E.S. Hospital

E.S. HOSPITAL
VILLUPURAM.

Service Name :	HOSPITAL INFECTION CONTROL MANUAL HOSPITAL-WIDE NABH-E / ESH / HIC / 01
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PURPOSE:

1.1 Hospital infection:

1.1.1 Hospital infection is also called Nosocomial infection. It is the single largest factor that adversely affects both the patient and the hospital. The English word Nosocomial is derived from the Greek NOSOKOMEION meaning "hospital". Nosocomial infection is that which develops in the patients after more than 48 hours of hospitalization.

1.2 Hospital Infection Control Program:

1.2.1 The main aim of the infection control program is to lower the risk of an infection during hospitalization.

1.2.2 The three main areas for the infection control program are as follows: (goals and objectives):

1.2.2.1 Development of **surveillance system**. Surveillance implies that the observed data are regularly analyzed and reported to those who are in position to take appropriate actions. The surveillance system will establish a database, which will give endemic rates of Nosocomial infection.

1.2.2.2 **Continuous Medical Education:** The Medical and paramedical staffs are enrolled in the CME for the updated knowledge in Hospital infection Control Policies & Procedures.

1.2.3 Basic elements of the infection control program:

1.2.3.1 Providing a system of identification and reporting of infections.

1.2.3.2 Providing a system for keeping records of infectious diseases in patients and personnel.

1.2.3.3 Following Infection control practices such as Hand Hygiene, standard precautions, Isolation practices, Use of PPE, Cleaning and decontamination of medical equipments, aseptic techniques and sterilization process.

1.2.3.4 Providing the staff, orientation and continuous education & training on infection prevention and control.

1.2.3.5 Providing for coordination with all Departments and with **medical audit committee in quality assurance.**

1.3 Hospital Infection Control Team & Committee:

1.3.1 Hospital Infection Control Team:

1.3.1.1 The infection control team will have **the responsibility** of monitoring the occurrence of Hospital acquired infection and recommending corrective action.

1.3.1.2 The Infection Control Team consists of:

1.3.1.2.1 Infection Control Nurses

1.3.1.2.2 Infection Control Coordinator

1.3.1.2.3 Physicians

1.3.2 Hospital Infection Control Committee:

1.3.2.1 The infection control committee is a management committee appointed to direct, monitor, and support the hospital's infection control program.

1.3.2.2 It is made up of the representatives of various clinical and other disciplines.

1.3.2.3 It is important for the members to devote enough time for the program.

1.3.2.4 The Infection Control Committee consists of:

Medical Director	Chairman
Micro Biologist	Convener
Infection Control Nurse	Member
Lab In-charge	Member
Administrative Officer	Member
Nursing Superintendent	Member
Physician	Member
Purchase In-Charge	Member
Maintenance In-Charge	Member
Housekeeping In-Charge	Member

2.0 SCOPE:

2.1 Hospital – wide.

3.0 ABBREVIATIONS:

- 3.1 **HAI** : Hospital acquired Infections
- 3.2 **HIC** : Hospital Infection Control
- 3.3 **HCO** : Health care Organization
- 3.4 **ICP** : Infection Control Program
- 3.5 **ICC** : Infection Control Committee
- 3.6 **ICT** : Infection Control Team

4.0 DEFINITIONS:

4.1 **Surveillance:** It is defined as the counting scrutiny of all aspects of occurrence and spread of diseases that are pertinent to effective control. Surveillance means to watch over with great attention, authority and often with suspicion.

4.2 **Biomedical Waste:** it means any waste which is generated during the diagnosis, treatment or immunization of human beings or from research activities pertaining there to or in production or testing or biological preparations from organism or microorganism or product of metabolism and bio chemical reaction intended for use in diagnosis, immunization or treatment.

4.3 **Cleaning:** It is the removal of contaminant, e.g., soil, organic matter, and large number of microorganisms. Cleaning is a useful and essential prerequisite to any sterilization or disinfection procedure.

4.4 **Decontamination:** The removal of pathogenic microorganisms from objects so that they are safe to handle.

4.5 **Disinfection:** It is the destruction of most forms of microorganisms but not usually of bacterial spores, thus reducing them to a level that is not harmful to health.

4.6 **Hand Hygiene:** Hand hygiene refers to any action of hand cleansing with a view to reduce hospital acquired infections. The main medical purpose of washing hands is to cleanse the hands of pathogens (including bacteria or viruses) and chemicals which can cause personal harm or disease. It is well-documented that one of the most important measures for preventing the spread of pathogens is effective

hand washing. Antiseptic Hands wash, Antiseptic Hand Rub and Surgical Hand Wash are three methods commonly used in an HCO for this purpose.

4.7 **Hospital Acquired Infection:** Hospital Acquired Infections are those that were neither present nor incubating at the time the patient was admitted to the health care facility. The majority of these infections become evident within 48 -72 hours of admission.

4.8 **Standard Precautions:** The measures designed to reduce the risk of transmission of blood borne pathogens and other microorganisms from both recognized and unrecognized sources of infection.

4.9 **Sterilization:** Sterilization is the total destruction or removal of all living organisms including bacterial spores.

4.10 **Surgical Site Infections**: Infection in the surgical site that occurs within 30 days of the surgical procedure or within one year if there is an implant or foreign body such as prosthetic heart valve or joint prosthesis.

4.11 **Ventilator Associated Pneumonia:** Ventilator Associated Pneumonia is defined as pneumonia in a patient on mechanical ventilator support.

4.12 **Antimicrobial agent/Antimicrobial (Antibiotic):** Any agent, which has a potential for or is used with an intention of affecting microbial growth inside or on the human body. This includes antibacterial, antifungal, antiviral & anti parasitic agents.

4.13 **Prophylaxis/Prophylactic antimicrobial agents/Antibiotic prophylaxis:** *Administration* of an antibiotic or antimicrobial agent prior to the onset of symptoms in order to prevent clinical infection.

4.14 **Organism directed antimicrobial Therapy:** Usage of antimicrobial agent against infection by specific microorganisms.

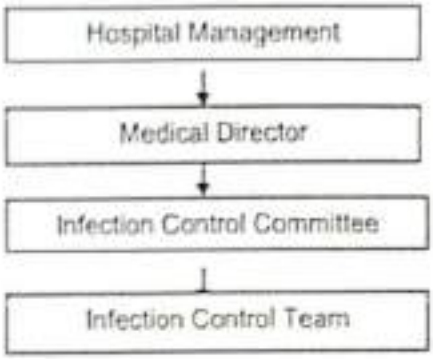
4.15 **Standard Universal Precaution:** They are a set of precautions designed to protect health care workers from exposure to blood borne pathogens. Since the majority of patients infected with HIV / HBsAg / HCV are asymptomatic at the time of presentation all patients are approached as having potentially infectious blood and body fluids. Precautions may vary based on anticipated exposure.

5.0 RESPONSIBILITY:

5.1 Infection Control Team

5.2 Infection Control Committee

6.0 DEPARTMENTAL HIERACHY:



7.0 ROLES AND RESPONSIBILITIES:

7.1 Hospital Management:

7.1.1 It is the responsibility of the hospital management to make available resources required for ICP.

7.1.2 The management will regularly earmark adequate funds from its annual budget to enforce implementation of the hospital's ICP.

7.1.3 In addition it will encourage continued education and training program starting from pre-induction training to additional in-service training.

7.2 Medical Superintendent:

7.2.1 The Medical Superintendent is the ultimate authority who will ensure implementation of the ICP and will also monitor the efficacy of the program and report to the higher authorities.

7.2.2 He will also ensure that whole hearted support is given to the ICC and ICT in their day to day activities.

7.3 Infection control coordinator:

7.3.1 Detection of incidence of hospital acquired infection.

7.3.2 Investigation to trace out the source of infection.

7.3.3 Identification of causes of infection.

7.3.4 Finding out the mode of transmission.

7.3.5 Instituting the effective measure to check the infection.

7.3.6 Surveillance program.

7.3.7 Maintain all necessary documents.

7.4 Infection Control Nurse (ICN):

7.4.1 The duties of the ICN are primarily associated with ensuring the practice of infection control measures by nursing staff , housekeeping staff and other healthcare providers.

7.4.2 Thus the ICN is the link between the HICC and the wards, Units etc. in identifying problems and implementing solutions.

7.4.3 In addition the ICN conducts daily Infection control rounds and maintains the registers.

7.4.4 The ICN is also involved in educating nurses ,housekeeping staff and other paramedical staff who involves with patient care.

7.4.5 The ICN also collects data from wards and Units like for assessing the rate of HAI with the help of ICT.

7.5 Infection Control team:

7.5.1 The infection control team meets once in 15 days and otherwise as necessary. Documentation of meetings and recommendations are kept with the Nursing Superintendent and Infection control officer.

7.5.2 This team will work under the guidance of infection control committee.

7.5.3 Ensure that correct hand hygiene techniques are followed.

7.5.4 Collection of data from wards/ Units.

7.5.5 Periodic analysis of data to detect the incidence of HAI and recognition of any outbreak of infection.

7.5.6 Microbiological sampling of affected areas e.g. wards, OT, ICU, CCU etc.,

7.5.7 Determine the factors involved in the occurrence and spread of infection.

7.5.8 Random quality control sampling for bacteriological investigations by swabs taken from sterile instruments, linen etc in O.T, CSSD, labor room and other facility whenever necessary.

7.5.9 Education and training of hospital staff about hospital infection.

7.5.10 Infection control Nurse is particularly responsible for education of hospital staff regarding the various aspects of hospital infection control practices.

7.5.10.1 Infection control nurse:

7.5.10.1.1 Take lectures for in-charge nurses once a week regarding making them aware of implementing infection control protocols.

7.5.11 Monitoring all patients for signs of infection and when needed will give guidance on patient isolation.

7.5.12 Monitors all patients with indwelling catheters and devices and generate the data needed for analysis.

7.5.13 Monitors onset of outbreaks of infection and handle such infections and take appropriate corrective action to prevent recurrence.

7.5.14 Responsible for developing a staff health program and will particularly look after pre and post exposure prophylaxis.

7.5.15 They will monitor effectiveness of:

7.5.15.1 Sterilization and disinfection activities.

7.5.15.2 Housekeeping services including biomedical waste management.

7.5.15.3 Laundry and linen management.

7.5.15.4 Interact with maintenance and biomedical engineering department to ensure all engineering controls to prevent or establish in place.

7.5.15.5 Develops educational content suitable for all hospital employees on this topic and ensure ongoing pre-induction training and re-enforcement training.

7.5.16 Education of the housekeeping staff and the nursing staff is done by the infection Control nurses regarding the handling of BMW which includes the following Process:

7.5.16.1 Collection.

7.5.16.2 Segregation of waste according to the color coding.

7.5.16.3 Storage in the wards in appropriately colored closed containers / bins.

7.5.16.4 Treatment of the sharps and plastic tubes before disposal.

7.5.16.5 Transport of the waste to the main storage area in closed trolleys

7.5.16.6 Storage under proper roof cover and locked room

7.5.16.7 Final disposal of BMW

7.6 Infection Control Committee:

7.6.1 To minimize the risk of infection to patients, staff and visitors.

7.6.2 To determine method of surveillance (both active and passive) and reporting.

7.6.3 Determine the criteria for reporting of HAI (Hospital Acquired infections).

7.6.4 Review occurrence of clusters of infections (outbreaks).

7.6.5 Review of records of all patient with infectious diseases.

7.6.6 Review with the medical audit committee the use of antibiotics and anti infectives (Antibiotic policy).

7.6.7 Recommendation in relation to selection of equipments used for sterilization.

7.6.8 Development of forms or data sheets used for collecting and reporting of data for the infection control program.

7.6.9 Prepare and update procedure manuals of aseptic techniques used in the hospital.

7.6.10 Determine the policy on screening and immunization of hospital staffs.

7.6.11 Determine the content and methodology of training program for hospital staff in prevention and control of Hospital infection.

8.0 REFERENCE TO PRE ACCREDITATION ENTRY LEVEL NABH STANDARDS:

S.No	Chapter	Relevant NABH Standard / Objective Element
1.	Hospital infection control	The organization has an Infection Control manual, which is periodically updated and conducts surveillance activities. **HIC.1. a – e.**
2.	Hospital infection control	The hospital takes actions to prevent or reduce the risks of Hospital Associated Infections (HAI) in patients and employees. **HIC.2. a – c.**
3.	Hospital infection control	Biomedical waste (BMW) management practices are followed. **HIC.3. a – e.**
4.	Continuous Quality Improvement	The organization identifies key indicators to monitor the structures, processes and outcomes which are used as tools for continual improvement. **CQI.2.**

9.0 POLICIES:

9.1 Infection Control Programme:

9.1.1 The hospital ICP will have sequence of the activities which are designed to implement the hospital infection control policy and procedures to accomplish the goals and objectives.

9.2 Infection Control Manual:

9.2.1 Hospital infection control manual containing instructions and practices for patient care is an important tool.

9.2.2 The manual was developed and updated by the infection control team and reviewed and approved by the infection control committee.

9.2.3 It is readily available for hospital workers, and updated in a timely fashion.

9.3 Hand Hygiene:

9.3.1 ICT will ensure in that all health care workers are aware of the need for following hand hygiene principles.

9.3.2 The infection control team will also ensure that all health care workers are educated in this regard.

9.4 SURVEILLANCE:

9.4.1 The hospital areas are identified and classified for surveillance activities.

9.4.2 The following areas have been identified as high risk areas:

- 9.4.2.1 Operation Theatres.
- 9.4.2.2 Cath. Lab
- 9.4.2.3 Labor Room.
- 9.4.2.4 Intensive care units.
- 9.4.2.5 Laboratory.
- 9.4.2.6 Dialysis
- 9.4.2.7 CSSD.
- 9.4.2.8 Casualty.
- 9.4.2.9 House Keeping Department(BMW Management)

9.4.3 The following areas have been identified as moderate risk areas:

- 9.4.3.1 Post operative wards.
- 9.4.3.2 Dressing room.

9.4.4 The following areas have been identified as low risk areas:

- 9.4.4.1 General Wards
- 9.4.4.2 OPD

9.4.5 Surveillance for infection can be either active or passive.

9.4.5.1 Passive Surveillance:

9.4.5.1.1 Clinicians suspecting occurrence of Hospital Acquired Infections (HAI) report this to the Chairperson Infection Control Committee.

9.4.5.1.2 All details regarding the patient, procedures, medication etc. are made available.

9.4.5.1.3 The microbiology department shall be responsible for reporting any information about infections suspected to be hospital acquired.

9.4.5.2 Active Surveillance:

9.4.5.2.1 Active surveillance is done of all the identified risk areas of the hospital as mentioned below:

9.4.5.2.2 **Operation Theatres:**

9.4.5.2.2.1 Culture swabs and air sampling plates are sent from Operation Theatres after fumigation once every 15 days.

9.4.5.2.2.2 Monitoring of working OT:

9.4.5.2.2.3 Air sampling of a working OT is done once a month.

9.4.5.2.2.4 Sampling of in use disinfectants: 1ml of samples of in-use disinfectants, hand wash agents are sent to the microbiology laboratory in a sterile container once a month.

9.4.5.2.2.5 Records are kept with OT in charge.

9.4.5.2.2.6 In case of unacceptable results decision on corrective measures are taken by HICC.

9.4.5.2.3 **Intensive care units:**

9.4.5.2.3.1 Surveillance samples.

9.4.5.2.3.2 Central line tips / other intra-vascular devices.

9.4.5.2.3.3 Water samples from humidifiers.

9.4.5.2.3.4 ET tube secretions. Urine samples from catheterized patients.

9.4.5.2.3.5 Surveillance samples are sent to microbiology lab.

9.4.5.2.3.6 Data is also sent to microbiologist in the prescribed format.

9.4.5.2.3.7 Samples of disinfectant in use: random two samples of 1 ml of disinfectant per ICU are sent in a sterile container once a month.

9.4.5.2.3.8 Swabs may be sent after cleaning.

9.4.5.2.3.9 Analysis of data is presented at the subsequent Infection Control Committee meeting.

9.4.5.2.3.10 Records are maintained by microbiologist.

9.4.5.2.3.11 Records are maintained by respective unit/ wards

CSSD:

9.4.5.2.3.12 Swabs are sent for sterility check after cleaning weekly.

9.4.5.2.3.13 Biological indicators of sterilization are sent from steam autoclaves weekly.

9.4.5.2.3.14 Records kept by CSSD.

9.4.6 Mandatory Monitoring:

9.4.6.1 Enter details of all patients with invasive lines on the infection control checklist and update findings during daily rounds.

9.4.6.2 Collect and analyze data to determine the rates of HAI.

9.4.6.3 The HAI rates recorded at NHV are:

9.4.6.3.1 Urinary Tract Infections (UTI)

9.4.6.3.2 Surgical Site Infections (SSI)

9.4.6.3.3 Ventilator Associated Pneumonia (VAP)

9.4.6.3.4 Catheter Related Blood stream Infections (CRBSI)

9.5 Notification of Infectious Diseases:

9.5.1 Infectious diseases still occur frequently throughout India and constant vigilance is required to prevent the reappearance of diseases thought to have been conquered. Changes in lifestyle

have also led to the emergence of new threats to public health from infections. Health authorities depend on medical practitioners for information on the incidence of infectious diseases and notification is vital in efforts to prevent or control the spread of infection.

9.5.2 The policy on Notifiable infectious diseases at this Hospital; ensures that information on all such diseases is sent in the relevant format to the appropriate authorities.

9.5.3 The hospital has the policy to report communicable diseases to the local health authorities i .e IMC.

9.5.4 All The Hospital medical and nursing personnel are educated and trained for this activity and the hospital administration provides for investigating such suspected cases and provides forms and system for such notifications.

9.6 Usage of Personal protective equipment:

9.6.1 In the hospital PPE has been kept in the entrance of all the wards, ICU's and theaters as well as provided for use to all other hospital personnel.

9.6.2 It contains minimum of 3 disposal of all PPE, which is used in case of emergency entry.

9.6.3 The reusable PPE was also kept for regular use for hospitals workers and for the patient attenders.

9.6.4 In this hospital, the reusable PPE are washed in during night times.

9.6.5 And it can be reused for six months.

9.6.6 Using personal protective equipment provides a physical barrier between micro-organisms and the wearer.

9.6.7 It offers protection by helping to prevent micro-organisms from:

9.6.7.1 Contaminating hands, eyes, clothing, hair and shoes;

9.6.7.2 Being transmitted to other patients and staff.

9.6.8 Personal protective equipment includes:

9.6.8.1 Gloves;

9.6.8.2 Protective eye wear (goggles);

9.6.8.3 Face Mask;

9.6.8.4 Apron;

9.6.8.5 Gown;

9.6.8.6 Slippers/boots/shoe covers; and

9.6.8.7 Cap/hair cover

9.7 Standard Universal Precautions:

9.7.1 Wearing of Personal Protective Equipment (PPE): As discussed in 11.8 and 12.8

9.7.2 Prevention of injury from sharps:

9.7.2.1 Sharps injuries commonly occur during use of needles and surgical instruments and after use during disposal.

9.7.2.2 Precautions to be observed:

9.7.2.2.1 Needles should not be recapped, bent or broken by hand.

9.7.2.2.2 Disposable needles & other sharps should be discarded into puncture resistant rigid containers at the site of procedure.

