



# **INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES**

**SHEIKHPURA, PATNA - 800 014 (Bihar, India)**

## **STANDARD OPERATING PROCEDURE (NATIONAL ACCREDITATION BOARD FOR HOSPITALS & HEALTH CARE PROVIDERS)**

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**AMENDMENT SHEET**

<b>S. No</b>	<b>Section no &amp; Page no</b>	<b>Details of the amendment</b>	<b>Reasons</b>	<b>Signature of the Preparatory authority</b>	<b>Signature of the approval authority</b>

**INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES****PATIENT CARE IN ICU/CCU  
(SOP)****SOP - Policies and Procedures on Care of patients in ICU/ HDU****PURPOSE:**

To define policies guiding care of patient in the Intensive Care Unit and High Dependency units.

**SCOPE:**

For all patient availing intensive and high dependency units services.

**RESPONSIBILITY:**

All medical and paramedical staff at critical care units,  
Infection control team,  
Department Bio-Medical Engineering,  
Housekeeping staff

**REFERENCE:**

**NABH:** Pre Accreditation Entry Level Standards for Hospitals, First Edition, April 2014.

**POLICY:**

- 1) Intensive care admission and / or discharge shall be decided by treating doctor/In charge, ICU. Each patient shall be under the care of a nurse, always maintaining the patient to nurse ratio of 2:1. Intensive care areas shall follow infection control practices as per procedure. (Ref: Infection control manual). Intensive care units shall follow the quality assurance programme.
- 2) Visitors shall not be allowed in high dependency areas, except in special situations wherein restricted entry of one or two close relatives shall be permitted during visiting hours only.
- 3) As and when there is a shortage of beds, patients those who are normal will be shifted to the wards and priority will be given to the emergency patients.
- 4) One empty bed shall be kept reserved for all the time for receiving emergency patients of IGIMS who need ICU admission.

- 5) Quality assurance system is implemented and followed in ICU's.
- 6) Cleaning of floors, work stations, etc to be done with Bionil disinfectant.

## **PROCEDURE:**

Patients needed emergency care is shifted to Intensive Care Unit will be depending up on the cases.

**Admission Criteria in ICU:** Admission criteria are used to select patients who are likely to benefit from care in ICUs. Patients who meet any of the following criteria shall be admitted to the ICUs at the request of the consultant. While we make every effort to strictly adhere to admission criteria, we accommodate requests from consultants who clinically feel that a patient would benefit from close monitoring in the critical care unit even through not strictly meeting the criteria stated below:

### **1) Respiratory:**

- 1.1 Acute respiratory failure ( $\text{PaO}_2 < 60$  mm Hg).
- 1.2 Respiratory rate  $> 30$  breaths/minute and  $< 8$  breath/mt.
- 1.3 Patients requiring ventilatory support (invasive or non-invasive).
- 1.4 Pulmonary emboli with haemodynamic instability.
- 1.5 Massive Haemoptysis .

### **2) Surgical:**

- 2.1 Post-operative patients requiring haemodynamic monitoring, ventilator support or extensive nursing care.
- 2.2 Patients with surgical abdomen requiring preoperative fluid and/or electrolyte resuscitation.
- 2.3 Polytrauma with significant injury to thoracic / abdominal organs requiring surgical intervention.

### **3) Renal:**

- 3.1 Patient who has acute renal failure with accompanying respiratory or hemodynamic components require close monitoring & respiratory/ hemodynamic support.
- 3.2 Significant acidosis or alkalosis.
- 3.3 Hypo or hyperkalemia with dysarrhythmias or muscular weakness.
- 3.4 Hypo or hypernatremia with seizures, altered mental status.
- 3.5 Severe hypercalcemia with altered mental status, requiring close neurological monitoring.

