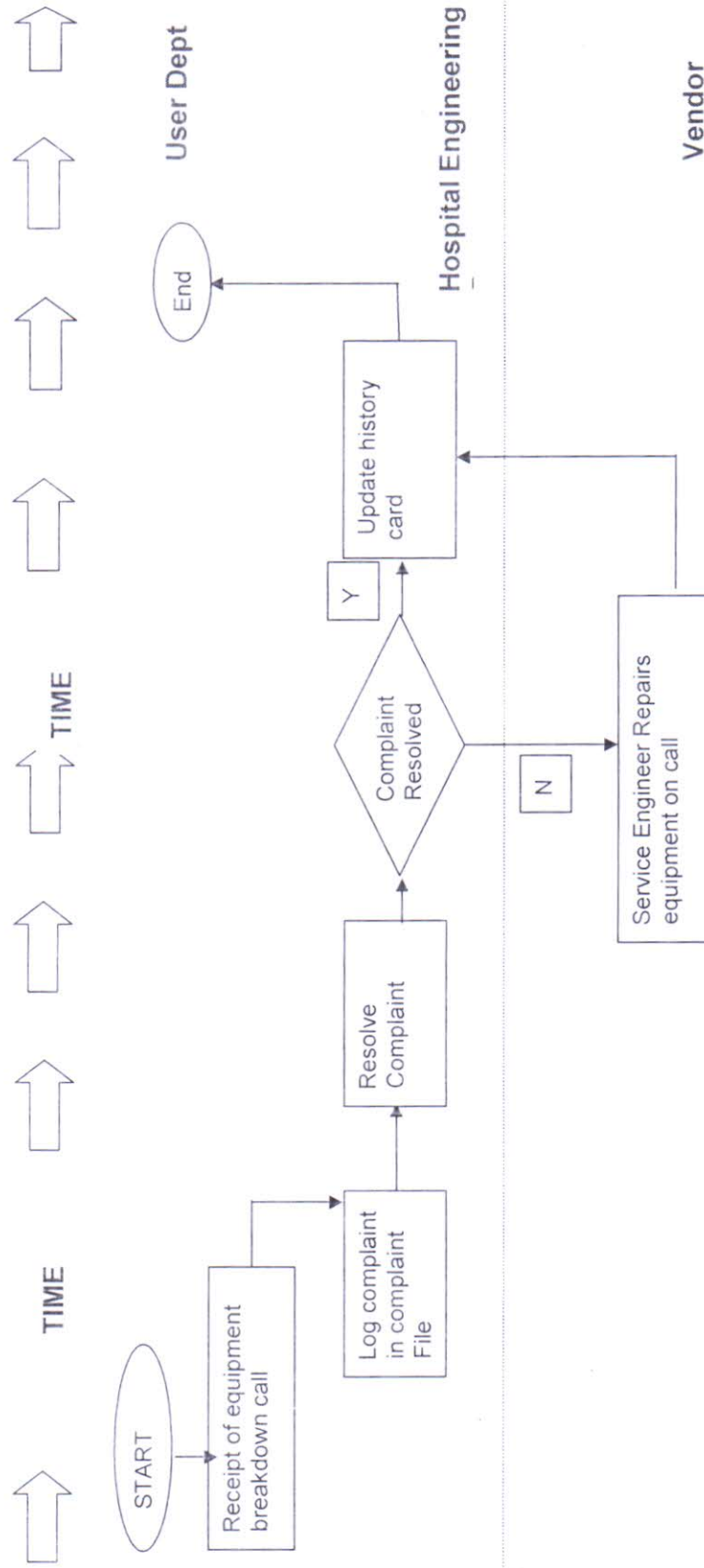
(Name & Signature)