9.7.2.2.3 Sharps should not be passed from one HCW (Health Care Worker) to another.

9.7.2.2.4 The person using the equipment should discard it. If necessary a tray can be used to transport sharps.

9.7.2.2.5 All sharps containers to be discarded when it is 3/4th full.

9.7.3 Hand washing: As discussed in 11.3 and 12.3.

9.8 Staff Health Programme:

9.8.1 Employee health programme:

9.8.1.1 Employee health education:

9.8.1.2 Periodic classes are conducted for Nursing staff, paramedical staff and House keeping staff by the Infection Control Nurse.

9.8.1.3 All employees are instructed in universal precautions, isolation policies, hand washing protocols and waste management.

9.8.1.4 All infections including Cutaneous and or other diagnosed communicable diseases e.g hepatitis , mumps, rubella, measles, chicken pox, diarrhea, productive cough more than three weeks, rashes etc., are to be reported by staff to their immediate supervisor at which time appropriate action to protect the patients in the hospital will be taken.

9.8.1.5 All staff is informed that they should report exposure to potentially infectious blood or body fluids to their immediate supervisor who in turn informs the Infection Control Nurse or concerned person in absence of ICN.

9.8.1.6 Action is taken after assessment of risk at each situation.

9.8.1.7 Work restrictions may be imposed in situations which call for such action.

9.8.1.8 Personnel shall adhere to policies and practices to minimize the potential spread of diseases and /or infection.

9.8.1.9 Personnel shall adhere to existing employee health requirements.

9.8.2 Managing exposure to potentially infectious body fluid:

9.8.2.1 Categories of exposure:

9.8.2.1.1 Needle stick injuries.

9.8.2.1.2 Non- intact skin exposure.

9.8.2.1.3 Mucosal exposure e.g. Splash into eyes.

9.8.2.2 Immediate action to be taken:

9.8.2.2.1 Needle stick injuries: Briefly induce bleeding from the wound. Wash for 10 minutes with soap and water. Report to immediate supervisor. Visit the physician for further management.

9.8.2.2.2 Non intact skin exposure: Wash for 10 minutes with soap and water Report to to immediate supervisor. Visit the physician for further management.

9.8.2.2.3 Mucosal exposure e.g. splash into eye: .Wash for 10 minutes by using clean water or normal saline to irrigate the eye. The eyelid should be held open by another person wearing sterile gloves. Do not use soap and water or disinfectant. Report to immediate supervisor. Visit the physician for further management.

9.8.2.3 **Management:**

9.8.2.3.1 If index patient is known, patient is checked for HIV antibodies HBsAg.

9.8.2.3.2 Injured health care worker is checked for anti HBs antibody and HIV after obtaining consent.

9.8.2.3.3 For HIV: NACO guidelines are followed for assessment of risk and suggestions are acted upon.

9.8.2.3.4 Guidelines are appended to this manual.

9.8.2.3.5 For HBV infection: In case patient is positive.

9.8.2.3.6 If health care worker has adequate anti HBs titer ->100MIU- only reassurance need be given.

9.8.2.3.7 If titer is <10 give first dose of vaccine and immunoglobulin 1000units.Advise to complete vaccination.

9.8.2.3.8 If titer is between 10& 100 MIU give booster.

9.8.2.3.9 In case patient is negative Check anti HBs titer and proceed accordingly.

9.9 Cleaning ,Disinfection and Sterilization:

9.9.1 Critical instruments / equipment (that are those penetrating skin or mucous membrane) should undergo sterilization before and after use. e.g. surgical instruments and implants.

9.9.2 Semi-critical instruments / equipment (that are those in contact with intact mucous membrane without penetration) should undergo high level disinfection before use and intermediate level disinfection after use.

9.9.3 Non-critical instruments /equipment (that are those in contact with intact skin and no contact with mucous membrane) requires only intermediate or low level disinfection before and after use.

Article	Standard Procedure	Comments
Ambubag	Should be cleaned with 70% Iso prophyl Alcohol	
Applicators (Tonometer prisms)	Immersion in 0.05% hypochlorite (500 parts per million of available chlorine) for 10 minutes.	A fresh solution should be prepared at the start of each clinic.
Arterial catheters	Sterile single use only, must be discarded after used.	
Baby weighing scales	A fresh liner should be used for each baby. Clean tray as necessary with detergent and water.	If contaminated should be wiped with hypochlorite 0.5%after washing.
Baby bath tub	Should be cleaned after each use with detergent and water	
Beds and couches ,Frame	Should be cleaned with 0.5% of sodium hypochlorite between patients and as required.	If contaminated with body fluids, see spillage policy. If used for patient with isolation r - after cleaning, should be wiped with a disinfectant

Mattresses and pillows	Should be cleaned with 0.5% hypochlorite between patients and as required.	If contaminated with body fluids, the blood spills policy should be implemented. Should not be used if cover is damaged. Contaminated pillows must be discarded. Torn mattress covers must be replaced before mattress in re used.
Bedpans and urinals	Should be cleaned and disinfected with 2% sodium hypochlorite . It must be ensured that the item is dry before re-use.	
Brushes Nail Toilet	1. Disposable - single use. 2. Re-usable – to be returned to CSSD after each use. Should be rinsed well in flush water and stored dry.	Should not be left on sink after use.
Carpets	Vacuum daily.	Should be shampooed or steam cleaned in isolation rooms as part of terminal cleans.
Commodes	Seat and arms should be cleaned with detergent and water, and dried.	If soiled or used in isolation, should be wiped with sodium hypochlorite 2%, and dried, after cleaning.
Cradles	Should be cleaned with detergent and water, and	

	dried.	
Curtains	Should be changed as part of a rolling program by domestic services.	Should be changed as part of terminal clean.
Drainage bottles	Disposable - single use Re-usable -rinse and return to CSSD	
Drip stands	Should be cleaned with detergent and water and dried.	After use in isolation, should be wiped with sodium hypochlorite 2%, and dried after cleaning.
Ear pieces for auroscope	Should be cleaned with detergent and water and dried.	To be returned to CSSD after use in isolation.
Earphones	Should be cleaned with detergent and water and dried.	Foam should be replaced after use in isolation.
Leads and monitors	Should be dismantled to smallest components and cleaned with detergent and water and dried.	
Eye protection	Should be cleaned with detergent and water and dried.	For blood splashes blood spillage policy should be followed.
Floors	Should be done daily. A damp mop with detergent and water should be used.	For blood splashes blood spillage policy should be followed.
Furniture	Should be damp dusted with detergent and water.	
Humidifiers	Should be cleaned with 2% sodium hypochlorite	

Incubators	Should be cleaned with appropriate disinfectant	
Intravenous monitoring pumps (and feed pumps)	Should be cleaned with appropriate disinfectant	After use in isolation wipe with sodium hypochlorite 2%, and dry, after cleaning.
Instruments	Single use only. To be returned to CSSD.	According to the validity – 6 days from time of sterilization
Linen	Should be soaked in 0.5% sodium hypochlorite for 5 minutes than washed and; returned to laundry	In case of soiled and contaminated
Mops	Disposable - use for one day. Re-usable to be laundered every day.	Mops must not be stored wet or cleaned in disinfectant solutions.
Peak flow	Disposable - single patient use.	
Nebulizers	Cleaning with 70% alcohol	
Pressure relieving devices	Should be clean with detergent and water and dried.	
Proctoscopes	Re-usable to be rinsed and returned to CSSD.	
Raised toilet seats	Should be cleaned after each use with detergent.	
Skin disinfection	Showers are preferred to bath or bed baths.	
Soap dispensers	Should be cleaned weekly with detergent and water and dried.	
Sphygmomanometer cuffs	After use in isolation, should be immersed in	

	0.5% sodium hypochlorite than should be washed with soap and water and dried	
Sputum pots	Disposable with close fitting lid. Should be discarded into clinical waste for incineration.	
Suction bottles	*Disposable –single use *Non disposable bottles:- Must be changed every 24 hours (or sooner it full *The contents may be emptied down the toilet *must be rinsed and autoclaved *Recyclable connector tubing should be cleaned thoroughly, dry and sterilized *Do not leave fluids standing in suction bottles. To be stored dry when not in use.	
Telephones	To be wiped with 70% alcohol.	
Thermometers	To be covered with disposable sleeve before use and stored dry in individual holder. In between patients, should be cleaned and wiped with 70% isopropyl alcohol (swab). If disposable sleeve not used, in between patients, should be washed in general purpose detergent and tepid water then wiped with 70% alcohol (swab). To be stored in individual holder inverted.	
Toilet seats	To be cleaned at least twice daily with detergent.	
Trolleys (Dressing)	To be cleaned daily with 1% sodium hypochlorite	

Urine measuring jugs	To be immersed in 2% sodium hypochlorite	
Vomit bowls	Contents must be emptied into sluice then rinsed and washed and disinfected with 2% sodium hypochlorite	
Walls	Should be cleaned with detergent and water as part of planned preventative maintenance programme.	
Wash bowls	Patients must have own dedicated bowl. After each patient's use, should be cleaned with detergent.	
Wheel chairs	Hospital – clean between patients with 1% sodium hypochlorite	
Stethoscope	Alcohol swab after each use	
Laryngoscope	Blade with soap and water, handle and bulb-isopropyl alcohol	
Ventilator tubing's	Single use only	
Transducer	Alcohol swab and autoclave	
Ventilator	Isopropyl alcohol Alcohol 70%	
Cardiac table	Mop with 1 percent sodium hypochlorite. Allow to dry.	
Cardiac monitors, Defibrillators and ECG Equipment	If patient contact, then surface is cleaned and disinfected.	
Ampoules/ vials	Wipe neck (ampoule) or top surface of rubber cap (vials) with a 70 percent isopropyl alcohol impregnated swab and	

	allow to dry before opening or piercing.	
Clinic Trolleys	Clean with a cloth dampened with detergent and water	
Scissors	Surface disinfect with a 70% alcohol wipe	
Cheatle forceps	Do not use. If necessary to use, autoclave daily and store dry in a closed container	
Oxygen face mask	Wash with detergent and dry if contaminated. Before each use, wipe with 70% ethyl or isopropyl alcohol	
Instrument cleaning OT	Used instruments are cleaned immediately by the scrub nurse . Reusable sharps are decontaminated in Lysol / hypochlorite and then washed in the room adjacent to the respective OR by scrubbing with a brush, liquid soap and vim. They are then sent for sterilization in the CSSD. After septic cases the instruments are sent in the instrument try for autoclaving. Once disinfected, they are taken back to the same instrument cleaning area for a manual wash described earlier. They are then packed and re-autoclaved before use.	
Speculums	Clean and wash thoroughly. Rinse and dry. Send to CSSD for autoclaving. An alternative is immersion in cidex OPA for 5 minutes after disassembling any accessories. Rinse with sterile distilled water after disinfection.	

Rectal Thermometer	Thoroughly wash with detergent and water, then dry. Store dry and separately from oral thermometers. Disinfect with 70 percent alcohol for 5 minutes. Frequency – After each patient	
Patient shaving (preop)	Use disposable OR shaver blade, not a razor. Frequency – After each patient	

9.9.4 Disinfectants:

9.9.4.1 **Glutaraldehyde**: Rapid acting -can be used up to 14 days after activation. Long acting can be used up to 28 days after activating. Contact time- for disinfection 15-30 minutes. - for sterilization 8-10 hours.

9.9.4.2 **Sterilium:** Contains 2-propanol, 1-propanol ,macetronium ethyl sulfate. Contact time for patient care hand wash: 1.5ml for 30 secs. Contact time for surgical hand wash: 9 ml for 3 minutes.

9.9.4.3 **Ecoshield**: Contains stabilized hydrogen peroxide 11% w/v with 0.01% w/v diluted silver nitrate solution. For surface disinfection: 10% v/v solution in de-ionized water with contact time of 60 minutes. For fumigation: 1 litre of 20% v/v solution /1000 cu ft of space in 60 min.

9.9.4.4 **Bacillocid:** Contains chemically bound formaldehyde, glutaraldehyde and benzalkonium chloride. Used as surface disinfectant at 2% solution in operation theatres and at 0.5% in wards and dressing rooms. Can be sprayed onto wet surfaces with a low pressure sprayer and allowed to dry slowly.

9.9.4.5 **Betadine:** Iodophor .This is a high level disinfectant. Used for surgical hand scrub, skin disinfection.

9.9.4.6 **Sodium Hypochlorite 1% stock**- Used for containing blood spills, disinfecting counter tops and other hard surfaces at 1 %. Used in laboratory for decontamination of waste from equipment as well as glassware at 5%.

9.9.4.7 **OPA** (*ortho*-Phthalaldehyde). Used as high level disinfectant for endoscopes. Its advantages are reduced exposure times at ambient temperatures, superior microbicidal activity and less toxic fumes.

9.9.4.8 **Alcohol - 70%:** Used for disinfection of non-disposable patient care items in out- patient departments and also in laboratory for cleaning of microscope lenses and surfaces of critical work surfaces.

9.9.4.9 Alcohol - 99%: Used for preparation of cotton swabs in phlebotomy cell etc.

9.9.5 **Endoscopes - cleaning and disinfection:** Mechanical cleaning: This is the most important step. Flush the air/water channel for 10-15 seconds to eject any blood or mucus. Aspirate detergent through the biopsy/suction channel to remove gross debris. Use a cleaning brush suitable for the instrument and channel size to brush through the suction channel. Disinfection: The endoscope and all internal channels should be soaked in 2% glutaraldehyde for 20 minutes. Rinsing: Following disinfection, rinse the instrument internally and externally to remove all traces of disinfectant. Drying: Dry the endoscope externally. Flush air through each channel.

9.9.6 **Sterilisation:**

9.9.6.1 **Autoclave:**

9.9.6.1.1 All metal articles used in surgery except sharp knives and fine scissors are autoclaved.

9.9.6.1.2 Autoclaving at 121°c for 20 minutes at 15 lbs pressure effectively kills most microorganisms and spores.

9.9.6.1.3 Working of an autoclave:

9.9.6.1.3.1 Loading.

9.9.6.1.3.2 Closing.

9.9.6.1.3.3 Air removal.

9.9.6.1.3.4 Steam exposure.

9.9.6.1.3.5 Holding.

9.9.6.1.3.6 Exhaust.

9.9.6.1.3.7 Drying.

9.9.6.1.3.8 Unloading.

9.9.6.1.4 Autoclaves are used in CSSD for instruments, certain plastics linen gauze and other items.

9.9.6.2 **Microbiological monitoring:**

9.9.6.2.1 Swabbing and culture for bacteria in OT once a week.

9.9.6.2.2 Air sampling to determine the quality of air in OT done weekly on Monday morning as well as randomly once a week to ensure sterility.

9.9.6.2.3 Testing efficacy of autoclaves.

9.9.6.2.4 Biological and chemical indicators are used to monitor the effectiveness of sterilization,

9.9.6.2.5 Biological indicators containing bacterial spores are used for monitoring the efficacy of sterilizers.

9.9.6.2.6 Commercially available spore strips impregnated with spores of Bacillus stereothermophilus are used.

9.9.6.2.7 Chemical indicator such as Bowie-Dick tapes (signaloc) show a change of color after exposure to sterilizing temperature.

9.9.6.2.8 For ETO sterilizer: Biological indicator is spores of Bacillus subtulis

9.10 Visitors' policy:

9.10.1 Though instructing and preparing visitors for patients in isolation is time consuming and often frustrating, their presence is valuable to the emotional well-being of the patient.

9.10.2 The visiting hours permitted in our hospital are from 4pm-7pm daily.

9.10.3 Visitors are allowed with visitors pass from the respective wards or ICU where patient is admitted.

9.10.4 Visitors who have experienced coryza, fever, Cough, sore throat, vomiting should be discouraged from visiting the hospital.

9.10.5 Children are not allowed to visit between 6pm-7pm.

9.10.6 Visitors should maintain the **NO SMOKING** policy.

9.10.7 Visitors should wash their hand well with soap and water before entering and when leaving the room.

9.10.8 Visitors must maintain a quiet environment and avoid unnecessary noise. Visitors are not allowed to bring flowers for the patients

9.11 Housekeeping activities:

9.11.1 A patient admitted to the hospital can develop infection due to bacteria that survive in the environment.

9.11.2 Therefore it is important to clean the environment thoroughly on a regular basis.

9.11.3 This will reduce the bacterial load and make the environment unsuitable for the growth of microorganisms.

9.12 Biomedical Waste Management:

9.12.1 Hospital waste is different from domestic waste in that it may contain biological material, which may possess potentially harmful microorganisms. Therefore, special care should be taken while managing hospital waste to make sure that it does not harm others. Waste management should also confirm to legal requirements. The method of disposal should be acceptable to general public in that area. Waste minimization is also important. This can be achieved by strengthening "reuse services" which includes cleaning and sterilization.

9.12.2 **Objectives:** To prevent infection by maintaining good hygiene and sanitation. To protect the patient, patient attendants and all health care personnel from avoidable exposure to infection.

To prevent environmental pollution. To manage waste in a clean, healthy, economical and safe manner. To minimize waste.

9.12.3 **Major categories of Biomedical waste: A** Non infectious items: Domestic/kitchen waste. Paper/wrapper. Ampoules, vials and IV bottles. **B** Infectious waste: Sharps. Plastics. Non plastic

9.13 General Guidelines for all procedures:

9.13.1 Hand washing is mandatory before, after and in between procedures and patients.

9.13.2 Each health care worker should be familiar with personal protection (Universal precautions) required for each procedure. These precautions should be strictly adhered to.

