# Manual of Operations of Hospital Acquired Infection Control Committee (HAICC)

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A. Purpose:

1. To maintain standards in infection control measures and minimize hospital acquired infections in patients and staff.
2. To define policy and procedure regarding hospital acquired infections in the hospital.

B. Scope: Hospital Wide.

C. Hospital Acquired Infection Control Committee:

1. Members:

   Chairperson(Chief Medical Superintendent) :- Prof. Dr Gaurav Gupta.

   Member Secretary(Professor & Head of Microbiology Department) :- Prof. Dr Amit A. Rangari.

   Infection control officer(Senior Consultant Microbiologist) :- Asst. Prof. Dr Aakansha Sharma.

   Other Members:- Head’s of all Clinical Departments,
   - Head of Surgery department:- Prof. Dr Gaurav Gupta.
   - Head of Medicine department:- Prof. Dr Shubhangi H. Verma
   - Head of Obstetric& Gynaecology department:- Prof. Dr N.K. Vashisht.
   - Head of E.N.T. department:- Asst. Prof. Dr Paromitra Patra.
   - Head of Ophthalmology department:- Asst. Prof. Dr Anand Deshpande.
   - Head of Paediatrics department:- Prof. Dr Vinayak Deshmukh.
   - Head of Orthopaedic department:- Asso Prof. Dr Naresh.
   - Head of Anaesthesia department:- Prof. Dr Ashok M. Takhalate.
   - Head of Skin & V.D. department:- Asst. Prof. Dr Neelprabha.
   - Head of Chest & Tuberculosis department:- Prof. Dr Pillai D. Vivekan.

   Chief of Blood Bank service:- Dr Somendra Dhariwal.
   Medical officer(CMO):- Dr D N Sharma.
   Chief of Nursing services:- Mrs. Vijaylakshmi Pillai.
   Infection Control Nurse(I.C.N.):- Mrs. Rachna Philip.

   Invited members:- Chief of all supportive services
   - OT.:- Prof. Dr Ashok M. Takhalate (Anaesthesia department)
   - C.S.S.D.:- Mr. Vijaykumar Singh.
   - Laundry:- Mr Naveen Jain.
   - House keeping:- Mr Satyajeet.

2. Objectives of the committee:

   - To minimize the risk of infection to patients, staff and visitors.
   - To identify the roles and responsibilities of key personnel involved in the prevention and control of infection.
   - To maintain Surveillance over hospital acquired infections.
To develop a system for identifying, reporting, analyzing, investigating and controlling hospital acquired infections.

- To develop and implement preventive and corrective programmes in specific situations where infection hazards exist.
- To Advice the Chief Medical Superintendent on matters related to the proper use of antibiotics, develop antibiotic policies and recommend remedial measures when antibiotic resistant strains are detected.
- To review and update hospital infection control policies and procedures from time to time.
- To help to provide employee health education regarding matters related to hospital acquired infections.

3. Meetings

The Hospital acquired infection control committee (HAICC) should meet at least once a month and otherwise as necessary, to formulate and update policies related to hospital infection. Documentation of meetings and recommendations are kept by the Chief Medical Superintendent.

The ICN (Infection Control Nurse) and Infection control officer (Senior Consultant – Microbiologist) conduct inspection rounds once a month. Registers are maintained by ICN.

D. Policy:

HAICC will have a Hospital Acquired Infection Control Team (HAICT), to take day to day responsibilities.

1. Hospital Acquired Infection control Team composition:

The Hospital Acquired infection control team (HAICT) consist of the:

- Infection Control Officer (Senior Consultant-Microbiologist): Dr Aakansha Sharma (M.B.B.S., M.D.)
- Infection Control Nurse: Mrs. Rachna Philip.
- Clinician: Dr Samarth Sharma (M.B.B.S., M.D. Medicine Department).

HAICT should meet at least once a week and will look after surveillance, control of infection, monitoring of hygienic practices and advising HAICC on matters of policy for prevention of hospital infection.