3.6 Hypo or hypermagnesemia with haemodynamic compromise or dysarrhythmias or muscular weakness

**4) Drug Ingestion and overdose:**

4.1 Drug ingestion with significantly altered mental status & inadequate airway protection / hemodynamic instability.

4.2 Seizures following drug ingestion

**5) Endocrine:**

5.1 Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status, respiratory insufficiency, or severe acidosis.

5.2 Thyroid storm or myxedema coma with hemodynamic instability.

5.3 Other endocrine problems such as adrenal crisis with hemodynamic instability.

5.4 Non Ketotic hyperosmolar coma.

**6) Miscellaneous:**

6.1 Environmental injuries (lighting, near drowning, hyperthermia or hypothermia).

6.2 Any other clinical conditions requiring ICU level nursing care.

6.3 Suicidal gestures including partial hanging, drug overdoses and other self-inflicted injuries.

**Discharge Criteria:**

1. Written discharge order by the attending physician.
2. Substantial resolution of the problems responsible for admission.
3. Anticipation of prolonged medical stability.
4. Elimination of need for mechanical ventilation/ airway protection.
5. The admission of a patient to these units shall be done by the Senior Resident who in turn shall inform the specialists / doctors who are trained to handle emergency care in Intensive Care Units (Intensivist).

6. The specialist shall give written instructions to trained nursing staff for the management and treatment of a particular patient in such units.
7. Each patient shall be under the care of a nurse, always maintaining the patient to nurse ratio of 2:1 / as advised by ICU doctor in-charge.
8. Emergency medicines with resuscitative equipments shall always be kept ready for use. (Ref: Checklist for emergency medicines and equipments).
9. Specialized life support equipments like, ventilators, defibrillators, infusion pumps, Central oxygen supply and suction, etc., are readily available.
10. The staff on duty is trained to handle and use this highly technical equipment properly and at the right time.
11. All staff shall be trained periodically on how to handle critical care equipments so as to minimize break down and loss.
12. Staff in charge of these units shall check that these equipments are kept in proper working condition at all times.
13. **Department of Bio-Medical Engineering** shall on a daily basis check the equipments of the intensive care units, and maintain log book.
14. **Department of Bio-Medical Engineering** shall also take care of the maintenance and calibration of equipments of the intensive care units.
15. This shall be reviewed by the head nurse of the intensive care units and Intensivist.
16. 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.
17. Sterility of these units shall be strictly maintained. Floor, workstation should be cleaned with Hydrogen peroxide + Ammonium nitrate composition disinfectant.
18. 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.
19. Transfer of the patients to the normal ward or the patient's home is done after the treating doctor gives specific orders for the same.

20. 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.
21. 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.
22. 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 visit schedule shall be written in the discharge card duly named, signed, dated and time by the treating doctor.
23. A copy of all reports shall be given to the patient along with the discharge summary.
24. Infectious cases need isolation.

#### **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 out to other wards with their or the attend consent and the same will be intimated to the patient attendant.
- 3) On arrival the patient /attendant will be informed about the non-availability of beds, if the patient is stable he will be transferred to other hospital of patient choices.
- 4) In case of minor injury or unstable will be stabilized and transferred with the help of hospital ambulance to a hospital of patient choice.
- 5) At the time of transfer, transfer protocol is followed.

#### **Quality Assurance Programme in ICU:**

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

				register	
		Medication administration (route, dose and frequency)	ICU incharge staff	Drug chart	Once in two months
		Coordination between staff in ICU	ICU incharge 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 , VAP	Monthly



## **Infection Control Manual**

A hospital-associated infection prevention manual containing instructions and practices for patient care is an important tool. The manual should be developed and updated by the infection control team and reviewed and approved by the committee. It must be made readily available for health care workers, and updated in a timely fashion.

### **Education and Training of Health Care Staff**

Health administrators should be oriented towards the importance of the infection control programme.

Health care workers should be equipped with requisite knowledge, skills and attitudes for good infection control practices. The infection control team should:

- Assess training needs of the staff and provide required training through awareness programmes, in-service education and on-the-job training;
- organize regular training programmes for the staff for essential infection control practices that are appropriate to their job description;
- provide periodic re-training or orientation of staff; and review the impact of training.