9.13.3 Follow proper waste segregation and disposal after each procedure.

9.13.4 It is the duty of the nurse to remind the physician regarding the due date of change.

10.0 PROCEDURES:

10.1 Surveillance:

10.1.1 Surveillance of the various high-risk, moderate-risk and low-risk areas are conducted by the following methods:

10.1.1.1 **Registers: The following registers are maintained by the Infection control team:**

10.1.1.1.1 **OT and CSSD surface culture register.**

10.1.1.1.2 **ICU and Ward surface culture register.**

10.1.1.1.3 Monthly microbiological data register.

10.1.1.1.4 Quality indicator surveillance register.

10.1.1.1.5 Water culture register.

10.1.1.2 **HAI forms:** These forms are available in each ward. It is the duty of in-charge sister in the ward to report any case suspected to be HAI, by filling up the form and submitting to ICN. Or separate registers should be maintained for detection of HAI viz UTIs, CRBSI, SSI and VAP. Incharge nurses should fill the registers on daily basis and report to ICN who along with the ICO will assess the rates of HAI.

10.1.1.3 **Correlation With Microbiological Reports:** The data collected is checked with the type of microorganism isolated from the specimens to assess if it's a case of HAI depending upon the time of insertion of catheter, patients clinical condition etc. **Rounds:** The ICN takes rounds of all OT'S, ICUs and wards to check whether all the staff is following the various infection control protocols. ICO along with ICN take surprise rounds as and when necessary.

10.1.1.4 **Air Sampling and Surface Cultures:** Air samples and surface swabs are taken for culture. These are sent to Microbiology laboratory weekly on Monday morning as well as randomly once a week to check for any growth in the OT's and ensure sterility. If the culture shows a positive growth, disinfection and fumigation must be repeated and the culture must be carried out again.

10.1.1.5 **Statistics:** Statistics are maintained for incidence of various infections like wound infections, postoperative infections, vascular line infections, respiratory tract infections, urinary tract infections as well as O.T sterility. A monthly and yearly HAI is prepared. The statistics is collected in following way. Maintainenace of separate registers for tracking the incidence of HAI by in-charge nurses on daily basis. Collection of data from in-charge nurses by ICN weekly or in 15 days. Analyzing the data by microbiologist and ICN and tracing the incidence of HAI.

10.2 Hand Hygiene:

10.2.1 Hand washing is usually limited to hands and wrists; the hands are washed for a minimum of 30 60 seconds with soap (plain or antimicrobial) and water.

10.2.2 **Purpose:** To prevent transmission of infectious agents among patient, health care personnel and visitors. It is the single most effective way to prevent the spread of infection.

10.2.3 **Types:** Antiseptic Hands wash. Antiseptic Hand Rub. Surgical Hand Wash.

10.2.4 **Indication:**

10.2.4.1 **When should use soap and water?** When hands are visibly dirty. When hands are visibly soiled with blood and body fluids (Ex: vomiting, urine, stool, dressings etc). After handling contaminated articles, like (ex: urinals, bed pans, kidney tray dustbins etc.). On starting and completion of duty shifts. Before eating and after using a rest room. Prior to putting on sterile gloves for performing any procedures (Ex: insertion of a central venous catheter etc).

10.2.4.2 **When should use hand rub solution?** Before direct contact with patients. After contact with patients Ex: after taking pulse, blood pressure, After changing position. Direct contact in between the patients. Before and after direct contact with IV lines, any tubing's etc. Before and after administration of medication and injection.

10.2.5 **General instructions:** Remove all the hand and arm jewellery. Apply enough soap on hands to make good lather. Medical hand washing should be done for 30-60 sec. Surgical hand washing should be done for 3-5 min.

10.2.6 **Procedure:** Hand antisepsis removes or destroys transient micro-organisms and confers a prolonged effect. It may be carried out in one of the following two ways:

10.2.6.1 **General Hand washing Technique:** Remove watch and jewellery, stand well away from the sink Turn on the tap wet hands from finger tips to elbow, holding up to enable water to run down from the finger to the elbow. Apply soap and scrub each hand with the other, using rotatory movements from the finger tips to the elbows with special attention to the nails and finger webs. At the start of the shift, a **two minute scrub** is considered the shortest acceptable duration for hand washing. A 30 second scrub should be done in between patient who are not grossly contaminated. If grossly contaminated, a 60 second scrub is recommended. Rinse thoroughly under running water ensuring that water flows from the fingertips to the elbows. Close the tap dry with clean towel beginning with the hands and proceeding to the wrists and then to the forearms. Dry with clean towel / paper towel. Turn off water using same paper towel and dispose in proper respectable containers.

10.2.6.2 **Surgical Hand Wash:** Strict aseptic techniques are to be followed by all personnel involved in surgical procedures: A minimum of **5 minutes scrub** is recommended before each operation. After the preliminary wash of both hands with soap and water, with the hands held up, scrub the hands with sterile brush and soap, starting at the finger nails, hands, and proceeding over the forearm to the elbow. Ensure that once the brush has been used over the wrist and fore arm, that it is not used over the finger tips and palms. Particular attention is given to the finger nails. All personnel should be advised to keep nails short and while scrubbing, the undersurface of the nails should be cleaned. Rinse hand s with running water. Keep arms and fingers held up and elbow down to ensure flow of water from tips to the elbow. Close tap with elbow. As an additional precaution, povidone iodine is applied on both hands and washed off with water after about 1 minute .Dry hand with a sterile towel and avoid touching contaminated articles/surfaces.

10.2.7 **Cleaning of equipment and articles:** Contaminated disposable articles are bagged appropriately in leak proof bags and disposed. Critical and Non-critical reusable medical equipment is disinfected or sterilized after use.

10.2.8 **Laundry:** Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged or put into carts at the location where it was used; it should not be sorted or pre-rinsed in patient-care areas Linen soiled with blood or body fluids should be deposited and transported in bags that prevent leakage.

10.2.9 **Eating utensils:** Routine cleaning with detergent and hot water is sufficient.

10.2.10 **Terminal cleaning:** Terminal cleaning of walls, beds, and curtains may be done. Disinfectant fogging is not recommended.

10.2.11 **Precautions against blood borne transmission:**

10.2.11.1 **Instruction for wards:**

10.2.11.1.1 **Admission:** Patients with HIV / HBV / HCV disease but presenting with unrelated illnesses may be admitted in any ward as per existing rules. Confidentiality shall be maintained with appropriate precautions to prevent nosocomial transmission.

10.2.11.1.2 **Preparation of patients:** It is the responsibility of the attending physician to ensure that patients, testing positive are informed about the result and receive counseling. The nursing staff will explain to patients, attendants and visitors (when necessary), the purpose and methods of hand washing, body substance and excreta precautions, and other relevant precautions.

10.2.11.1.3 **Specimens:** Adequate precautions are to be taken while collecting specimens. The specimens are to be transported in leak-proof containers placed inside a leak-proof plastic cover. Ensure that the cover and the outside of the container are not contaminated. Attach a 'Biohazard' label.

10.2.11.1.4 **Waste disposal:** A bin lined by a yellow plastic bag is placed in the patient's room for infectious waste. When the bag is 3/4ths full it is sent for disposal. Non-infectious waste does not require special precautions and is disposed in a manner similar to non-infectious waste generated from any other patient.

10.2.11.1.5 **Death of a patient:** Those cleaning the body should use gloves and other protective wear. Before leaving the ward, the body is bagged as for any case.

10.2.12 **Precautions against contact transmission:** Contact isolation precautions are recommended for specified patients known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted by direct contact with the patient (hand or

skin-to-skin contact that occurs when performing patient – care) or indirect contact (touching) with contaminated environmental surfaces or patient-care items.

10.3 Procedures in High-risk areas:

10.3.1 The hospital has identified precautions to be taken in these high risk areas for employee safety.

Type of exposure	Examples	Protective barriers
Low Risk Contact with skin with no Visible blood	• Injections • Minor wound dressing	Gloves
Medium Risk Probable contact with blood; Splash unlikely	• Insertion or removal of intravenous cannula • handling of laboratory specimens • Large open wounds dressing • Venipuncture, spills of blood • Vaginal examination	Gloves ,Gowns and Aprons
High Risk probable contact with blood, splashing, uncontrolled bleeding	• Major surgical procedures particularly in Neuro surgery and other minor surgical procedures	Gloves, Water-proof Gown or Apron Eye wear, Mask

10.3.1.1 Specimen Collection: If small volumes of fresh urine are needed for examination, the distal end of the catheter, or preferably the sampling port if present, should be cleansed with a disinfectant, and urine then aspirated with a sterile needle and syringe.

10.4 Handling of collection and transportation of blood samples:

10.4.1 Specimens for general investigations: Lab request forms should be duly filled and sent along with the specimen to the concerned departments. Use gloves and take special care if there are cuts or scratches on the hands. Take care to avoid contamination of hands and surrounding area with the blood. Use disposable / autoclaved syringes and needles. Use 70% ethanol or isopropyl alcohol swabs / sponges for cleaning the site of needle puncture. Use thick dressing pad or adsorbent cotton below the forearm when drawing blood and tourniquet above. Tourniquet must be removed before the needle is withdrawn. Place dry cotton – swab and flex the elbow to

keep this in place till bleeding stops. Place used needles and syringes in a puncture resistant container containing disinfectant. Do not recap used needles.

10.4.2 **Specimen for culture:** All the specimens for culture must be taken before institution of antimicrobial therapy. However, therapy should not be delayed unnecessarily. For each specimen, sterile container must be used and spillage must be avoided during collection, catheterization and transportation. The specimen containers should be labeled with the name and hospital number of the patient. specimen from patients with suspected blood borne pathogens or other highly infectious organisms should be placed in plastic bags and should bear the biohazard label of labeled as UP. Specimen should be incubated and never refrigerated once it is inoculated into the medium.

10.4.2.1 **Blood:** Draw under strict aseptic conditions. Prepare skin as for surgical procedures. Ensure povidone iodine is applied from the center to the periphery. Allow a contact time of three minutes. Alternatively 70% alcohol (spirit), tincture iodine may be used. After the needle is withdrawn, inject directly into blood culture bottles with another need.

10.4.2.2 **CSF and body fluids such as ascitic, peritoneal, pleural and synovial:** Collect the specimens in sterile containers with aseptic precautions.

10.4.2.3 **Ear,nose and throat swabs:** Take two swabs of specimen and place in one sterile tube. It is not necessary to wet the swabs with saline or distilled water.

10.4.2.4 **Faeces:** Place small quantitiy of faeces in a sterile, wide mouthed bottle. Close tightly with screw cap.

10.4.2.5 **Miscellaneous specimens:** Ulcer exudates, swabs from wounds, burns, vagina, cervix etc. do not apply antiseptic solution before taking the specimens. Place 2 swabs of specimen in a sterile test tube. Send additional swabs when multiple examinations are required.

10.4.2.6 **Pus:** Collect 1-2 ml of pus in a sterile test tube. If this is not possible, take as much as possible on two sterile swabs and place in a sterile test tube. Send sufficient material

in separate containers for multiple examinations (e.g. M tuberculosis, anaerobes,fungi).

10.4.2.7 **Sputum:** Collect an early morning, coughed up specimen after rinsing the mouth with plain water. Place 5-10 ml specimen into sterile screw capped bottle and send to the laboratory within 30 minutes. If there is delay, refrigerate and send within 1 hour.

10.4.2.8 **Urine:** Midstream clean catch sample is obtained. Suprapubic aspiration is a better method for collecting urine for culture, but is invasive. Use a 21 gauge 2.5" needle (longer than the usual needle) for this purpose.

10.4.3 **Transportation of specimens:** All the specimens should be transported in covered containers. Appropriate transport media should be used wherever needed. Laboratory request forms and the outside of the container should not be soiled with liquid specimens. If soiling has occurred, discard and collect another sample.

10.5 **Disinfection and Sterilisation:**

10.5.1 **Endoscopes - cleaning and disinfection:** Mechanical cleaning: This is the most important step. Flush the air/water channel for 10-15 seconds to eject any blood or mucus. Aspirate detergent through the biopsy/suction channel to remove gross debris. Use a cleaning brush suitable for the instrument and channel size to brush through the suction channel. Disinfection: The endoscope and all internal channels should be soaked in 2% glutaraldehyde for 20 minutes. Rinsing: Following disinfection, rinse the instrument internally and externally to remove all traces of disinfectant. Drying: Dry the endoscope externally. Flush air through each channel.

10.5.2 **Sterilization:**

10.5.2.1 **Autoclave:**

10.5.2.1.1 **Autoclaving at 121°c for 20 minutes at 15 lbs pressure effectively kills most microorganisms and spores.**

10.5.2.1.2 **Working of an autoclave:**

10.5.2.1.2.1 **Loading.**

10.5.2.1.2.2 **Closing.**

10.5.2.1.2.3 **Air removal.**

10.5.2.1.2.4 **Steam exposure.**

10.5.2.1.2.5 **Holding.**

10.5.2.1.2.6 **Exhaust.**

10.5.2.1.2.7 **Drying.**

10.5.2.1.2.8 **Unloading.**

10.5.2.1.3 Autoclaves are used in CSSD for instruments, certain plastics linen gauze and other items.

10.6 Housekeeping:

10.6.1 Housekeeping in wards:

10.6.1.1 Wet mopping of the floor with disinfectant 2 times per day in non-critical areas. This has to be done 2-3 times per hour in critical areas.

10.6.1.2 Mopping after visiting hours is mandatory. Fresh O liquid (2-3% Benzalkonium chloride / Benzyl septol) can be used as disinfectants in the prescribed dilution.

10.6.1.3 Fresh cleaning solution accurately diluted for each task must be prepared.

10.6.1.4 Mops should be washed and dried thoroughly after each use.

10.6.1.5 These must be replaced when worn out.

10.6.1.6 Brooms should not be used, however, if absolutely necessary care must be taken that sweeping is not done during the time of dressing or meals.

10.6.1.7 Furniture and fixtures must be wiped daily with disinfectant.

10.6.1.8 Cleaning solution must be discarded immediately after use in dirty utility area.

10.6.1.9 It must not be discarded in wash basin or clinical sinks.

10.6.1.10 Hands must be washed properly before carrying out other duties.

10.6.1.11 Curtains must be washed every 15 days.

10.6.2 Housekeeping in ICU:

10.6.2.1 Wet mopping of the floor with disinfectant is done every 2 hours.

10.6.2.2 Mopping after visiting hours is mandatory.

10.6.2.3 For cleaning the contaminated material e.g sputumcups, bedpans, urinals etc 5% sodium hypochlorite solution must be used,75 ml of this solution must be diluted within 12 litres of water. This gives 325 ppm of chlorine.

10.6.2.4 For each task, fresh cleaning solution must be prepared.

10.6.2.5 Separate cups, bedpans, urinals, and shelf must be provided per bed.

10.6.2.6 General cleaning of walls should be done by fresh-o-liquid.

10.6.2.7 Curtains must be wiped every 7 days.

10.6.2.8 Cleaning solutions must be discarded immediately after use in the sluice.

10.6.2.9 It must not be discarded in wash basins or clinical sinks.

10.6.2.10 Hands must be washed properly before carrying out other duties.

10.6.2.11 Clean A/C filters weekly once.

10.6.3 Housekeeping in special risk areas:

10.6.3.1 The sister in-charge of the Unit/ ward must inform the domestic supervisor immediately that special cleaning is required.

10.6.3.2 The domestic staff responsible must be made sufficiently aware of any risks, they must be adequately protected and must be aware of the procedures.

10.6.3.3 Separate cleaning equipment should be reserved for these areas.

10.6.3.4 A plastic bag for disposal of waste, a bowl for damp dusting preferably kept in the cubicle, disinfectant solution if required, disposable wipes and a mop and bucket designated for that area.

10.6.4 House Keeping In The Operation Theatre:

10.6.4.1 Theatre complex should be absolutely clean at all items.

10.6.4.2 Dust should not accumulate at any region in the theatre.

10.6.4.3 Soap solution is recommended for cleaning floors and other surfaces.

10.6.4.4 Operating rooms are cleaned daily and the entire theatre complex is cleaned thoroughly once a week.

10.6.4.5 **Before the start of the 1st case:**

10.6.4.5.1 Wipe all equipment, furniture, room lights, suction points, OT table, surgical light reflectors, other light fittings, slabs etc with soap solution.

10.6.4.5.2 This should be completed at least one hour before the start of surgery.

10.6.4.5.3 **Linen & gloves:**

10.6.4.5.3.1 Gather all soiled linen and towels in the receptacles provided.

10.6.4.5.3.2 Take them to the service corridor (behind the theatre) and place them in trolleys to be taken for sorting.

10.6.4.5.3.3 The dirty linen is then sent to the laundry.

10.6.4.5.3.4 Use gloves while handling dirty linen.

10.6.4.5.4 **Instruments:**

10.6.4.5.4.1 Used instruments are cleaned immediately by the scrub nurse.

10.6.4.5.4.2 Reusable sharps are decontaminated in Lysol / hypochlorite and then washed in the room adjacent to the respective OR by scrubbing with a brush, liquid soap and vim.

10.6.4.5.4.3 They are then sent for sterilization to the CSSD.

10.6.4.5.4.4 After septic cases the instruments are sent in the instrument tray for autoclaving.

10.6.4.5.4.5 Once disinfected, they are taken back to the same instrument cleaning area for a manual wash described earlier.

10.6.4.5.4.6 They are then packed and re-autoclaved before use.

10.6.4.5.5 **OT Environment:**

10.6.4.5.5.1 Wipe used equipment, furniture, OR table etc., with detergent and water.

10.6.4.5.5.2 If there is a blood spill, disinfect with sodium hypochlorite before wiping.

10.6.4.5.5.3 Empty and clean suction bottles and tubing with disinfectant.

10.6.4.6 **After the last case:**

10.6.4.6.1 The same procedures as mentioned above are followed and in addition the following are carried out.

10.6.4.6.2 Wipe over head lights, cabinets, waste receptacles, equipment, furniture with ecoshield.

10.6.4.6.3 Wash floor and wet mop with liquid soap and then remove water and wet mop with Bacilloflor solution.

10.6.4.6.4 Clean the storage shelves scrub & clean sluice room.

10.6.4.7 Weekly cleaning procedure:

10.6.4.7.1 Remove all portable equipments.

10.6.4.7.2 Damp wipe lights and other fixtures with detergent.

10.6.4.7.3 Clean doors, hinges, facings, glass inserts and rinse with a cloth moistened with detergent.

10.6.4.7.4 Wipe down walls with clean cloth mop with detergent.

10.6.4.7.5 Scrub floor using detergent and water or Bacilloflor.

10.6.4.7.6 Stainless steel surfaces – clean with detergent, rinse & clean with warm water.

10.6.4.7.7 Replace portable equipment.

10.6.4.7.8 Clean wheel castors by rolling across toweling saturated with detergent.

10.6.4.7.9 Wash (clean) and dry all furniture and equipment (OT table, suction holders, foot & sitting stools, Mayo stands, IV poles, basin stands, X-ray view boxes, hamper stands, all tables in the room, holes to oxygen tank, kick buckets and holder, and wall cupboards).