2. Responsibilities of the Hospital Acquired Infection Control Team:

- Advise staff on all aspects of infection control and maintain a safe environment for patients and staff.
- Advise management of at risk patients.
- Carry out targeted surveillance of hospital acquired infections and act upon data obtained e.g. investigates clusters of infection above expected levels.
- Provide a manual of policies and procedures for aseptic, isolation and antiseptic techniques.
- Investigate outbreaks of infection and take corrective measures.
- Provide relevant information on infection problems to management.
- Assist in training of all new employees as to the importance of infection control and the relevant policies and procedures.
- Have written procedures for maintenance of cleanliness.
- Surveillance of infection, data analyses, and implementation of corrective steps. This is based on reviews of lab reports, reports from nursing in charge etc.,
- Waste management
- Supervision of isolation procedures.
- Monitors employee health programme.
- Addresses all requirements of infection control and employee health as specified by NABH, state and local laws.

3. Infection Control Nurse (ICN):

Duties of Infection Control Nurse: The duties of the ICN are primarily associated with ensuring the practice of infection control measures by nursing and housekeeping staff. Thus the ICN is the link between the HAICC and the wards/ICUs etc. in identifying problems and implementing solutions. In addition the ICN conducts Infection control rounds and maintains the registers. The ICN is also involved in education of paramedical staff including nurses and housekeeping staff.

4. Infection Control Officer (ICO):

The Senior Consultant Microbiologist serves as Infection Control Officer.

Duties of Infection Control Officer:
- The ICO supervises the surveillance of hospital acquired infection as well as preventive and corrective programmes in con.
- Review and revision of Hospital Acquired Infection Control Committee Manual: Written policies and procedures shall be reviewed at least every year by the Hospital Infection Control officer and Committee.

5. SURVEILLANCE AND REPORTING OF INFECTION:

Surveillance for infection can be active or passive

a. PASSIVE CLINICAL REPORTING:
Clinicians suspecting occurrence of HAI may report this to the Chief Medical Superintendent (Honorary Head of the Hospital Acquired Infection Control Committee). All details regarding the patient, procedures, medication etc. are made available.

The Senior Consultant in charge (ICO) of the microbiology department shall be responsible for reporting any information about infections suspected to be hospital acquired.

b. ACTIVE SURVEILLANCE:
High risk areas of the hospital are identified as: Operation Theatres
Transfusion services unit
Food handlers
Drinking water
Toilets and bathrooms
Central Sterile Supply Department
i. Operation Theatres:
Culture swabs (aerobic and anaerobic) and air sampling culture plates are sent from Operation Theatres after fumigation every month.

Monitoring of working OT: Air sampling of a working OT is done once a month. Sampling of in use disinfectants: 1ml of sample of in-use disinfectants, hand wash agents are sent to microbiology laboratory in a sterile container once a month/6month or annually. Records are kept with OT in charge. In case of unacceptable results decision on corrective measures are taken by HAICC.

ii. Intensive care units:
Surveillance samples: Central line tips
Water samples from humidifiers
ET tube secretions
Urine samples from catheterized patients

Surveillance samples are sent per patient on device microbiology laboratory. Data is sent to microbiologist in the prescribed format. Analyses of data are presented at the subsequent HAICC meeting. Records are maintained by microbiologist (ICO).

Samples of disinfectant in use: random two samples of 1 ml of disinfectant per ICU are sent in a sterile container monthly. Swabs may be sent after cleaning. Records are maintained by respective ICUs.

iii. Transfusion services unit
Cleaning of transfusion unit storage areas is done and swabs are sent for culture monthly.

iv. Wards
Swabs are sent from the wards, post fumigation once in a month.

Samples of disinfectant in use: random two samples of 1 ml of disinfectant in use are sent in a sterile container monthly once to check for sterility. Register to be maintained by ward.

v. Glutaraldehyde monitoring
In use glutaraldehyde may be sent for sterility check: 1 ml of in use glutaraldehyde to be sent in a sterile container to the microbiology laboratory fortnightly from: Endoscopy room, Operation Theatre. Records to be maintained by the concerned Department.

vi. Food handlers
Screening of food handlers is done biannually. Samples include nasal swabs and stool samples.

Records to be maintained by Kitchen Incharge.

vii. Drinking Water
Bacteriological surveillance to be done monthly. Records maintained by Microbiology Department.

viii. Central Sterile Supply Department
Swabs are sent for sterility check after cleaning weekly. Records kept by Microbiology Department.

SPECIAL STUDIES
Special studies will be conducted as needed. These may include:

- The investigation of clusters of infections above expected levels.
- The investigation of single cases of unusual or epidemiologically significant hospital acquired infections.
- Prevalence and incidence studies, collection of routine or special data as needed and sampling of personnel or the environment as needed.