### **Infection Control Practices**

Infection control practices can be grouped in two categories

- (1) standard precautions;
- (2) additional (transmission-based) precautions.

Transmission of infections in health care facilities can be prevented and controlled through the application of basic infection control precautions which can be grouped into standard precautions, which must be applied to all patients at all times, regardless of diagnosis or infectious status, and additional (transmission-based) precautions which are specific to modes of transmission (airborne, droplet and contact).

### **Standard Precautions**

Treating all patients in the health care facility with the same basic level of “standard” precautions involves work practices that are essential to provide a high level of protection to patients, health care workers and visitors. These include the following:

- Hand washing and antisepsis (hand hygiene);
- Use of personal protective equipment when handling blood, body substances, excretions and secretions;
- Appropriate handling of patient care equipment and soiled linen;
- Prevention of needlestick/sharp injuries;

- Environmental cleaning and spills-management; and
- Appropriate handling of waste.

### **Hand washing and Antisepsis (hand hygiene)**

Appropriate hand hygiene can minimize micro-organisms acquired on the hands during daily duties and when there is contact with blood, body fluids, secretions, excretions and known and unknown contaminated equipment or surfaces (for further details see Annex 1). Wash or decontaminate hands:

- After handling any blood, body fluids, secretions, excretions and contaminated items;
- Between contact with different patients;
- Between tasks and procedures on the same patient to prevent cross contamination between different body sites;
- Immediately after removing gloves; and
- Using a plain soap, antimicrobial agent, such as an alcoholic handrub or waterless antiseptic agent. The hospital setting is a good setting for communication about personal hygiene, such as informing visitors and the general public about hygiene rules such as washing hands.

### **Use of Personal Protective Equipment**

Using personal protective equipment provides a physical barrier between micro-organisms and the wearer. It offers protection by helping to prevent micro-organisms from:

- Contaminating hands, eyes, clothing, hair and shoes;
- Being transmitted to other patients and staff (for further information about personal protective equipment see Annex 2). Personal protective equipment includes:
  - gloves;
  - protective eye wear (goggles);
  - mask;
  - apron;
  - gown;
  - boots/shoe covers; and
  - cap/hair cover.

### **Examples of Personal Protective Equipment**

Personal protective equipment should be used by:

- Health care workers who provide direct care to patients and who work in situations where they may have contact with blood, body fluids, excretions or secretions;
- support staff including medical aides, cleaners, and laundry staff in situations where they may have contact with blood, body fluids, secretions and excretions;
- laboratory staff, who handle patient specimens; and
- family members who provide care to patients and are in a situation where they may have contact with blood, body fluids, secretions and excretions.

### **Principles for use of Personal Protective Equipment**

Personal protective equipment reduces but does not completely eliminate the risk of acquiring an infection. It is important that it is used effectively, correctly, and at all times where contact with blood and body fluids of patients may occur. Continuous availability of personal protective equipment and adequate training for its proper use are essential. Staff must also be

aware that use of personal protective equipment does not replace the need to follow basic infection control measures such as hand hygiene. The following principles guide the use of personal protective equipment:

- Personal protective equipment should be chosen according to the risk of exposure. The health care worker should assess whether they are at risk of exposure to blood, body fluids, excretions or secretions and choose their items of personal protective equipment according to this risk.
- Avoid any contact between contaminated (used) personal protective equipment and surfaces, clothing or people outside the patient care area. Discard the used personal protective equipment in appropriate disposal bags, and dispose of as per the policy of the hospital.
- Do not share personal protective equipment.
- Change personal protective equipment completely and thoroughly wash hands each time you leave a patient to attend to another patient or another duty.