10.6.4.7.10 After washing floors, allow disinfectant solution to remain on the floor for 5 minutes to ensure destruction of bacteria (Bacilloflor).

10.6.4.8 Maintenance and Repairs:

10.6.4.8.1 Machinery and equipments should be checked, cleaned and repaired routinely.

10.6.4.8.2 Urgent repairs should be carried out at the end of the day list.

10.6.4.8.3 Air conditioners and suction points should be checked, cleaned and repaired on a weekly basis.

10.6.4.8.4 Preventive maintenance on all theatre equipment to be carried out weekly and major work to be done at least once every year.

10.6.5 Cleaning & Disinfection of Operation Theatres, Laboratory & Critical Care Areas:

10.6.5.1 Recommended Cleaning Schedule: The recommended cleaning schedule includes: Immediately prior to the commencement of an operative procedure the environment should be visually inspected for cleanliness and appropriate action to be taken. Spot cleaning of blood substances should be undertaken as soon as practicable with an effective decontaminant. Cleaning of contaminated furniture, equipment, floors and walls. At the conclusion of the day's operative schedule, operating rooms, anesthetic rooms, catheterization lab, scrub/utility areas, recovery rooms and corridors, furnishings, fixtures, fittings, flows and face plates of vent should be cleaned.

10.6.5.2 Cleaning:

10.6.5.2.1 Daily: Floors, bench tops and horizontal surfaces, furniture, equipment, sinks and toilets.

10.6.5.2.2 **Areas to be cleaned:** Operating area, **preparation room, recovery room.**

10.6.5.2.3 **Weekly cleaning:** Shelves and desks.

10.6.5.2.4 **Half yearly: Ceilings, walls doors, light fittings, fire and smoke detector.**

10.6.5.3 **Disinfection Practices: All horizontal surfaces:** Wet mopping with TASKI-R2/Bacillo floor. Bacillo floor: Aldehyde free, economical general purpose surface disinfectant. Effective against broad range of bacteria, fungi at 0.1 % dilution. DILUTION: 0 .1% to 10 liters of water (3/4 bucket) add 10 ml of Bacillo floor. 0.1 % dilution – For areas Consultation rooms Dressing rooms, Wards, toilets, Corridors, Laboratory, Kitchen, Laundry room, Pharmacy. 2.0% Dilution For Areas: ICU, OT, & other Critical care areas. Wash floors and other tiled surfaces, taking care to cover corners & other inaccessible areas. Allow to dry. For optimum effect, keep floors wet for 15 mints or more. Use freshly diluted soln. for optimum results. Composition: Each 100 gm. Didecyldimethyl Ammonium Chloride – 7 gm Corrosion Inhibitors. For blood spills, sodium hypochlorite 10,000 ppm, prepared according to manufacturer's instructions must be used promptly followed by thorough rinsing. Cleaning & disinfection should take place at the end of each shift.

10.7 Laundry and Linen Management:

10.7.1 Linen should be washed at 80-90°c over 20 minutes with detergent in the water since this is the most effective way of killing vegetative bacteria. The linen should be steam pressed. Only the linen used in procedures requiring sterile technique should be sterilized. This procedure is done in O.T. Washing of linen is not undertaken in the premises of the hospital. Guidelines are provided for the processing of soiled linen within the hospital premises. I. **Routine Handling of Soiled Linen:** Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged or put into carts at the location where it was used; it should not be sorted or pre-rinsed in patient-care areas. Linen soiled with blood or body fluids should be

deposited and transported in bags that prevent leakage. Soiled Linen with blood or body fluids, and all linen are soaked in 1% hypochlorite solution for 20minutes before washing. Personnel handling soiled linen should be provided with PPE. **II. Transportation of Clean Linen:** Clean linen should be transported and stored by methods that will ensure its cleanliness. **Laundry process:** Laundry chemicals used in the in-house laundry section. **III. Storage of clean linen:** The Linen is stored in the House keeping department in the Linen Storage Room.

10.8 Biomedical waste management:

10.8.1 Hospital waste management consists of the following steps: Segregation should take place at the source of waste generation. It is important that segregation takes place at source, as it is the person who generates the waste knows best about its nature. A color code is followed which is maintained throughout the hospital. All the patient care areas should have appropriate containers for collecting the waste. The hospital follows the color codes for segregating waste and disposal as per guidelines; **Black bag:** This encompasses general noninfectious waste, which is sent to IMC for final disposal. It includes: Domestic/kitchen waste, Paper Packages. Empty saline bottles, vials and ampoules. **Red bag:** This encompasses the infectious waste, which is incinerated or disinfected and then sent to IMC for final Disposal. The waste includes: Human tissues, organ parts and body parts, placenta. Cytotoxic drug ampoules and vials, discarded or expired drugs. Disposable items like infected IV tubings. Rubber catheters, Infected IV sets, cannulas, Ryles tube etc. **Puncture proof containers:** filled with 0.5% sodium hypochlorite is used for disposing sharps like needles, Syringes, scalpels, vials, ampoules and stillest. These are further sent to IMC for final disposal. **Radioactive waste:** It encompassed the syringes and the needles used to administer the radio opaque dye and the radioactive isotopes. The syringes, needles and the isotopes are collected in lead containers till they are free of radioactivity. Then the lead containers are sold as scrap.

10.9 Needle-stick injury:

10.9.1 Handing Syringes and Needles:

10.9.1.1 DOs: Pass syringes and needles in a tray. Preferably cut it with needle destroyer. Put needle and syringes in 1% Sodium hypochlorite solution. Remove cap of the needle near the site of use. Pick up open needle from tray / drum with forceps.

10.9.1.2 DONTs: Never pass on open syringe and needle directly to next person. Do not bend or break used needle with hands. Never test the fineness of the needle's tip before use with bare or gloved hand. Never pick up open needle by hand. Never recap any needle. Never dispose it off by breaking it with hammer / stone.

10.9.2 **Sharps disposal: Definition:** Sharps refer to needles razors, scalpel blades, broken glasses and any other object capable of penetrating the skin. Sharps must never cross hands and must be carried in a tray or dish to the site of disposal. **Needles must never be re-sheathed after use.** The person using the sharps is responsible for its disposal into the puncture proof container with 1% bleach. The container should be placed in a safe place. The container should not be more than 3/4th full and the contents well immersed in the solution. HCP should not attempt to retrieve items once discarded or try to empty out the contents. **Never recap, bend or break disposable needles.**

10.9.3 **Dealing With Sharps Injury:** When sharps injury occurs the following must be done:

10.9.3.1 **First Aid:** Stop the procedure immediately.

10.9.3.2 **Contaminated Wound:** encourage bleeding from the skin wound and wash. The injured area with copious soapy water, disinfectant, scrub solution or water.

10.9.3.3 **Contaminated intact skin:** wash the area with soap and water.

10.9.3.4 **Contaminated Eyes:** gently rinse the eyes while open with saline or water.

10.9.3.5 **Contaminated mouth:** spit out any fluid- rinse the mouth with water and spit out again.

10.9.3.6 **Retention:** if possible of the item and details of its source for identification of possible infection.

10.9.3.7 **Report Accident:** All occupational exposures must be fully documented in the sentinel event reporting form.

10.9.3.8 **Risk Assessment:** The factors which should include, nature and extent of the injury / item causing the injury (eg: solid or hallow needle)/body substance involved/ volume of the blood / body substances to which employee was exposed.

10.9.4 **Classification of Exposure:**

Protective barriers **Low Risk**	Contact with skin with no visible blood (a) Injections (b) Minor wound dressing **Use Gloves**
Medium Risk	Probable contact with blood Splash unlikely • Vaginal examination, • Insertion or removal of intravenous cannula • Handling of laboratory specimens • Large open wounds dressing • Venipuncture spills of blood **Use Gloves, Gowns and Aprons**

10.9.5 **Blood Testing (Consent Required):**

Health care worker	Source
1. Hepatitis B surface Antigen (HBsAg)	Hepatitis B status
2. HIV I & II Antibodies	HIV status
3. Hepatitis C virus	Hepatitis C status

10.9.6 **NOTE:** The Blood samples for the investigation for source and Health care works are sent for rapid testing. Confirmation of reactive result is not necessary for starting PEP but the process should continue to confirm and confidentiality of the source is maintained. If source unknown epidemiological information is taken into account. The Health care works should have completed Hepatitis B immunization within 3 months of their present Employment.

10.9.7 **Post Exposure Prophylaxis – HBV:**

10.9.7.1 **Exposure to HBsAg-Positive Source:** Exposed persons who are known to have responded to vaccination are considered protected and need no further vaccine series. Exposed persons who are in the process of being vaccinated but who have not completed the vaccine series should receive the appropriate dose of HBIG (i.e.0.06 ml/kg) and should complete the vaccine series doses. Persons who have written documentation of a complete hepatitis B vaccine series and who did not receive post-vaccination testing should receive a single vaccine booster dose. Alternatively, these persons can be managed according to guidelines for management of persons with occupational exposure to blood or body fluids that contain blood. Unvaccinated persons or persons known not to have responded to a complete hepatitis B vaccine series should receive both HBIG and hepatitis vaccine as soon as possible (preferably ≤24 hours) after a discrete, identifiable exposure to blood or body fluids that contain blood from an HBsAg-positive source. Hepatitis B vaccine should be administered simultaneously with HBIG in a separate injection site, and the vaccine series should be completed by using the age-appropriate vaccine dose and schedule.

10.9.7.2 **Exposure to Source with Unknown HBsAg Status:** Unvaccinated persons who have a discrete, identifiable exposure to blood or body fluids containing blood from a source with unknown HBsAg status should receive the hepatitis B vaccine series, with the first dose initiated as soon as possible after exposure (preferably within 24 hours) and the series completed by using the age appropriate dose and schedule. Exposed persons who are not fully vaccinated should complete the vaccine series. Exposed persons with written documentation of a complete hepatitis B vaccine series require no further treatment.

10.9.7.3 **Guidelines for post exposure hepatitis B Immuno-prophylaxis of unvaccinated persons who have a discrete identifiable exposure to blood or body fluids that contain blood.**

Cause of Exposure		Suggested action

Discrete exposure to an HBsAg*-positive source	Percutaneous (e.g., bite or needle stick) or mucosal exposure to HBsAg-positive blood or body fluids that contain blood	Administer hepatitis B vaccine and hepatitis B immune globulin (HBIG)†
Discrete exposure to a source with unknown HBsAg status	Percutaneous (e.g., bite or needle stick) or mucosal exposure to blood or body fluids that contain blood from a source with unknown HBsAg status	Administer hepatitis B vaccine†

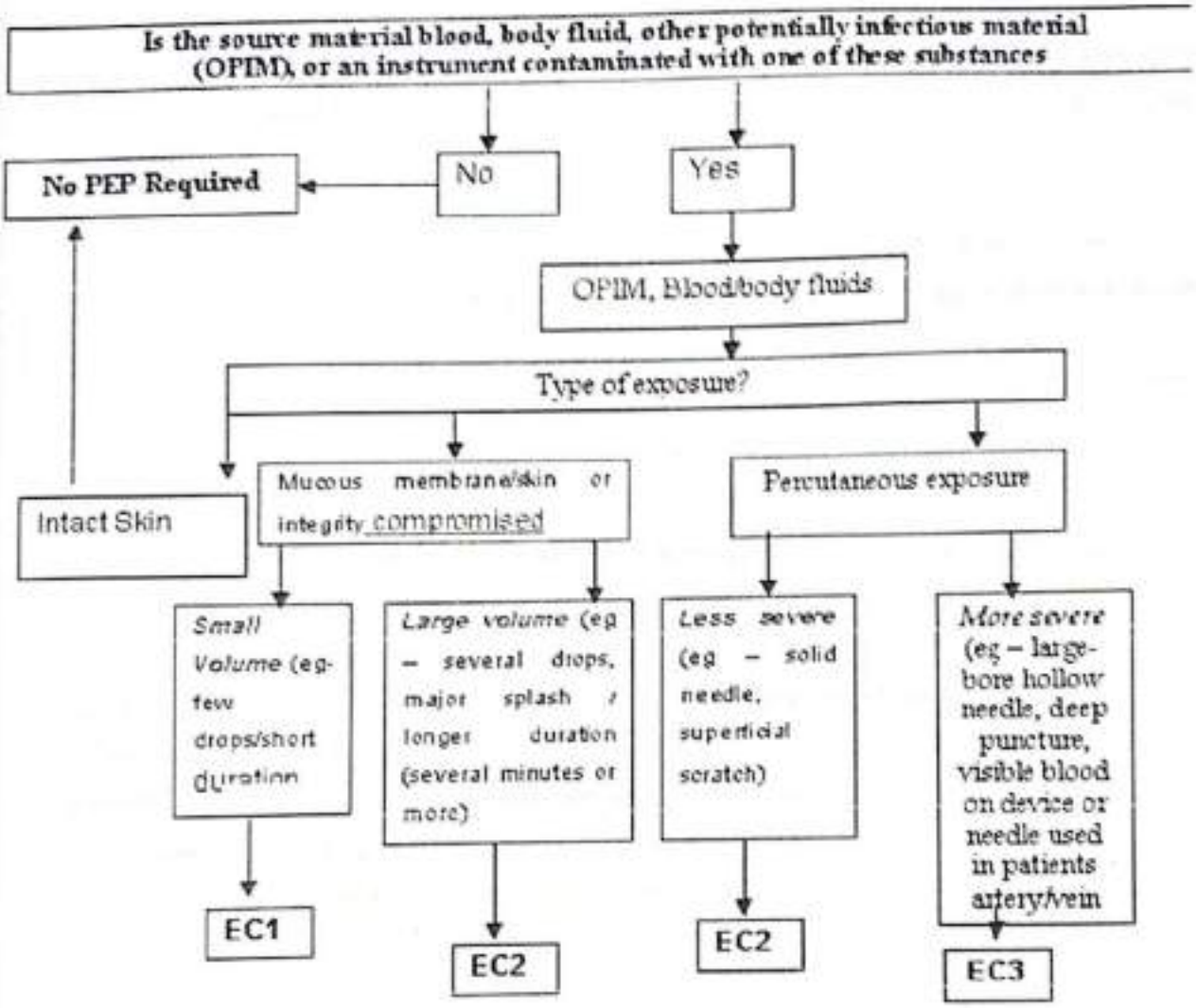
10.9.7.4 Follow Up: HCWs are tested for HBsAg status at 3 and 6 months as a follow up and for the completion of vaccination.

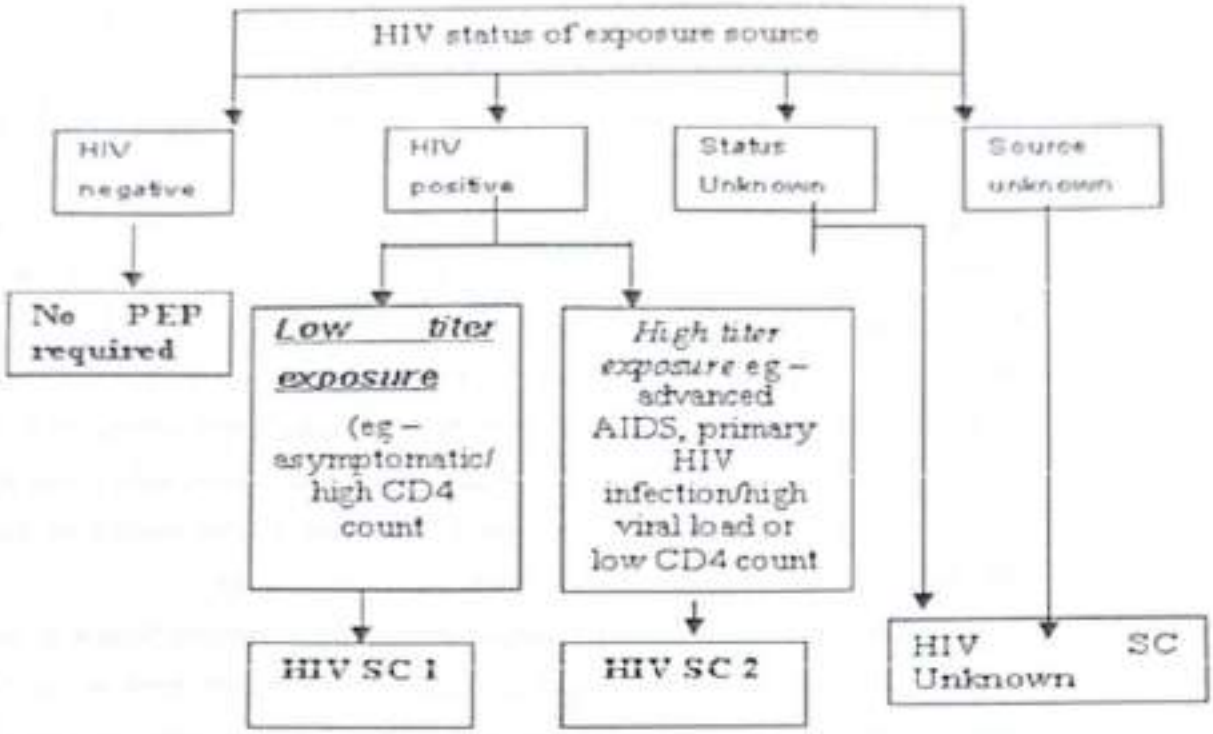
10.9.7.5 **Post HIV Exposure Management / Prophylaxis (PEP):** It is necessary to determine the status of the exposure and the HIV status of the exposure source before starting post-exposure prophylaxis (PEP).

10.9.7.5.1 **Post exposure Prophylaxis:** The decision to start PEP is made on the basis of degree of exposure to HIV and the HIV status of the source from whom the exposure/infection has occurred.

10.9.7.5.2 **Determination of the Exposure Code (EC):** Exposure code can be defined as per the flow chart given below. It may be classified into three categories, EC1, EC2 and EC3, depending upon the nature of exposure.

10.9.7.5.3 **Exposure Code (EC):**





10.9.7.6 Determination of PEP Recommendation:

Exposure code (EC)	HIV SC	PEP Recommendation
1	1	PEP may not be warranted
1	2	Consider Basic Regimen
2	1	Recommended Basic Regimen (most exposure are in this category)
2	2	Recommended Expanded Regimen
3	1 or 2	Recommended Expanded Regimen
2/3	Unknown	If setting suggests a possible risk(epidemiological risk factors) and EC is 2 or 3, consider basic regimen

10.9.7.7 **Basic regimen:** Zidovudine (AZT) –600 mg in divided doses (300mg/twice a day or 200 mg/thrice a day for 4 weeks). Lamivudine (3TC) – 150 mg twice a day for 4 weeks.