6. Surgical site infections
Prescribed format is filled up by surgeons. Records maintained by ICO. Data collected every quarterly by secretary HAICC and presented.
7. STAFF HEALTH PROGRAMME

a. Health evaluation:
A pre-employment medical check up is performed at the time of joining services for all staff under the ambit of Health and Family Welfare Department, Government of Chhattisgarh/Medical board SSIMS Bhilai(CG).
All staff are required to submit a medical certificate from a government medical official/MO of Medical board SSIMS Bhilai(CG), as an evidence of fitness prior to their joining duty.
An annual medical check up will be done for all staff of the hospital.
Records are maintained by the administrative office.
Vaccination for Hepatitis B is provided to all staff members who are not vaccinated.

b. Employee health programme:
Employee health education: Periodic classes are conducted for paramedical staff by the Infection Control Officer (Senior Consultant Microbiologist)/Infection Control Nurse. All employees are instructed about universal precautions & PEP, isolation policies, hand washing protocols and waste management.
All infections including cutaneous and or other diagnosed communicable diseases e.g. hepatitis, mumps, rubella, measles, chicken pox, diarrhoea, productive cough more than two-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.
All staff is informed that they should report exposure to potentially infectious body fluid to their immediate supervisor who in turn informs the Infection Control Nurse or concerned person in absence of ICN. Action is taken after assessment of risk at each situation.
Work restrictions may be imposed in situations which call for such action.
Personnel shall adhere to policies and practices to minimize the potential spread of diseases and/or infection.
Personnel shall adhere to existing employee health requirements.

c. Managing exposure to potentially infectious body fluid:
Categories of exposure: 1. Needle stick injuries
2. Non-intact skin exposure
3. Mucosal exposure e.g. Splash into eye

Immediate action to be taken

1. Needle stick injuries: Briefly induce bleeding from the wound.
   Wash for 10 minutes with soap and water.
   **Immediately report (within 2 hours, maximum 72 hours of accidental/occupational exposure) to supervisor and direct the exposed Health Care Worker staff to Infection Control Officer who will assess SC(Source Code) & EC(Exposure code) and in consultation with Physician, advice for appropriate PEP(Post Exposure Prophylaxis). Record of such exposure to staff will be maintained by Hospital Superintendent Office.**

2. Non intact skin exposure: Wash for 10 minutes with soap and water.
   **Immediately report to supervisor and direct the exposed Health Care Worker staff to Infection Control Officer who will assess SC(Source Code) & EC(Exposure code) and in consultation with Physician, advice for appropriate PEP(Post Exposure Prophylaxis). Record of such exposure to staff will be maintained by Hospital Superintendent Office.**

3. Mucosal exposure e.g. splash into eyes
   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.
Immediately report to supervisor and direct the exposed Health Care Worker staff to Infection Control Officer who will assess SC(Source Code) & EC(Exposure code) and in consultation with Physician, advice for appropriate PEP(Post Exposure Prophylaxis). Record of such exposure to staff will be maintained (in written record format) by Hospital Superintendent Office.

Management:
- If index patient is known, patient is checked for HIV antibodies(after obtaining written informed consent), HBsAg & HCV.
- Injured/exposed health care worker is checked for HIV antibodies(after obtaining written informed consent), HBsAg & HCV.
- For HIV: NACO guidelines are followed for assessment of risk and suggestions are acted upon. Guidelines are appended to this manual(Appendix I on page no.33).
- For HBV infection: In case source patient is positive: If health care worker has adequate anti HBs titre - >100MIU- only reassurance need be given. If titre is <10 give first dose of vaccine and immunoglobulin 1000units. Advise to complete vaccination. If titre is between 10& 100 MIU give booster.
- In case source patient is negative: Check health care worker’s anti HBs titre and proceed accordingly.

8. MRSA:
Colonised and infected patients are isolated and barrier nursed. In case of outbreaks selected staff will be screened. If any staffs are found to be colonized, they are restricted from work, advised mupirocin ointment 2% for one week for eradication of nasal carriage and allowed to return to work after two consecutive cultures drawn one week apart are found to be negative.