## CALIBRATION REPORT OF EQUIPMENTS

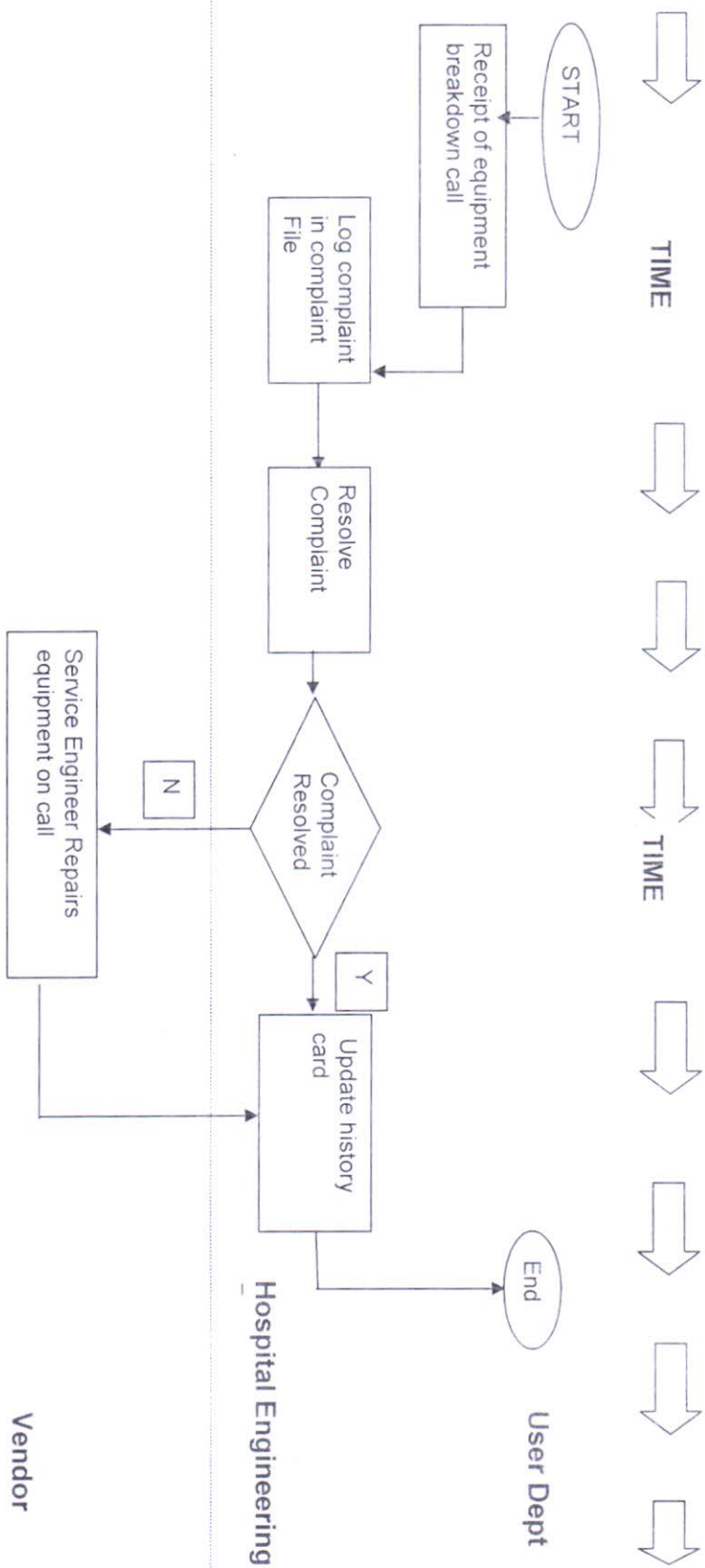
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BREAKDOWN MAINTENANCE WORKFLOW





BREAKDOWN MAINTENANCE WORKFLOW



District Hospital Intensive Care Unit	Standard Operating Procedure SOP/NQAS/DH/ICU - 1.0
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Prepared by : Department In-charge	Approved by : Name :	Issue Date	Version No. : 1.0
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