10.9.7.8 **Expanded regimen: (4 weeks therapy):** Basic regimen + Indinavir – 800 mg/thrice a day, or any other protease Inhibitor.

10.9.7.9 **Testing, Counseling and Follow up:** The health care provider should be tested for HIV as per the following schedule. Base-line HIV test - at time of exposure. Repeat HIV test - at six weeks following exposure. 2nd repeat HIV test - at twelve weeks following exposure. On all three occasions, HCW must be provided with a pre-test and post-test counseling. HIV testing should be carried out on three ERS (Elisa/ Rapid/ Simple) test kits or antigen preparations. The HCW should be advised to refrain from donating blood, semen / Organ /tissues and abstain from sexual intercourse. In case sexual intercourse is undertaken a Latex condom be used consistently. In addition, women HCW should not breast -feed their infants.

10.9.7.10 **Duration of PEP:** PEP should be started, as early as possible, after an exposure. It has been seen that PEP started after 72 hours of exposure is of no use and hence is not recommended. The optimal course of PEP is not unknown, but 4 weeks of drug therapy appears to provide protection against HIV. If the HIV test is found to be positive at anytime within 12 weeks, the HCW should be referred to a physician for treatment.

10.9.7.11 **Pregnancy and PEP:** Based on limited information, anti-retroviral therapy taken during 2nd and 3rd trimester of pregnancy has not caused serious side effects in mothers or infants. There is very little information on the safety in the 1st trimester. If the HCW is pregnant at the time of exposure to HIV, the designated authority/physician must be consulted about the use of the drugs for PEP.

10.9.7.12 **Steps to be undertaken by the Infection control officer on receiving information about exposure:** All needle-stick/sharp injuries should be reported to the Infection Control Nurse. A separate register is maintained by the Infection Control nurse. Infection control officers in hospitals have been directed to ensure that PEP drugs are available at all times.

10.9.7.13 **Post HCV Exposure Management / Prophylaxis (PEP):** Post exposure follow-up of health-care, emergency medical, and public safety workers for hepatitis C virus (HCV) infection. For the source, Baseline testing for Anti-HCV.* For the person exposed to an HCV-positive source, baseline and follow-up testing including: Baseline testing for Anti-HCV and ALT activity; and Follow-up testing for anti-HCV (e.g., at 4-6 months) and ALT activity. (If earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4-6 weeks.) No vaccine available. If acute hepatitis develops administer 10mu Interferon, with or without Ribavirin three times a week until ALT normalizes or for 3 months.

10.9.7.14 **Immunization schedule:** Hepatitis B Virus: 0, 1, 6 months booster dose 1 year after 3rd dose. For Health care workers, after (3 series doses), vaccine response status Anti HBs levels should be checked after 1-2 months of 1 series. < 10 IU/ml Repeat 2nd series. Again test for Anti HBs after 1-2 months of 2nd series. No response and HBsAg Negative counsel to take precautions. HbsAg Positive - Manage

10.10 Management of Spills:

10.10.1 **Blood and Body fluid Spillage:** The Spills shall be promptly confined by covering it with absorbent material like paper napkins, toilet paper or newspaper. Do not touch the soiled material by hand. Either use forceps, tongs or gloved hands. Rubber gloves are better than surgical gloves. 1: 10 Sodium Hypochlorite solution / Household Chlorine bleach (5000 – 6150 ppm available chlorine)/Baccillocid special 2% must be poured on and around the spill area for at least 20 minutes and remove the soiled material. Discard all soiled material into contaminated yellow waste bag as per hospital waste disposal policy. Put 1: 100 dilution Sodium Hypochlorite / Household Chlorine bleach (500 – 615 ppm available chlorine)/Bacillo-floor-0.5% spray over the area. Clean the area with detergent soap and water. Mop dry. Take off gloves, wash and dry hands.

10.10.2 **Chemical spillage:** The method to manage the spill remains same except in place of disinfectant neutralizing chemicals are used. For acidic substances sodium and calcium carbonate and for basic substances citric acid powder or other acid is used.

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10.10.2 **Chemical spillage:** The method to manage the spill remains same except in place of disinfectant neutralizing chemicals are used. For acidic substances sodium and calcium carbonate and for basic substances citric acid powder or other acid is used.

10.10.3 Mercury spillage: Mercury is a very toxic element. Whenever its spillage occurs it should be managed carefully. Remove all gold and silver ornaments worn in hands/forearms. Use two pair of gloves with facemasks and eye protection. Try to gather all the small droplets of mercury with the help of cardboard sheet to make a big drop. Suck this drop using a syringe. Put this drop in a plastic container having 5-10 ml of water and seal it with tape. Send this to the manufacturer to reuse. Keep the syringe in plastic container for future use.

10.11 Special Care Units:

10.11.1 INTENSIVE CARE UNITS: Design of the Unit Space around and between beds should be adequate for placement and easy access to equipment and to patients. Good housekeeping practices should be followed. This includes regular cleaning of all areas, maintenance, linen and curtain changes etc. Clean floor at least four times a day. **1. Procedures to be followed by health care personnel:** Hand Hygiene: Importance of this cannot be over-emphasized in the ICU setting. Standard Precautions: as appropriate, should be followed by all staff while handling patients or samples (refer to the section on Universal Precautions). Wear plastic aprons and gloves for all procedures. Remove and discard them immediately after each patient. Use gloves for / all patient contact. Wear masks while examining patients with 'uncertain' diagnosis. **2. Instruments:** Although disposable items are ideal, reusable items are often used, for reducing the cost. Separate thermometers should be used for each patient. Trolleys are to be adequately loaded and should be used for bedside procedures. **3. Microbiological monitoring:** Swabs for culture are taken from common dust settling areas and air conditioners once a month. **II. OBSTETRICS AND LABOUR ROOM:** Policies regarding admission of pregnant women with infection. **1. Pregnant women suffering from infections:** Not in Labor : Admit in medical wards / Isolation ward, just as one would admit a non-pregnant woman with similar illness. In Labor : Admit to isolation side of labor room. **2. Indications for admission to isolation side in labor room:** Pregnant women with at least 22 weeks of gestation and in labour with: Hepatitis (A, E or unknown). Diarrhoea and Dysentery (severe, watery, with blood and mucous). Known infection with a blood borne pathogen (HBV, HCV & HIV). Suspected or confirmed communicable disease

requiring isolation. **3. Labour Room: a. Housekeeping has to be meticulous:** Clean the floor at least four times in 24hours. One of these should be with detergent and copious amounts of water. phenol may be used to mop the floor for the remaining times. Any spill of blood or fluids should be immediately decontaminated with 1% Sodium hypochlorite 10 minutes, mopped dry and then cleaned thoroughly with detergent and water. Environment and equipment should be maintained dust free. Strip the bed and wipe clean with detergent and water and then once more with bacillol spray after each patient. Wear gloves for this procedure. Use fresh linen for each patient. **b. Personnel:** Follow universal Precautions with absolute care. Sterile gloves, gown, plastic apron, goggles, mask and impervious footwear (covering dorsum and sole) are recommended while conducting delivery and any other procedure where spill / splash is expected. Wear gloves and plastic apron for performing vaginal examination and preparing parts. Anyone with open wounds skin lesions should not be involved in invasive procedures. Wash hands after each procedure and between patients.

10.12 Hospital Acquired Infection (HAI) Surveillance:

10.12.1 Urinary tract infection rate (UTI). Respiratory tract infection rate (VAP). Intravascular device infection rate (CRBSI). Surgical site infection rate (SSI). Catheter related blood stream infections: The following should be the surveillance criteria to define catheter related blood stream infections. The patient has a **central line in place.** (midline catheters, non tunneled central venous. Catheters, pulmonary artery catheters, peripherally inserted central venous catheters, tunneled venous catheters, umbilical catheters, peripheral catheters, percutaneously inserted into central veins (sub-clavian, central, internal jugular, or femoral). The patient has been admitted **for > 48 hours** in that health care unit. The patient has any of the following criteria being fulfilled. Recognized **pathogen isolated from blood culture.** Pathogen is not related to infection from another sites. Common skin contaminant isolated from 2 blood cultures drawn on separate occasions and organism is not related to infection at another site. Positive antigen test and organism is not related to infection at another site. Patient ≤ 12 months of age and has fever > 38 ° C, Hypothermia, Apnoea, Bradycardia. Common skin

contaminant isolated from 2 blood cultures drawn on separate occasions and organism is not related to infection at another site. Positive antigen test and organism is not related to infection at another site. **Calculation:** All the patients on central lines in a unit are included for surveillance. Data collected by infection control nurse with above criteria fulfilled. End of month add all the catheter days for a unit. Number of blood stream infections (BSI) / 1000 catheter days = (Number of BSI / Total number of catheter days) X 1000.

10.12.2 **Ventilator associated Pneumonia (VAP):** The following criteria need to be fulfilled: The patient should have been on mechanical ventilation (either through an endotracheal tube or through Tracheostomy) in an ICU for > 48 hours to be qualified to be a case under consideration for VAP. Rales or dullness to percussion on physical examination of chest and any of the following: New onset of purulent sputum or change in character of sputum. Same organism isolated from blood culture as from respiratory tract with no other source of infection. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing or biopsy. Chest radiographic examination showing new or progressive infiltrate / consolidation, cavitations without carcinoma or tuberculosis or pleural effusion. And any of the following: New onset of purulent sputum or change in character of sputum. Same organism isolated from blood cultures as from respiratory tract with no other obvious source of infection. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy. Histopathological evidence of pneumonia. **The number of ventilator days is calculated as for BSI for that unit and the number of VAP** as characterized by the above criteria is also calculated over a month. The denominator is taken as number of VAP / 1000 ventilator days, i.e. number of VAP as defined by the above criteria/number of ventilator days X 1000.

10.12.3 **Catheter Related Urinary Tract Infection (CRUTI):** To be classified for surveillance the following needs to be fulfilled: The patient should have been Foley's or in dwelling catheter in a unit for > 48 hours to be qualified to be a case under consideration for CRUTI. And An indwelling urinary catheter should have been present within 7 days before the urine is cultured.'And Patient has history of fever (> 38°C) urgency, frequency, dysuria or suprapubic tenderness. And Patient has

urine culture of ≥ 1 lakh organisms/ml urine with no more than two types of organisms. The number of urinary catheter days is calculated as for BSI for that unit and the number of UTI as characterized by the above criteria is also calculated over a month. The denominator is taken to be number of UTI / 1000 urinary catheter days. i.e, (Number of UTIs as defined by the above criteria / Total number of urinary catheter days) x 1000.

10.12.4 **Surgical site infection rate (SSI):** Data is collected in a fixed format by the incharges nursing which is collected by the ICNs and analysed by the ICO. SSI involves patients developing infection within 30 days of surgery and is calculated as The number of patients developing SSI after surgery over a month is calculated. The denominator is taken as Number of patients undergoing same surgeries. % of SSI is calculated as: (Number of SSIs as defined by the above criteria / Total number of patients undergoing same surgery) x 100.

11.0 QUALITY OBJECTIVES:

11.1 To ensure the prevention of infection in the hospital.

11.2 To ensure the control on the spread of infection within the hospital.

11.3 To ensure reduction in the HAIs in the hospital.

11.4 To ensure the analysis of the HAI trends and timely detection of any impending outbreak.

11.5 To ensure that trainings are being provided to every staff member in hospital infection control and prevention aspects.

12.0 QUALITY INDICATORS:

S.No	Performance Indicator	Numerator	Denominator	Standardization factor
1	Urinary tract infection rate	No. of Catheterized patients developing UTI in the hospital	Total no of urinary catheter days	1000
2	Respiratory tract infection rate	No. of patients developing ventilated associated pneumonia	Total number of ventilator days	1000
3.	Intravascular device infection rate	No.of catheter related blood stream infection (CRBSI)	Total number central venous days	1000
4	Surgical site infection rate	No. of patients developing SSI after surgery	No. of patients undergoing same surgeries	100

13.0 DATA INFORMATION:

13.1 All the quality indicators are monitored at appropriate interval as defined in the policy.

13.2 The report shall be submitted to the Quality Assurance Officer , NABH coordinator & Medical Director.

13.3 Improvements on the quality care indicator shall be discussed in the Quality Management Committee.

13.4 Appropriate corrective and preventive actions shall be taken and the documentation done of the same.

14.0 RECORDS:

14.1 All the below mentioned records shall be maintained by the HIC Committee and shall be destroyed after getting approval from the management and QM Committee.

S.no	Title	Responsibility	Code	Retention Period
1	OT and CSSD surface culture register	OT in-charge	ESH/OT/01	2 years
2	ICU and Ward surface culture register	ICU in-charge	ESH/ICU/02	2 years
3	Monthly Microbiological data register	Lab in-charge	ESH/LAB/03	2 years
4	Quality Indicator surveillance register	QA in-charge	ESH/QA/04	2 years
5	Water culture register	IC in-charge	ESH/ICN/05	2 years

15.0 TRAINING:

15.1 All Doctors, Nurses, Technicians and Housekeeping staff shall be trained regularly regarding the hospital infection control protocols, procedures and how to handle different emergencies.

15.2 All new joining staff shall be oriented to the Department by the Head of the department.

15.3 Training needs of the staff is assessed by the Head of the Department based on the performance of staff.

Annexure: 1

LIST OF NOTIFIABLE DISEASES

- **COVID**
- **Chickengunya Virus Disease**
- **Cholera**
- **Congenital Syphilis**
- **Dengue virus infections**
- **Diphtheria**

- Gonorrhea
- Haemophilus influenzae, invasive disease
- Hansen's disease / Leprosy
- Hepatitis A, B,C, E
- HIV Infection (AIDS has been reclassified as HIV Stage III) (AIDS/HIV)
- Leptospirosis
- Malaria
- Measles / Rubeola
- Meningococcal disease
- Mumps
- Pertussis / Whooping Cough
- Plague
- Poliomyelitis,
- Q fever
- Rabies
- Rubella / German Measles
- Severe Acute Respiratory Syndrome-Associated Coronavirus Disease (SARS)
- Smallpox / Variola
- Spotted Fever Rickettsiosis
- Syphilis
- Tetanus / c. tetani
- Tuberculosis (TB)
- Typhoid fever
- Varicella / Chickenpox
- Viral Hemorrhagic Fever (VHF)
- Ebola virus
- Yellow fever

*** If any patients admitted with above disease intimate to ICD & NS immediately.

E.S. Hospital

E.S. HOSPITAL

VILLUPURAM.

Service Name :	**HOSPITAL WIDE SAFETY MANUAL** **NABH-E / ESH/ SM / 01**
Date Revised :	06.09.2023
Revised Edition :	03
Prepared By :	**Designation: Safety Officer** Name : Mr.NandhaKumar. Signature : 08 : 09 : 23
Reviewed By:	**Designation: QM Coordinator** Name : Jothi Kirubakaran.I **Signature :** 08/09/23
Approved By :	**Designation: Managing Director** Name : Dr . S.Saravanan,M.D. Signature : 08/09/23
Issued By :	**Designation: QM Coordinator** Name : Jothi Kirubakaran.I Signature : 08/09/23

CONTENTS

1.0

PURPOSE:

1.1 The management of E.S. Hospital is extremely committed to provide a safe and secure environment and facilities to all patients, families, employees and visitors who utilize the hospital premises. In order to achieve this goal the hospital will: Appoint a safety committee which will develop, document and implement a "hospital wide safety programme". This safety programme will be documented in the "Safety Manual".

2.0 SCOPE:

2.1 This manual details the following:

2.1.1 The responsibilities and the functions of the safety committee.

2.1.2 The role of the management to ensure all safety laws and regulations are adhered to at all times.

2.1.3 The role of the management in updating all amendments in these laws and regulations and to ensure all licenses and registrations are current at all times.

2.1.4 Documentation of the operational and maintenance plan for the facility and the plan to ensure round the clock provision of safe water, electricity and medical gases and vacuum system to take care of the patients.

2.1.5 Design, document and implement a plan for facility inspection rounds.

2.1.6 The documentation of hazards and risks identified and corrective and preventive action to be taken safety of all the patients, employees and visitors.

2.1.7 Design and create all the necessary safety signage's in a bilingual and image format and ensure they are displayed in all appropriate places.

2.1.8 Documentation of the operational and maintenance plan for all clinical and support service equipment used for the medical care of patients.

2.1.9 Documentation and implementation of a "Laboratory safety plan".

2.1.10 Documentation and implementation of a "Radiology safety plan".

2.1.11 Documentation and implementation of a "Fire and Non fire safety plan".

2.1.12 Design, document and ensure safety education for all the employees.

3.0 ABBREVIATIONS:

3.1 NABH : National Accreditation Board For Hospitals and Healthcare providers

3.2 FMS : Facility Management and Safety

3.3 HMIS : Hospital Management Information System

3.4 CA : Corrective Action

3.5 PA : Preventive Action

3.6 HIRA : Hazard Identification and Risk Analysis

4.0 DEFINITIONS:

5.0 RESPONSIBILITY: Safe Operations & Patient Safety Committee, Management.

Medical Director	Chairman
Administrative officer	Convener
Safety Officer	Member
Quality Coordinator	Member
Nursing Superintendent	Member
Infection control Nurse	Member
Biomedical Engineer	Member
Radiation dept In charge	Member
Laboratory In charge	Member
Dietitian	Member
Physiotherapist	Member
Security In charge	Member
Housekeeping In charge	Member
Invitees when desired	Member

6.0 ROLES & RESPONSIBILITIES:

6.1 Safety Committee:

6.1.1 All safety related reporting and data collections mechanisms shall be established and pursued like: Incident Reporting. Medication Error Reporting. Adverse Drug Reactions. Nosocomial Infection Reports. Facility Safety Surveillance.

6.1.2 The hospital shall collect data and analyze it regarding the following aspects with a view to improve patient safety plan. Staff perceptions and suggestions for improving patient

safety. Staff willingness to report errors. Patient/family perceptions and suggestions for improving patient safety.

6.1.3 The hospital may also focus on the improvement of the patient safety program through utilizing proactive risk reduction strategies like: Identification, reporting, and management of sentinel events. Identification of high-risk processes. Failure mode, effects, and criticality analysis.

6.1.4 Responsible for implementation of policies related to Radiation safety.

6.1.5 Undertake Facility *& Loss Prevention Surveillance* every quarter to identify and analyze potential patient safety issue and submit the report to the Quality Improvement Committee.

6.1.6 Prepare Fire Plan, Fire Drawings, fire training and conduct 2 fire drills/ year.

6.1.7 Prepare Disaster Plan, Internal & external disaster drill annually.

6.2 **Management:**

6.2.1 The management will designate a functionary (Managing Director) to list all the laws, acts and regulations that are applicable to the health care organization.