### **Gloves**

Wear gloves (clean, non-sterile) when touching blood, body fluids, secretions, excretions or mucous membranes. Change gloves between contacts with different patients. Change gloves between tasks/ procedures on the same patient to prevent cross-contamination between different body sites. Remove gloves immediately after use and before attending to another patient. Wash hands immediately after removing gloves. Use a plain soap, antimicrobial agent or waterless antiseptic agent. Disposable gloves should not be reused but should be disposed of according to the health care facility protocol.

### **Masks**

Wear a mask to protect mucous membranes of the mouth and nose when undertaking procedures that are likely to generate splashes of blood, body fluids, secretions or excretions. (For further information about types of masks to be used see Annex 2.) Wear surgical masks rather than cotton material or gauze masks. Surgical masks have been designed to resist fluids to varying degrees depending on the design of the material in the mask. Do not reuse disposable masks. They should be disposed of according to the health care facility protocol. It is important to use personal protective equipment effectively, correctly, and at all times where contact with patient's blood, body fluids, excretions and secretions may occur.

### **Protective eyewear/goggles/visors/face shield**

Wear protective eyewear/goggles/visors/face shields to protect the mucous membranes of the eyes when conducting procedures that are likely to generate splashes of blood, body fluids, secretions or excretions. If disposable, discard appropriately. If they are reusable, decontaminate them according to the manufacturers' instructions.

### **Gowns and plastic aprons**

Wear a gown (clean, non-sterile) to protect the skin and prevent soiling of clothing during procedures that are likely to generate splashes of blood, body fluids secretions or excretions.

Impermeable gowns are preferable. Remove a soiled or wet gown as soon as possible. A plastic apron may be worn on top of the gown to protect exposure to blood, body fluids, secretions and excretions. Launder gowns and aprons appropriately if they are reusable, according to the hospital guidelines. Do not reuse disposable gowns and aprons. They should be disposed of according to the health care facility protocol.

### **Caps and boots/shoe covers**

Wear caps and boots/shoe covers where there is a *likelihood* the patient's blood, body fluids, secretions or excretions may splash, spill or leak onto the hair or shoes. Launder caps and shoe covers appropriately if they are reusable, according to the hospital guidelines. Do not reuse disposable caps/shoe covers. They should be discarded according to the health care facility protocol. Clean and disinfect reusable boots.

### **Patient care equipment**

Handle patient care equipment soiled with blood, body fluids secretions or excretions with care in order to prevent exposure to skin and mucous membranes, clothing and the environment. Ensure all reusable equipment is cleaned and reprocessed appropriately before being used on another patient

### **Linen**

Handle, transport and process used linen that is soiled with blood, body fluids, secretions or excretions with care to ensure that there is no leaking of fluid.

### **Prevention of needle stick/sharps injuries**

Take care to prevent injuries when using needles, scalpels and other sharp instruments or equipment. Place used disposable syringes and needles, scalpel blades and other sharp items in a puncture-resistant container with a lid that closes and is located close to the area in which the item is used. Take extra care when cleaning sharp reusable instruments or equipment. Never recap or bend needles. *Sharps must be appropriately disinfect and/or destroyed as per the national standards or guidelines.*

### **Management of health-care waste**

Uncollected, long stored waste or waste routing within the premises must be avoided. A sound waste management system needs to be developed and closely monitored. (For further information see Environmental Management

### **Additional (transmission-based) precautions**

Additional (transmission-based) precautions are taken while ensuring standard precautions are maintained. Additional precautions include:

- Airborne precautions;
- Droplet precautions; and
- Contact precautions

## **Airborne precautions**

Airborne precautions are designed to reduce the transmission of diseases spread by the airborne route. Airborne transmission occurs when droplet nuclei (evaporated droplets) <5 micron in size are disseminated in the air.<sup>6</sup> These droplet nuclei can remain suspended in the air for some time. Droplet nuclei are the residuals of droplets and when suspended in the air, dry and produce particles ranging in size from 1-5 micron. These particles can remain suspended in the air for long periods of time, especially when bound on dust particles. Diseases which spread by this mode include open/active pulmonary tuberculosis (TB), measles, chicken pox, pulmonary plague and haemorrhagic fever with pneumonia. The following precautions need to be taken:

- Implement standard precautions.
- Place patient in a single room that has a monitored negative airflow pressure, and is often referred to as a “negative pressure room” (see Glossary). The air should be discharged to the outdoors or specially filtered before it is circulated to other areas of the health care facility.
- Keep doors closed.
- Anyone who enters the room must wear a special, high filtration, particulate respirator (e.g. N 95) mask.
- Limit the movement and transport of the patient from the room for essential purposes only. If transport is necessary, minimize dispersal of droplet nuclei by masking the patient with a surgical mask. *It is important to gain the support of engineering services to ensure that the negative airflow pressure is maintained.*

## **Droplet precautions**

Diseases, which are transmitted by this route, include pneumonias, pertussis, diphtheria, influenza type B, mumps, and meningitis. Droplet transmission occurs when there is adequate contact between the mucous membranes of the nose and mouth or conjunctivae of a susceptible person and large particle droplets (> 5 microns).<sup>7</sup> Droplets are usually generated from the infected person during coughing, sneezing, talking or when health care workers undertake procedures such as tracheal suctioning. The following precautions need to be taken:

- Implement standard precautions.
- Place patient in a single room (or in a room with another patient infected by the same pathogen).
- Wear a surgical mask when working within 1-2 meters of the patient.
- Place a surgical mask on the patient if transport is necessary.
- Special air handling and ventilation are not required to prevent droplet transmission of infection.

## **Contact precautions**

Diseases which are transmitted by this route include colonization or infection with multiple antibiotic resistant organisms, enteric infections and skin infections. The following precautions need to be taken:

- Implement standard precautions.

- Place patient in a single room (or in a room with another patient infected by the same pathogen). Consider the epidemiology of the disease and the patient population when determining patient placement.
- Wear clean, non-sterile gloves when entering the room.
- Wear a clean, non-sterile gown when entering the room if substantial contact with the patient, environmental surfaces or items in the patient's room is anticipated.
- Limit the movement and transport of the patient from the room; patients should be moved for essential purposes only. If transportation is required, use precautions to minimize the risk of transmission.

## **Patient placement and transportation of patients**

### **Patient placement**

Appropriate or selective placement of patients is important in preventing the transmission of infections in the hospital setting. General principles in relation to the placement of patients include the following:

#### **Spacing between beds**

In open plan wards there should be adequate spacing between each bed to reduce the risk of cross contamination/infection occurring from direct or indirect contact or droplet transmission. Optimum spacing between beds is 1-2 meters.

#### **Single rooms**

Single rooms reduce the risk of transmission of infection from the source patient to others by reducing direct or indirect contact transmission. Where possible, single rooms should have the following facilities:

- hand washing facilities;
- toilet and bathroom facilities.

#### **Anterooms**

Single rooms used for isolation purposes may include an anteroom to support the use of personal protective equipment.

#### **Cohorting**

For infection control purposes, if single rooms are not available, or if there is a shortage of single rooms, patients infected or colonized by the same organism can be cohorted (sharing of room/s). When cohorting is used during outbreaks these room/s should be in a well-defined area (a designated room or designated ward), which can be clearly segregated from other patient care areas in the health care facility used for non-infected/colonized patients.

### **Transportation of patients**

Limiting the movement and transport of patients from the isolation room/ area for essential purposes only will reduce the opportunities for transmission of micro-organisms in other areas of the hospital. If transportation is required, suitable precautions should be taken to reduce the risk of transmission of micro-organisms to other patients, health care workers or the hospital environment (surfaces or equipment). For example: when transporting a patient with pulmonary tuberculosis (open/active) placing a surgical mask on the patient while in transit is an appropriate precaution.

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