6.2.2 The Medical Director will have in his safe custody all the licenses, registrations and certifications that are necessary to run the organization.

6.2.3 It will be the duty of the Medical Director to ensure that all these licenses, registration and certifications are current or updated within the time frame.

6.2.4 It is also the duty of Medical Director to ensure that any updates or amendments to the existing laws, acts and regulations are immediately captured and brought to the notice of top management so that necessary procedure changes can be made to comply with the amendments.

7.0 Operational and Safety Plan:

7.1 It will be the responsibility of Administrative Officer / Managing Director to ensure all civil, electrical, plumbing and air conditioning facilities available in E.S Hospital is safe and secure for all patients, families, staff and visitors. In order to carry out this task the Administrative officer / Managing director will be supported by the Engineering Services department. The Engineering Services department will have among its staff all technicians needed to carry out this operational

and maintenance plan. It will be the duty of the head of the estates department to ensure that maintenance staff or contactable round the clock. This will be done through a single point fault reporting centre that will receive the call, time the complaint and enter in to a register and inform the concerned maintenance person. In this way the response time for correction of complaints will be monitored and reported to the Administrative officer / Managing director. The estate department will identify the signages required and design them and display them in right places. A list of signages will be maintained by the estate department. The Engineering Services department will maintain up to date drawings of the entire health care organization. These drawings will be displayed in correct places in the E.S Hospital so that the patients, staff and visitors can identify the escape routes. The Engineering Services department will ensure that the health care organization is provided with electricity and water round the clock. It will ensure alternate sources are provided in case of failure and regularly test these alternate sources. The Engineering Services department will form part of the safety committee and take part in hazard identification and list analysis as well as facility rounds. It is the duty of Engineering Services department to ensure that patient safety devices or installed across the organization and inspect them periodically. The Engineering Services department will coordinate with the Safety Committee in formation of fire and non-fire management plan, management of hazardous material and disaster management plan.

8.0 "NO SMOKING" Zone:

8.1 E.S Hospital's Administration expects compliance from all staff, patients and visitors regarding its rules and regulations governing smoking. Smoking is prohibited in all areas of the Hospital complex and premises. Employees violating this policy is subjected to a fine and/or disciplinary action by E.S Hospital. **Patients:** Patients are not allowed to smoke while hospitalized and are so informed prior to admission. **Dissemination of the Policy:** Signs indicating the general policy will be posted at or near the entrances to the lift lobbies. Departments heads will keep staff informed about this policy make copies of the written policy available to employees upon request. New employees will be informed about this policy during orientation. Compliance and Enforcement of the Policy: All supervisory personnel are responsible for implementation of this policy. The Human Resources Department is available for advice and interpretation of the

policy. Any employee who deliberately violates this policy will receive a written warning. If the employee has any subsequent violations, (s) he will be subject to progressive discipline up to and including termination from employment. Hospital Employees are asked to help maintain this policy by courteously informing anyone who appears to be unaware of the regulations.

9.0 Emergency Codes:

9.1 **Important Telephone Numbers:**

9.1.1 FIRE EMERGENCY –100

9.1.2 ENGINEERING – 127/123

9.1.3 **SAFETY TEAM – 142**

9.2 **Codes:**

9.2.1	CODE BLUE	:	MEDICAL EMERGENCY (100).
9.2.2	CODE RED	:	FIRE – ACCIDENT AND EMERGENCY (100).
9.2.3	CODE PINK	:	CHILD ABDUCTION (100).

10.0 Safety Education:

10.1 The Hospital requires all new employees to attend orientation program. This orientation is intended to provide new employees with an awareness of safety importance and their responsibility for maintaining a safe and healthy work environment, and to give an overview of workplace safety basics. The results should be more safety conscious employees who are receptive to learning and practicing the specifics of a safe, healthy workplace.

10.2 Safety Orientation for New Employees: All new employees receive safety orientation. The orientation will consist of the following information: The Hospital Safety Officer or external instructors will present the general safety policies of the Hospital, and the new employee's supervisor will present: Procedures and policies specific to the new employee's position. 2. All Policies & Procedures related to safety. 3. Fire reporting procedures. 4. Fire extinguisher location and use. 5. Fire prevention. 6. Safe lifting techniques. 7. Any information the supervisor feels will provide the new employee with a safe environment.

10.3 Regular Training Programs: Hospital shall conduct various training programs on safety issues at regular intervals. Safety committee in association with HRD should conduct these programs.

11.0 Safety Inspections:

11.1 The hospital undertakes periodic inspection of the safety precautions undertaken either internally or with the help of an appropriate external agency.

11.2 It is conducted twice in a year in patient care areas and atleast once in a year in non-patient care areas.

11.3 The reports of the safety inspections are reviewed by the hospital's safety committee and the same is submitted to appropriate Government Department/Agency as and when required.

11.4 The safety Inspection records are maintained with respective departmental authorities.

11.5 The Hospital Safety Officer or Committee may require periodic assessment of the following inventory: 1. Environmental (lighting, dusts, gases, sprays, noises). 2. Hazardous materials (flammable and caustic). 3. Equipment (biomedical equipments etc.). 4. Power equipment (boilers, motors, etc.). 5. Electrical equipment (switches, breakers, fuses, outlets, connections). 6. Hand tools. 7. Personal protective equipment (safety glasses, ventilators, radiation safety aprons etc). 8. Personal service/first aid supplies (Medical Check Up). 9. Fire protection equipment (alarms and extinguishers). 10. Walkways/roadways (sidewalks, roadways). 11. Transportation equipment (Ambulances, lifts). 12. Containers (hazardous waste bags). 13. Structural openings (windows, doors, stairways). 14. Buildings/structures (floors, roofs). 15. AC plant. 16. Miscellaneous (any items not covered above).

11.6 Each inspection report will record pertinent safety management violations, noncompliance items, and observe deficiencies.

11.7 Employees directly involved in the use or operation of the facilities or function being inspected is to participate in the inspection process.

11.8 Corrective and preventive measures are undertaken and implemented.

12.0 Hazard Communications:

12.1 General: Any incident in the hospital should be investigated by the Hospital Safety Committee and the report would be forwarded to the higher authority for further action .The following incidents should be immediately informed to the Safety Officer of the hospital:

12.1.1 Serious injury to patients.

12.1.2 Serious injury to employees.

12.1.3 Serious injury, caused by Hospital operations, to another party.

12.1.4 Major loss of Hospital equipment or property.

12.1.5 Major loss of equipment or property belonging to another party caused by Hospital operations.

12.1.6 **Reporting Accidents:**

12.1.7 Any accident should be immediately investigated by the employee's supervisor or appropriate staff member.

12.1.8 It should be reported to the Safety Officer for reporting purposes and for further investigation and resolution.

12.1.9 Upon learning of a serious accident involving employees or equipment, an employee must notify the Safety Officer immediately.

12.1.10 Serious accidents will be investigated by the Safety Officer.

12.1.11 Reports for any such incident are to be forwarded to the Safety Management committee of the hospital.

12.2 **Release of Information:**

12.2.1 In the case of accidents, supervisors and employees must not release information to the news media so as to avoid creation of unwanted panic among the people.

12.2.2 Information to the media is to be provided by the top management authorities not less than the designation of Managing Director.

12.2.3 If contacted by the media refer these individuals to the appropriate persons.

13.0 Procedures For Rescue:

13.1 At all patient care units, the ward In-charge will maintain a list of patients who are handicapped / fully dependant for mobilization.

13.2 Emergency telephone numbers must be kept by the telephone nearest to the person's normal work location.

13.3 All handicapped personnel will be evacuated with the help of assigned personnel.

13.4 **Transporting Handicapped Persons Via The Stairwells:**

13.4.1 In the event of an emergency, all handicapped personnel shall be directed along with an attendant to a safe area, such as a stairwell landing, exit or to a refuge area.

13.4.2 At no time shall any person be directed to an elevator lobby to wait for evacuation.

13.4.3 Under some circumstances, where it may be life threatening for the handicapped person and their attendant to remain in that location, the handicapped person must be evacuated via the stairwells.

14.0 Safety In Radiology:

14.1 **Introduction**: Radiology workers are at risk for occupational exposure to radiation and hazardous chemical. However standard precautions like personal protective equipment (PPE), safety devices and proper disposal of bio hazardous wastes can drastically reduces these risks. The document deals with the basic procedures to reduce the above mentioned risks.

14.2 **Purpose**: To reduce the risk of occupational exposure to radiation and hazardous chemicals.

14.3 **Scope:** The Hospital Radiation Safety program applies to all locations where radiation producing machines are used or stored, regardless of ownership or the location. It applies to all persons working at or frequenting these locations, regardless of their relationship with the Hospital. It applies to all radiation-producing machines at these locations, regardless of ownership of the machines.

14.4 **Responsibility**: Radiologist

14.5 **Safety Practices:**

14.5.1 Statutory Requirements: Commissioning and Decommissioning of X-ray Equipment has to be registered with AERB. Direct assistance to the patient while being X-rayed has to be avoided. If assistance is required, appropriate precautions have to be taken by the person who will assist by making use of appropriate protective material and devices which are available. Fetal protection measures to be used. Image intensifiers to be used for fluoroscopy examination. Periodic inspection of X-ray equipment and shielding features is conducted regularly. Personnel monitoring facility be provided to all radiation workers. Presence of uninvolved staff, patients and persons in any X-ray room must be avoided. Regular maintenance and calibration of the unit must be carried out. Reproductive organs

must be particularly shielded. Services of qualified radiologists and X-rays technologists to be used. Servicing and calibration of X-rays equipment should be undertaken by qualified, trained and authorized service engineer. There should be transfer of radiographs and reports to avoid repeated X-rays examinations. X-rays equipment meeting design certification and type approval requirement by AERB only shall be used. X-ray examination of pregnant women and children should be avoided as far as possible.

14.5.2 Personal protective equipment: No person shall operate or permit the operation of certified or uncertified medical radiographic and fluoroscopic equipment systems unless the following conditions are met: Only individuals required for the medical procedure, for training or for equipment maintenance shall be in the radiographic or fluoroscopic room during an exposure. Individuals who are present in a radiographer or fluoroscopic room during any exposure shall wear protective aprons of at least 0.25 mm lead equivalent during every exposure. The fluoroscopist shall wear protective gloves of at least 0.5mm lead equivalents. When a patient must be provided with auxiliary support during a radiation exposure and Mechanical holding devices are insufficient; the following procedures shall be followed: The person holding the patient shall be protected with a lead apron of at least 0.5mm lead equivalent. The person holding the patient shall be protected with lead gloves of at least 0.25 mm lead equivalent if the hands must be placed in the useful beam. Radiographers not to hold the patient during a radiation exposure, except in a life-threatening situation. No person shall be employed, routinely assigned, or required to hold a patient during radiographic and fluoroscopic procedures. If a patient must be held during the x-ray exposure, non-radiation workers such as nurses or members of the patient's family may be asked to perform this duty. Gonad shielding of not less than 0.5 mm lead equivalent shall be used on a patient during. Radiographic and fluoroscopic procedure, except for cases in which this would interfere with Diagnostic procedure. The operator shall collimate x-ray beam limitation to ensure that the x-ray field does not extend beyond the Region of interest. The Radiographic field shall be restricted to the areas of clinical interest as far as practical. A method to observe the patient during the x-ray exposure shall be provided for all units.

During radiographic exposure, the operator shall stand behind the protective barrier. The RSO shall provide safety rules to each individual operating x-ray equipment including any restrictions as to the operating technique required for the safe operations of the particular x-ray apparatus, and require that the operator sign a form acknowledging that the safety manual was read. No person shall permit or arrange for the intentional irradiation of a human being except for the purpose of medical diagnosis or treatment. No person shall deliberately expose an individual to the useful beam for the sole purpose of training or demonstration. No person shall operate an ionizing -radiation-producing machine unless that person understands and uses the principles of radiation safety to keep radiation exposure as low as reasonably achievable (ALARA).

14.5.3 List of Personal Protective Equipment: Lead Aprons (0.50 mm Lead). Thyroid Shields (0.50 mm Lead). Lead Goggles. Abdominal Shield (0.50 mm Lead). Gonad Shield. Ovarian Shield. Lead Glasses. Lead Screen 6 X 3 Feet (Mobile)(2mm Lead). 2mm Lead Lined Doors in all X-ray Producing unit. A method to observe the patient during the x-ray exposure shall be provided for all units. Lead Gloves

14.5.4 Safety Guidelines: Report every injury, no matter how slight, to your in charge. No intoxicating liquor shall be consumed while on duty. Anyone who is found under the influence of alcohol or drugs will be terminated. Know all the hospital emergency codes and be sure of your responsibilities. When dealing with the extremely large patient, be sure to seek help and lift the patient correctly. Know your fire extinguishers, their locations and the use. Use good housekeeping techniques at all times.

14.5.5 General Radiation Protection: A qualified radiographer must only do all radiographic techniques and procedures. All radiographers must take necessary steps in reducing radiation dose to the patient. Check the correct patient for correct examination. Plan your technique to reduce the radiation dose. Close the X-ray room door properly and tightly. Provide the necessary radiation protection. Collimate the radiation beam to necessary area only. Give proper and correct instructions. Select the appropriate exposure factor. Avoid unnecessary repeats. For female patients check whether they are pregnant. Limit number of people in the X-ray room while X-ray is being done. Mobile X-ray request only if it is

necessary. All staffs must wear radiation-monitoring badge while in the radiology department. Use only high-speed cassette (Green Sensitive) - to reduce exposure. Clear all staffs from room during Mobile X-ray /Provide Lead apron to the next Bed patient if he/she is not able to move. Everybody should be 6 feet away from x-ray tube during Mobile x-ray. Appropriate personal protective equipment (Radiation Protective devices) is to be worn where there is a risk of Radiation exposure. Personnel monitoring devices should always be worn when working with radiographic/fluoroscopic equipment. The devices worn should be those issued for the current time period and should be worn under the lead apron. Those workers wearing TLD badges should ensure that the Card has been properly inserted into the Cassette holder. Only persons whose presence is necessary should be in the radiographic or fluoroscopic room during exposure. All such persons who are subject to direct scatter radiation shall be protected by aprons or whole body protective barriers of not less than 0.25 mm lead equivalent. Note: A lead apron (Pb) of 0.25 mm lead equivalence will reduce scattered x-rays by 95%. Mechanical supporting or restraining devices shall be used when a patient or film must be held in position for radiography or fluoroscopy. If a patient must be held by an individual, that individual shall be protected with appropriate shielding devices of at least 0.25 mm lead equivalence for whole body protection and at least 0.5 mm lead equivalence for any part of the holder's body that is exposed to the primary x-ray beam. Mobile equipment should be used only for examinations where it is impractical to transfer patients to permanent radiographic installations. The operator should stand behind the barrier provided for his/her protection during radiographic exposures at permanent radiographic installations and should stand as far as possible (at least 6 feet) from the patient when operating the mobile equipment. Each mobile radiographic equipment operator, prior to making an exposure, should ask anyone within 6 feet of the x-ray tube and/or patient being radio graphed to move further away until the exposure is complete. Those persons who must remain within 6 feet of the patient and/or x-ray tube must be protected by whole body aprons or barriers of at least 0.25 mm lead equivalence. The operator shall give an audible warning before the

exposure is made. When Making X-ray exposures, it is advisable to place the image intensifier closest to the region of interest. This results in better image quality and reduces risk from potential hazards. The hand of the fluoroscopist should not be placed in the useful beam unless the beam is attenuated by the patient and a protective glove of at least 0.5 mm lead equivalent. Special precautions, consistent with clinical needs, should be taken to minimize exposure of the embryo or fetus in patients known to be or suspected of being pregnant. No fluoroscopy or abdominal area radiographic imaging shall be performed on a pregnant or potentially pregnant patient without the approval of a qualified physician. If the x-ray procedure does include the abdominal region of the pregnant or potentially pregnant patient, the examination shall not be performed without approval from a diagnostic radiologist. Although it is the responsibility of the referring physician to determine pregnancy status, those operating diagnostic x-ray equipment will ask all patients of childbearing age whether or not they are pregnant and the date of their last menstrual period. This information is to be recorded on the study requisition prior to examination. If the x-ray procedure does not include the abdomen or pelvis of the pregnant or potentially pregnant patient, the abdominal region should be shielded with at least 0.25 mm lead equivalence, and the examination performed without regard to pregnancy. The minimum source-skin distance (SSD) for all mobile radiographic x-ray units must be 30 centimeters. The radiation protection program is guided by the concept of keeping radiation exposure As Low as Reasonably Achievable (ALARA). Remember that radiation cannot be seen or felt, but can be detected with radiation survey meters. Radiation exposure of all individuals routinely working with sources of radiation is monitored with a TLD (Thermo luminescent dosimeter) badge. The devices are checked quarterly. Radiation exposure can be minimized by utilizing three basic principles: Time: Shorter exposure time means a lower dose. Distance: Doubling the distance from a radiation source means one-fourth the dose rate. Tripling the distance gives one-ninth the dose rate. Inverse square law. Shielding: The use of appropriate shielding greatly reduces the dose rate.

14.5.6 Departmental Safety : Radiologist/Radiographer of radiology services is responsible for notifying the Management in case of any safety hazard. All radiology employees shall report defective equipment, unsafe conditions, acts or safety hazards to Manager of radiology services. Keep electrical cords clear of passage ways. Do not use electrical extension cords without prior informing the facility department. All equipments and supplies must be properly stored. Scissors, knives, pins, razors blades and other sharp instruments must be stored and used safely. All electrical machines, with heat producing elements, must be turned off or unplugged or it is in not use. Smoking is prohibited, per hospital smoking policy. Do not permit rubbish to accumulate. Notify the facility department immediately of illumination and Air conditioning effect Problems. Furniture and equipment must be allowed adequate passage and access to exits at all times. Employee who discovers the spill should inform minor spills, such as water& chemical spill , to House keeping team. This shall be done immediately. Report faulty equipment to the Biomedical Engineer or vendor. Obey warning signs. File drawers and cabinet doors shall be closed when not in use. Wear suitable clothing, only authorized personnel shall be allowed in X-ray room.

14.5.7 Patient's Safety: No patients shall be left unattended. Appropriate Personal protective equipment shall be kept available at all times, personnel shall be trained in their use. Two staff personnel will attend all trolley patients. When the lift is used for any patient, one staff must be present on the lift. All wheelchair will have safety band attached to it. When a trolley is used for the transportation of the patient, the side rails will always be up. Transportation method for out patient will be based on status of the patient when assessed by the hospital staff prior to x-ray/scanning. An out patient determined to be ambulatory will be allowed to walk to the unit. Ambulatory patients are to be accompanied from the radiology department to the CT room and back to the department. The Bed roll of U.S.Scan Table shall be changed for each patient to prevent any kind of cross Infection/contamination. X-ray bed roll will be provided for Infectious patients. If a patient must be held during x-ray, the assistant holding the patient will were a lead-lined apron during the entire procedure. The radiographer will ensure that all the Infant/children

being radio graphed have proper shielding and proper collimation of the X-ray beam to expose only the required Anatomy. All expectant females if necessary to be X-rayed will be properly shielded and the X-ray beam collimated to the area of interest only. Pregnant females will not be permitted in the X-ray room during exposure.

14.5.8 U.S.G. Scan Safety Guideline: Use condoms when using transvaginal probe and scanning infectious patients. Discard condoms safely. Equipment or incorrect settings can result in measurement errors or failure to detect details within the image. Damaged probes or improper use and manipulation can result in injury or increased risk of infection. A damaged probe can also increase the risk of electrical shock if conductive solutions come in contact with internal live parts. Inspect probes often for cracks or openings.

14.5.9 Lead Apron inspection/Radiation protective device: Lead aprons must be used to protect staffs and patients from unnecessary radiation exposure from diagnostic radiology procedures. Health care organization must perform inspections on medical equipment, including lead aprons, lead protective devices etc. Inspection Frequency: Monthly: The Inspection consists of visual check to look for obvious tears, cuts, or etc. Bi annually: Apron must be placed on the table and checked using the automatic brightness control (fluoroscopic method). If fluoroscopy is not available, then a radiographic unit may be used to x-ray the apron one section at a time. Aprons must be stored properly in hangers. Do not fold or pile up. Check for cracks.

14.5.10 Chemical Waste Disposal: Fixer & Developer is recommended for processing Medical X-ray films in automatic Film processor equipment. Storage: The chemicals must be stored and used at 4 to 29° C. Discard if there is evidence of contamination, dirt, over-dilution, excessive evaporation, or crystallization safely. Mixing Instructions: Instructions for mixing replenish and/or working solutions provided by leaflets for individual size packages shall be followed. Disposal: -Developer: Used Developer should be neutralized (pH 7-9) and flushed with large quantities of water to the sewer system. UNUSED developer contains hydroquinone which is a toxic substance, so unused developer cannot go down the drain. Keep developer and used fixer separated. If used fixer and developer accidentally get mixed together, the mixture must be disposed of as

dangerous waste. Disposal: Fixer - Used fixer from X-ray processing is defined as a Hazardous waste because it contains high concentrations of silver. Collect used fixer in a container marked "Hazardous Used fixer". Keep fixer separately- storage capacity 200 Litres. The supplier will be asked to take it back at cost. Keep disposal receipts. After sale close all the lids of the sold fixer container seal it with plaster to avoid spillage during transportation. The films are disposed with used fixer to the hypo buyer as solid waste.

15.0 Safety In Laboratory:

15.1 **Introduction**: Laboratory workers are at risk for occupational exposure to infectious agents and hazardous chemical. Infections can be acquired from exposure to contaminated blood, tissue and other biological material. However good laboratory practices with standard precautions like personal protective equipment (PPE), safety devices and proper decontamination and disposal of biohazardous wastes can drastically reduces these risks. The document deals with the basic strategies and procedures to reduce the above mentioned risks.

15.2 **Purpose**: To follow good laboratory practices (GLP) to reduce the risk of occupational exposure to infectious agents, hazardous chemical and to avoid accidents (eg. fire) in the laboratory.

15.3 **Safe Work Practices:**

15.3.1 **Handling Of Specimen:**

15.3.1.1 Gloves: Wear gloves and laboratory coats (aprons) at all times when handling and processing patient specimen, decontaminating instruments and cleaning. Bandage open cuts and scratches on the hand and then wear gloves. Wear gloves when performing phlebotomy and handling actual blood specimens. Wash hands immediately after gloves are removed, after a task that involves heavily contaminated matter and before leaving the laboratory.

15.3.1.2 Specimen Transport: Always transport specimens to the laboratory in leak proof containers. Do not accept grossly soiled or contaminated specimens.

Notify the individual responsible for submitting such a specimen and follow the laboratory's specimen rejection policy.

15.3.1.3 Needles and Syringes: Use needle-locking syringes or plastic disposable syringe-needle units. Never bend the needles, after use do not recap and cut the needle with help of needle destroyer, discard them in the sharps container. Secure blood culture bottles before inserting needles into the bottle (eg., place bottle in support rack).

15.3.1.4 Tubes: Always carry tubes in racks. Use plastic tubes when possible. Uncaps tubes carefully, avoid splashes or sprays (eg. when removing tops from vacuum tubes). In case of splash or spray, see the shower and eye wash section in this document. Do not use glass tubes that are broken or damaged at the mouth. Discard such tubes into the sharps container.

15.3.1.5 Centrifuges: Centrifuge tubes must be intact and properly balanced when centrifuged. Do not place tabletop centrifuges in the biological safety cabinets. Clean the centrifuge once daily after use to remove any contaminating material on the inner side of the centrifuge.

15.3.1.6 Hand washing: Frequent hand washing after removing gloves, before leaving the laboratory are absolutely essential. Use nonirritating soap for routine washing. Use antiseptic soap or an alcohol based hand disinfectant followed by thorough hand washing for accidental skin contamination.

15.3.2 **Handling Chemicals:** Wear appropriate PPE when handling hazardous chemicals. Label all reagents with their chemical names and appropriate hazard warnings provided from their material safety data sheets (MSDS). Keep MSDS for all chemicals either in the laboratory or in the office nearby. Store all hazardous chemicals, including chemicals, reagents and dyes, below eye level.

15.3.3 **Housekeeping And Miscellaneous Safe Practices:** Avoid or minimize activities associated with transmission of infectious agents. Designate clean and contaminated work area. Clean and disinfect all surfaces after spills and at the end of each work shift. Keep all work areas neat and uncluttered. Do not store personal items in the work area. Do not

bring food or beverages into the laboratory area. Remove coats before leaving the laboratory. Dispose all contaminated materials in appropriate coloured closed bags.

15.3.4 **Decontamination**: Routine decontamination and cleaning of the work environment are the responsibility of all laboratory workers particularly, of the housekeeping staff. To accomplish this work area should be uncluttered, with clean and unclean materials clearly demarcated and separated. The section below outlines the common decontamination protocols to be followed in the routine day-to-day functioning of the laboratory. Preparation Of 10% Household Bleach : Prepare fresh daily. Add one part of household bleach to nine parts of tap water. Dispense in wide mouthed large plastic containers. The containers should be only half full. Place the containers in the designated work areas. Decontamination of Work Surfaces: Works surfaces have to be decontaminated at least twice daily, before the work begins and at completion of work. Use a paper towel or a soft cloth soaked with the disinfectant (1% sodium hypochlorite solution). Wipe the work surface going over each area at least twice. Allow to air dry with a minimum contact time of 5-10 min. The housekeeping staff has to regularly fill the decontamination worksheet. Decontamination of Equipments (including vortex, centrifuge, and Telephone and Computer key boards): Follow same procedure as for work surfaces after consulting the supervisor that the disinfectant is compatible with the equipment surface. The periodicity of decontamination for the above mentioned equipment has to be decided by the supervisors in each section of the laboratory based on the use of equipment. Do not use alcohol on equipments that are close to open flames (burner). Do not use sodium hypochlorite on metal parts because they may cause rusting. Do not use aldehyde based disinfectants as general surface disinfectants. Decontamination of Spills: Refer MSDS Hazardous Spills.

15.3.5 **Waste Disposal:** Refer HIC Manual (BMW)

15.3.6 **Laboratory Areas:** The laboratory should have designated areas for laboratory work and access to such areas should be limited to the laboratory employees. Visitors in laboratory areas. Children under 12 years of age should not be permitted into any laboratory.

Laboratory supervisor is responsible for the safety of adult visitors to his or her laboratory. Hazard warning signs and labels shall display at appropriate locations.

15.3.7 **Laboratory Accidents:** Though the laboratory provides all facilities to avoid accidents, it is inevitable that a few accidents may occur over a period of time. The following section provides details of the management of such laboratory accidents: Needle stick injuries (including other sharps): Wash the area immediately with running water. Briefly induce bleeding from the wound by massaging(don't squeeze). Wash the area again with soap and water. Inform the department in-charge. Inform the incident to casualty in-charge and an incident report will have to be made. The Casualty Medical Officer has to assess the risk to the individual and suggest plan of treatment. The incident report forward to Personnel Manager. The hospital's policy of Post exposure prophylaxis will have to be followed and the appropriate prophylaxis instituted as early as possible. Incident report: While it may not be possible to alert the supervisor about the laboratory accident immediately, the laboratory worker should ensure that the supervisor is informed about the incident at the earliest. The supervisor is duly advised to prepare a report of the incident, using the incident report work sheet and the laboratory director has to be informed. The laboratory In charge shall ensure that the appropriate PEP/treatment has been followed.

16.0 *Electrical And Mechanical Safety:*

16.1 **Scope:** These sets of instructions relate to electrical and mechanical safety aspects.

16.2 **Safety Instructions:** Don't meddle with electrical equipment. Repairs are an electrician's job. Always check for defective cables, plugs or sockets. Never overload electrical equipment. Switch off and disconnect any equipment that sparks or stalls. Don't let cables trait across the floor. They are stumbling hazards. Don't use lighting circuits for portable tools. Avoid kinking, twisting, binding or crushing electrical cables. Do not put loose wires in the socket, use proper plug. Use only three pin plugs. Never connect a portable electrical tool without earthing. Don't use electrical tools near flammable vapours. Wear safety shoes where required. Do not use wet

gloves at work. Keep pathways to switch boards clear of obstructions. Do not throw water on live electrical equipment / wires in case of fire, use sand or blanket instead. Know the location of the nearest fire extinguisher, use the right type of extinguisher.

16.3 **Electrical maintenance personnel – DO's & DONT's:** DO's: Switch off the supply before handling a fan or replacing a bulb. Use the correct size and quality of fuse wire when renewing a blown fuse. Place "MEN WORKING" signboards on all switches before commencing work. Ensure that all controlling switches are opened and locked or the fuses withdrawn, before working on any circuit or apparatus. Treat circuits as alive until they are proved otherwise. See all the connections are securely made. Discharge all cables to earth before working on the case. Test rubber gloves periodically. Place rubber mats in front of electrical switch boards. Ensure that all portable appliances are provided with 3-pin plug and the metal part of the apparatus is earthed. Disconnect the supply immediately in case of fire on or near electrical equipment. Warn others when they seem to be in danger near live conductors. DONT'S: Do not connect single pole switch or fuse in the neutral circuit, but always connect in the phase wire. Do not close any switch unless you are familiar with the circuit. High voltage apparatus may give leakage shock or flash over even without touching. Don't touch without being sure. Do not use wires with poor and deteriorated insulation. Do not wear loose clothing, metal watch straps, rings etc, while working on socket electrical appliances. Do not bring a naked flame near oil filled equipment and battery. Do not enter excavations and trenches which give pungent smells, or work in badly lit / ventilated and congested areas.

17.0 Fire Safety:

17.1 **Steps For Fire Prevention:** It is the responsibility of every employee to observe report and check any condition or act that may be a potential cause of fire. The main points to be observed in fire prevention are as under: Old and frayed electric cables damaged switch boards, loose fixtures and sparking appliances, will be reported in writing to the Engineering Department by the concerned department, managers, and supervisors for immediate repair/replacement. Follow up action will be taken until work is complete. Welding/hot works by Engineering Department/contractors is not allowed without written permission of fire safety officer/shift

security officer. Departments will ensure that welding is not permitted in their departments unless a fire personnel is present to provide fire-fighting cover. It will also be ensured by manager/supervisor that a radius area of twenty feet from the point of welding is cleared of all inflammable material such as petrol / thinner oil, paints, cardboard paper, plastic cloth and dry wood. Furniture that cannot be removed should be covered with asbestos sheets or wet cloth or tin sheets. Chemicals and oil stored in material store will be divided into small stocks with adequate spacing in between. The Shift in charge Food & Beverages Department will be personally responsible for operation and safety of Liquid Petroleum Gas installation attached to the kitchen. He will ensure that all valves on the main feed pipeline and regulators on the gas stoves are shut, when not in use. Excessive paper, plastic, cardboards and wooden scrap will not be allowed to accumulate in office. Supervisor Housekeeping or engineering will ensure that prompt action is taken on complaint by concerned department. Patients who want to use electrical gadgets other than the ones provided by the hospital need to get prior permission from the engineering department. Used bandage/cotton etc. will not be allowed to accumulate. Unauthorized fires will not be lit in the hospital premises. An authorized fire will be completely snuffed before close of work. E.g. Lab areas. The electric main switch of all offices not occupied will be switched off when not in use. Fire works are not permitted inside the hospital. Private electric appliances like heaters, immersion rods are not allowed inside the hospital. Duplicate keys of all offices, stores, and departments will be deposited with security, and kept in the duplicate key box. All concerned will complete this action. This is however, not applicable to individual managers' cabins with glass facings. Fire fighting equipment will not be removed or misused for industrial/administrative purposes. Department concerned will prohibit people for any such misuse. Tapping of hydrant lines for administrative use is a serious violation of the safety policies. Engineering Department will ensure that existing underground and surface tappings are disconnected immediately. Whenever a new structure is to be built or an old structure is modified, Engineering Departments will involve the safety officer at the planning stage for projecting the fire safety requirements. The Engineering Departments will consult the safety Officer whenever any work site is used involving inflammable material.

17.2 **Fire Safety Plan:**

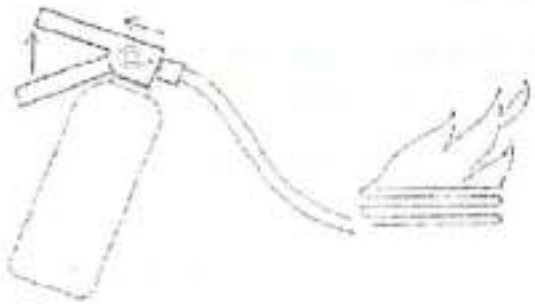
17.3 **Fire Emergency Team / Fire Rescue Team (Code Red Team):** Shall be familiar with the written Fire Safety Plan, providing for fire drill and evacuation procedure. Shall be responsible for availability and state of readiness of fire emergency. Shall participate in fire and evacuation drills. Shall be responsible for daily check for the availability of Fire watch at work place. In the event of Fire, shall report to Security office to supervise, provide and coordinate the following: Ensure that the all concerned has been notified of any fire or fire clearance. Direction of evacuating procedure is provided in Fire Safety Plan. Reports on condition on fire floor for information of Fire and rescue service on their arrival. Advise Fire and rescue service department in-charge in the operation. Each floor of a building shall be under the direction of a designated Fire/ Security department personnel for the evacuation of occupants in the event of fire. He shall be assisted in his duties by the fire rescue team. Each Fire / Security department personnel shall be familiar with the Fire Safety Plan, the location of exits and the location and operation of any available fire alarm system.

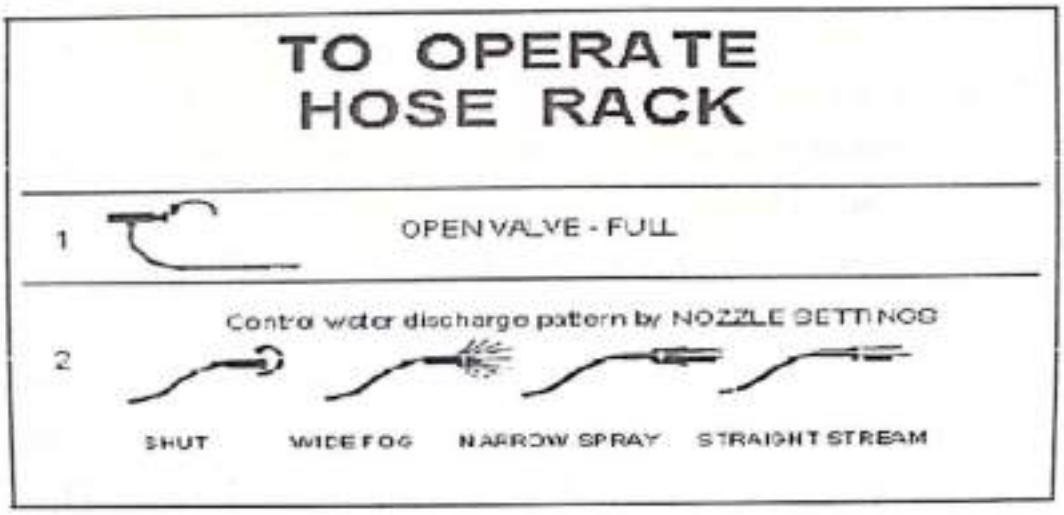
17.4 **Evacuation Route / Assembly Point:** Evacuation will be done through rear side and front side staircase. The patient evacuation will be done by trained personnel using foldable stretchers, wheel chairs. Staff will be evacuated through the 4 staircases (2 rear side and 2 front side) The evacuated personnel will be assembled in four assembly zones. The assembly zones are as follows: Emergency Assembly Zone 1. Emergency Assembly Zone 2. Emergency Assembly Zone 3. Emergency Assembly Zone 4.

17.5 **R-A-C-E:** This easy to remember acronym is our Hospital procedure in the case of a fire. Particularly in the hospital, every staff member is trained to recognize and respond appropriately in the case of a fire using this term. **Rescue** - Remove everyone from the area. If a fire occurred in a patient room the staff should immediately remove the patient from the area. **Alarm** - The Fire Alarm Pull Station shall be activated. Fire Alarm Pull Stations are located throughout the buildings, several on each floor. By activating the Fire Alarm a fire action plan is set into motion where Security receives the signal and initiates the emergency response. In addition the air conditioning systems that could increase fire spread are automatically shut down. **Confine / Contain** - Once the room or area has been cleared of patients the door shall be closed, thus confining the fire, which gives the fire response team the time needed to arrive. **Extinguish /**

Evacuate - When practical and only when an employee has been properly trained in the safe and proper use of a fire extinguisher, the attempt shall be made using one fire extinguisher. Evacuate if you are not comfortable using a fire extinguisher or if more than one extinguisher is needed.

17.6 **Operating Fire Extinguishers: Scope :** This set of instructions deal with the operation of all handy fire extinguishers in E.S Hospital. **Type of extinguishers:** CO2, DCP, Foam. **instructions on how to operate most fire extinguishers:** READ THE INSTRUCTIONS given on the fire extinguisher. Remember the word - **P A S S** : **PULL** the pin. Some units require the release of a lock latch, pressing a puncture lever, inversion, or other motion. **AIM** low. Aim the extinguisher nozzle (horn or hose) at the base of the fire. **SQUEEZE** the handle. This releases the extinguishing agent. **SWEEP** from side to side. Watch for reflash. Move in close. Pull apart the burned area to get at hot spots. Discharge the contents of the extinguisher. **NOTE:** Foam, CO2, water or other types of extinguishers may require slightly different actions.





17.7 **Summary:** Know how to operate the extinguishers. A small fire can easily become a big fire if an extinguisher is used incorrectly. Fight only small fires and preferably not alone! Make sure you have access to a safe exit. If you have the slightest doubt about whether to fight or not to fight the fire - DO NOT! Get out and call!!!

18.0 Hazardous Spills :

18.1 **Policy:** Only staff trained in spill response shall be allowed to clean-up major spills or they will take appropriate action in laboratories as mentioned below in all the cases immediate action would be taken as per protocols. In case of any spill hazard emergency, rescue operation is carried out through trained personnel (SAFETY COMMITTEE team immediately).

18.2 **Make the following notifications:** If the spill involves a fire, use manual call point to activate the fire alarm. Call code red team and provide details of the fire. For spill that does not involve fire or explosion, and describe emergency. Instruct others in the area about the emergency and stay clear of the spill area. If you have knowledge about the spill, identify yourself to the Safety Team. Follow the directions of the SAFETY COMMITTEE team.

18.3 **Biohazard Spills in the Laboratory: i) Employee Contamination:** If the skin becomes contaminated with blood or other potentially infectious materials, wash the area thoroughly with soap and water. If blood or other potentially infectious material is splashed into the eyes, immediately use the nearest source of clean water, and flush for at least 15 minutes. There are bath showers and eye fountain in all the departments of Laboratory Services. Remove grossly contaminated clothing immediately. Place the contaminated clothing in a plastic bag. Report the spill to the Supervisor, and seek medical attention. **ii) Clean Up:** Wear the appropriate PPE to clean up the spill. At a minimum, this includes gloves, protective eyewear and a mask, or a face shield. Depending on the size and type of spill, impervious gowns, protective foot coverings, or respirators may be needed. Pick up any broken glass with tongs or heavy towel. Do not use your hands. Spread 10% Hypochlorite solution over the spill and contain the area with disposable paper towel. Allow a contact time of 2 minutes. Carefully pick up the absorbent towels, and place into a red bag and clean the area with cleaning agent specific to that area. All PPE, tissue

paper and other items that became contaminated must be disposed of as per bio- medical waste disposal. Wash hands and any other exposed skin with soap and water even after removal of gloves before leaving the work area. **iii) Spills or Breakage in a Centrifuge:** If a spill / breakage occur during centrifugation, switch off the machine. Leave the centrifuge stopped and closed for at least 30 min. to allow any aerosols to settle. Remove the tube holding sockets if any and their contents to a safety cabinet. Call up the Biomedical Engineering Department. **For Engineering / Bio- Medical Department Personnel / Repair personnel :** Remove the lids (if they are being used) of the tube holder and place the tube holder, lids and tubes into a container for autoclaving or into an appropriate disinfectant (not into Hypochlorite which will corrode metal). Disinfect the whole inside of the centrifuge using 70% Isopropyl / Ethyl alcohol. The operator dealing with the breakage must wear heavy-duty gloves with a disposable plastic apron in addition to the conventional protective clothing. Please see that the centrifuge is functional before returning to the area. Intimate laboratory staff.

18.4 **Chemical Spills: i. Employee Contamination:** If the skin becomes contaminated with hazardous chemicals, wash the affected area thoroughly with copious amounts of water. If available, use the nearest shower for at least 15 minutes. If hazardous material is splashed into the eyes, immediately use the nearest clean water source and flush for at least 15 minutes. Remove grossly contaminated clothing immediately. Place the contaminated clothing in a plastic bag. Report the spill to the supervisor of the area and seek medical attention, from staff medical officer of the Casualty if possible, carry the label, Material safety data sheet (MSDS) or other pertinent information on the chemical.

18.5 **Minor spill Clean Up:** Small spills are less than 30 ml. Pick up any broken glass with tongs or another mechanical device. Do not use your hands. Place absorbent material over the spill, making sure not to spread liquid. Dispose of all contaminated material in a red color plastic bag. Label the bag with the name of the hazardous material. Contact Housekeeping for disposal.

18.6 **Major spill Clean Up:** Large chemical spills are greater than 30 ml, or any quantity of a highly hazardous material. Immediately evacuate the area and close all doors. Notify others not to enter the area. For spills of highly hazardous materials, activate the fire alarm by pulling then nearest manual pull box. Contact Security and request for the Safety team. Inform the Safety team of the

location, name of material and approximate quantity. Do not reenter the area until advised by the Safety team. The Safety team will assess the need to conduct further evacuation, shut down ventilation and the scope of clean up operations. When the spill is cleaned and the area is safe to re-enter, Security will notify the staff in the area.

18.7 **Handling Mercury Spills: Procedures:** All mercury spills are major spills. Isolate the area of the spill by placing a box, or caution board and spread ash over the spill to reduce the spread of the Mercury vapors. Notify everyone to remain clear of the area. Collect the mercury in a bottle or container with lid, properly labeled (mercury-poison)handover the same to the housekeeping dept. after informing the ward incharge. Do not dispose of Mercury in the general waste. Neither is it given for landfill disposal as it is against the environmental balance. Thus spilled Mercury will be collected in an air tight seal able container and give it to Tamilnadu waste treatment facility. **NOTE:** Keep unbroken thermometers / blood pressure instruments separate from the broken thermometers/ blood pressure instruments. In case of broken thermometer/ blood pressure instrument. Place it into a white bag and label the bag with the words hazardous waste.

18.8 **Other Spills: Responsibilities:** Only staff that are properly trained and equipped with the appropriate level of personal protective equipment shall be permitted to clean major hazardous materials spills. The Hospital's SAFETY COMMITTEE team consists of specially trained staff from Engineering, Nursing and Housekeeping.

19.0 Elevator Safety:

19.1 **Scope:** This set of instructions deal with safety in elevator.

19.2 **Safety in operation of men / materials lifts:** Give way to passengers getting out of the elevator, and wait for the next trip if the elevator is full. Know the safe working load (SWL) and the number of persons allowed in an elevator. In case of fire use the stairs, not an elevator. Enter and exit carefully, watch your step. Hold children's hands firmly. Stand clear off the doors. Keep clothes and any luggage that you may be carrying away from the opening. Push and hold the door open button if doors need to be held open. If the doors are struck, use the emergency call button (or phone). Ensure that lifts are inspected periodically. Lifting Tackles: Bed lift clamps. Lifting Machines: Men Lifts, Material lifts.

20.0 Kitchen:

20.1 **Scope:** These sets of instructions apply in cooking and related activities in the kitchen / pantries of Hospital.

20.2 **Safety Instructions:** While handling knives and other cutting implements hold firmly on the handle and concentrate on cutting only. Do not use knives having broken handles. Always use sharp knives for cutting. Avoid direct exposure with steam and steam carrying pipes. While frying, drop the ingredients into the oil slowly to prevent splashing of hot oil. Turn down or switch off the flame when you see the cooking oil smoking too much. Whenever you smell any cooking gas, turn off the regulator of the outlet(s). Do not wear loose clothing while operating the grinding machine. Do not keep leftover foodstuffs for long. Dispose them regularly. While handling hot containers, use a hand pad or cloth. Know the location of the nearest fire fighting equipment. In case of fire in LPG room use DCP or Co2 extinguisher. Do not touch electrical switches / plugs with wet hands. Make sure the floor is scrubbed / dried regularly. Wear clean aprons while working. Cut nails and crop your hair regularly.

21.0 Water Quality Safety:

21.1 **Purpose:** To narrate the activities related to the quality safety of drinking water and general-purpose water.

21.2 **Scope:** Covers drinking water and general purpose water.

21.3 **Responsibility**: Maintenance staff & HIC Team

21.4 **Procedure:** The water required for drinking and general purpose shall be obtained from the Hospital's water sources such as corporation water. 24 hours water supply shall be ensured by the technical team, which includes our plumbers and electricians. All complaints shall be attended to without any loss of time. The potability of the water used for drinking and cooking purposes shall be tested and ensured once in three months. The overhead tanks shall be cleaned once in two weeks to avoid any contaminants settled in the tank getting mixed in the pipeline. The date of cleaning and next due date for cleaning to be indicated. The overhead tank shall be kept covered. The drinking water points shall be provided with water filters and the filters shall

be periodically cleaned and cleaning dates indicated. Water used for general purpose shall be directly supplied to the point of use.

21.5 The R.O water used for the dialysis purpose shall be subjected to physical, chemical and Micro-biological analysis, especially for Endo-Toxin. The testing for physical and chemical analysis shall be sent monthly and for Endo-toxin test shall be send 3 months once. The R.O water tank shall be cleaned once in two weeks to avoid contamination and the cleaning schedule shall be mentioned including the next due date.

22.0 MEDICAL GAS SAFETY:

22.1 **Purpose:** To narrate the activities related to the quality safety of Medical Gas storage and Maintenance

22.2 **Scope:** Covers Medical gas storage area and Pipelines.

22.3 **Responsibility**: Maintenance staff & HIC officer.

22.4 **Procedure:** The medical gas storage shall be safe and secured manner, the cylinders shall be stored inside the storage area by proper chaining system and the room shall be locked. The empty and full cylinder shall be clearly identified and shall be marked/ tagged. There shall be proper maintenance of records both for the full and empty cylinder received. The maintenance person shall check the pressure of the cylinder before fitting the cylinder into the gas valve, and the pressure check shall be done and documented in the records. An appropriate Medical gas Maintenance log shall be maintained and usage shall be documented .The gas pipe line shall be subjected to leak test every 3 months. Appropriate sign posting shall be implemented surrounding the gas storage room like No Smoking Zone, Entry restricted and Caution sign shall be implemented.

22.5 The color coding of the gas pipelines shall adhere to standardized Norms as per National guidelines (ISO 9170-1:2008)

22.6 ISO 9170-1:2008 Code- Oxygen- white; Air- white &Black, Suction- yellow; Nitrous- French Blue; Co_2- Black

23.0 HOUSEKEEPING:

23.1 **Scope:** This set of guidelines apply to cleaning, mopping and infection control in the Hospital.

23.2 **Safety Instructions:** Keep all gangways, pathways, aisles and stairways clear. Wipe up spilt materials. Do not disturb electrical connections during cleaning. Do not open electrical panel boards of the machine. Ensure power supply is disconnected before cleaning electrical appliances. Use Safety gloves (Rubber, PVC) while handling biomedical waste. Dump waste materials in appropriate places in backyard. Do not spill any hazardous waste on the road. Ensure easy access to fire extinguishers. Know the location of the nearest fire fighting equipment. Do not enter radiation room unless otherwise authorized by the department. While cleaning cobweb use ladder and helmet. Adhere to the policies and procedures as specified in Infection Control Manual.

24.0 Crash Cart:

24.1 **Scope:** To insure availability of all drugs, equipment, and supplies necessary to initiate advanced life-support measures and ensure availability of carts throughout the hospital.

24.2 **Responsibilities:** Carts shall be stocked in accordance with an approved listing of drugs and supplies as established by the organization. Pharmacy shall be responsible for maintaining and replacing drugs in Emergency carts.

24.3 **Use of crash cart:** A sealed Emergency Cart shall be located in designated clinical, patient care areas at all times for use in medical emergencies and resuscitation. Carts shall be stocked in accordance with an approved listing of drugs and supplies as established by the organization. Emergency carts shall be checked every day for lock and In addition, monthly inspections shall assure that there are not outdated/ damaged drugs in the cart.

24.4 **Procedures:** Medication in Emergency carts shall be inventoried, checked for outdates and replenished by the pharmacist every time the cart is opened in emergency. Outdated drugs shall be removed from Emergency carts by the pharmacy carts that are ready for use shall be locked with a lock. When lock is removed from a cart, drugs and supplies in cart shall be inventoried and restocked as previously mentioned. A log shall be kept listing all drugs and expiration dates of drugs in each Emergency cart.

25.0

25.1 ***Patient Safety Programme***

5.1. Coordination of Patient Safety Activities

5.2. The Chairman of the Safety Committee shall do the coordination of the patient safety activities along with safety committee.

5.3. The individual unit chief shall coordinate unit specific safety programs like Laboratory, Radiology and Patient Care units.

5.4. Patient Identification: Patient must be identified while

- Performing procedures
- Taking blood or giving medicines or blood products
- Taking blood samples and other specimens for clinical testing
- Providing any treatments or procedures.

5.5. Patient Name, DOB and MR No. shall be used as patient identifiers. Identification shall be available with all in-patients.

5.6 Ask patient for their name, age and MR number prior to the start of any procedure, blood withdraw transfusion and prior to the administration of any medication, the accuracy of the patient's response s be compared to Identification band.

5.7 Sample containers must also be properly labeled with patient identifiers (Name & MR No.)

5.8 'Call-Out': Prior to the start of any surgical, interventional or invasive procedure, call-out or fina verification is performed to confirm the correct patient, procedure and specific marking of the involvec site.

5.9 The "Call-out" should involve the entire procedural team, which, at a minimum, includes the practitione doing the procedure, the anesthesia provider (if any), and the circulating nurse or other assistant.

5.10 The patient's name, date of birth, the intended procedure and intended site are stated out loud and documented. All in the room must agree for the procedure to begin.

5.11 Improve Effective communication:

5.11.1 Verification of verbal or online orders:

a. For verbal or online orders or for telephonic reporting of critical test results, verify the complete orde or test result by having the person receiving the order or test result "read-back" the complete order o test result and receive confirmation from the individual who gave the order or test result.

b. "Critical test results" - include "stat" tests, "panic value" reports, and other diagnostic test results tha require urgent response.

c. An official list of 'do not use' abbreviations, acronyms, and symbols that are not to be used throughou the organization shall be maintained.

5.11.2 Communicating to Patient about Safety:

- The hospital shall ensure proper communication about the safety to the patients.
- The hospital shall ensure sign boards, warning symbols at the relevant areas including radiation area electrical installations, Fire Exit etc.
- The hospital facilities and design shall provide for safety aspects including railings, appropriate padding etc to ensure prevention of potential injury.
- Define and communicate the means for patients and their families to report concerns about safety, and encourage them to do so.
- Communicate with clients/patients and families about all aspects of their care, treatment or services When clients/patients know what to expect, they are more aware of possible errors and choices

Clients/patients/residents can be an important source of information about potential adverse events and hazardous conditions

5.11.3 Medication Safety:

a. All medications, medication containers or other solutions on and off the sterile field in pre-operative and other procedural settings shall be labeled. Labeling shall occur when any medication or solution is transferred from the original packaging to another container.

b. Two qualified individuals shall verify all labels both verbally and visually. No more than one medication or solution shall be labeled at one time.

c. Labels shall include the name and strength of the medication or solution, the date, and the initials of the person preparing the label.

d. Any medications or solutions found unlabeled shall be immediately discarded.

e. Drug Formulary will be published annually with details of medicines used in the hospital.

f. Identify and annually review a list of look-alike / sound-alike drugs used in the organization, and take action to prevent errors involving the interchange of these drugs.

5.11.4 Eliminate wrong site, wrong procedure, and wrong patient surgery:

a. The OT supervisor shall ensure that all documents and equipment needed for surgery are on hand for staff before surgery begins. A checklist shall be maintained for ensuring the same.

b. The site of surgery shall be marked before commencement of the surgery. Marking is required in all cases involving right/left distinction, multiple structures (e.g. fingers, toes), or levels (e.g., spine).

c. The site marking should be done prior to moving the patient into the room where the procedure will be done.

d. Dental procedures are exempt from the requirement to mark the site directly, but must mark the operative tooth (teeth) on the dental radiographs or dental diagram.

5.11.5 Reduce the risk of hospital –Acquired Infections:

a. Every employee shall comply with hand hygiene guidelines given in the infection control manual. The unanticipated deaths and injuries of patients due to healthcare associated infections are required to undergo a root cause analysis. The detail report shall be filed with Infection Control nurse.

b. Turnaround Time: Measure, assess and, if appropriate, take action to improve the timeliness of reporting and the timeliness of receipt by the responsible licensed caregiver, of critical test results and values.

c. E.S. Hospital shall determine its current turnaround time for reporting.

d. An acceptable length of time shall be determined for the following:

   i Between the ordering of critical tests and reporting the test results and values, and

   ii Between the availability of critical results/values and receipt by the responsible licensed caregiver.

e. These data shall then be assessed to determine whether there is a need for improvement in the timeliness of reporting and, if so, takes appropriate action to improve and measure the effectiveness of those actions.

f. Abnormal results need to be communicated quickly to a responsible individual so that action may be taken. Delays in reporting or responding to a critical value can produce negative patient outcomes.

g. When the responsible licensed caregiver is not available, a back-up reporting system can ensure the information is provided in a timely manner to another qualified responsible caregiver to prevent avoidable delays in treatment or response.

5.11.6 Staff Education

a. The hospital policies and mechanisms relating to the patient safety shall be a part of the induction an orientation program for new employees.

b. Patient Safety related topics should be a mandatory on part of the continuing staff education ar training program curriculum.

c. All staff members shall be aware of the expectations of the hospital with regard to the prompt a correct reporting of accidents in hospital premises involving patients & bystanders.

5.11.7 Safety Improvement Activities

a. A cross functional team under the leadership of the Head – Facility Maintenance shall undertake a Facility & Loss Prevention Surveillance every quarter to identify and analyse potential patient safety issue and submit the report to the Quality Manager/Safety Committee head. The report of safety rounds shall be filed with the safety team.

b. The following safety related reporting and data collections mechanisms shall be established and pursued as described in the appropriate functional manuals.

i Incident Reporting

ii Medication Error Reporting

iii Adverse Drug Reactions

iv Nosocomial Infection Reports

v Facility Safety Surveillance

c. The hospital shall strive to collect data and analyze it regarding the following aspects with a view to improve patient safety plan. The trend analysis of incident report shall be done.

i Staff perceptions and suggestions for improving patient safety.

ii Staff willingness to report errors.

iii Patient/family perceptions and suggestions for improving patient safety.

d. The hospital may also focus on the improvement of the patient safety program through utilizing proactive risk reduction strategies like

i Identification, reporting, and management of sentinel events

ii Identification of high-risk processes

iii Failure mode, effects, and criticality analysis

6. REFERENCE:

NABH Guidelines For HCO 5th Edition.