9. Treatment of personnel
1. All personnel with communicable illnesses shall report to their supervisors. Appropriate evaluation and therapy are the responsibility of the clinician.
2. Personnel who develop infections shall be transferred to duties without direct patient contact or released from duty until no longer considered infectious, as decided by the head of the institution.
3. It is the policy of this hospital that no personnel are penalized. This is to encourage reporting of infection by personnel.
4. Prophylactic therapy is provided to employees following occupational injuries unless employee is already immunized.
5. If serologic tests are required to demonstrate immunity employees shall be assisted at no charge in obtaining these tests.
6. Passive immunization with immune globulin (gamma globulin) shall be considered for the following kinds of exposure(Hepatitis/Varicella zoster/Measles/Rubella).
7. Outbreak of infections within the hospital due to organisms such as salmonella, shigella, meningococci, MRSA may prompt a search for carriers among personnel as part of control of the outbreak. Work restrictions may be imposed in situations which call for such action.

10. Guidelines for Special Situations
A. Pregnant personnel
1. Shall not be assigned to care for patients with known Hepatitis B or who are carriers unless they have received three doses of hepatitis vaccine and have been documented to have anti-HBs antibody.
2. Shall not be assigned to care for patients with rubella, or infants with congenital rubella syndrome or rubella.
3. Will be informed of risks associated with parvovirus and cytomegalovirus (CMV) infections, herpes simplex and of infection control procedures to prevent transmission when working with high risk patient groups.

B. Personnel not immune to chicken pox shall not be assigned to care for patients with chicken pox or herpes zoster (disseminated or localized)

Also refer “Appendix II ” on page no. 36 for Post Exposure Prophylaxis Guidelines for Occupational Exposure.

11. ISOLATION
a. CRITERIA FOR ISOLATION AND PROCEDURES

Aim:
To prevent the transmission of pathogenic microorganisms within the hospital.
To recognize the importance of all body fluids, secretions and excretions in the transmission of nosocomial pathogens
To practice adequate precautions for infections transmitted by airborne, Droplet & contact.

Measures for reduction of transmission:

b. HAND WASHING: Frequent hand washing is the most important measure.

i. Patient care Hand wash
   Wash hands after touching blood, body fluids, secretions, excretions and contaminated items, whether gloves are worn or not. Wash hands immediately after gloves are removed. Wash hands between tasks and procedures on the same patient to prevent cross contamination of different body sites.
   Use a plain soap for routine hand washing.
   Use antiseptic soap or an alcohol based disinfectant followed by thorough hand washing for accidental skin contamination.
   Antimicrobial hand washing products should be used for hand washing before personnel care for newborns and when otherwise indicated during their care, between patients in high-risk units, and before personnel take care of severely immunocompromised patients.

ii. Surgical Hand Wash
   Procedural hand hygiene includes a full surgical scrub using running water and 4% chlorhexidine scrub solution from the finger tips to the elbow. The scrub should be performed for a minimum of 2 to 3 minutes.

c. GLOVES: Clean, unsterile gloves may be worn as a protective barrier during procedures.
   Sterile gloves are worn when sterile procedures are undertaken

d. PERSONAL PROTECTIVE EQUIPMENT: (PPE)
   Gowns: A clean, nonsterile, gown is worn to prevent contamination of clothing and skin of personnel from exposure to blood and body fluids. When gowns are worn to attend to a patient requiring barrier nursing, they are removed before leaving the patients environment and hand washing is done.
   Masks: This equipment is worn to provide barrier protection.
   Mask should cover both the nose and the mouth.

e. PATIENT ISOLATION:
   Patients are isolated when
   a. Suffering from highly transmissible diseases e.g. chicken pox. Patient is placed in a separate room.
b. Infected with epidemiologically important microorganisms such as MRSA, Imipenem resistant Acinetobacter spp.

c. Viral Hepatitis, Tuberculosis, Infection Disease

f. BARRIER NURSING

Barrier nursing: The aim is to erect a barrier to the passage of infectious pathogenic organisms between the contagious patient and other patients and staff in the hospital, and hence to the outside world. Preferably, all contagious patients are isolated in separate rooms, but when such patients must be nursed in a ward with others, screens are placed around the bed or beds they occupy.

Cohort nursing may be practiced as re-infection with the same organism is unlikely.

The nurses, attending consultants as also any visitors must wear gowns, masks, and sometimes rubber gloves and they observe strict rules that minimize the risk of passing on infectious agents. Surgical standards of cleanliness in hand washing are observed after they have been attending the patient.

Bedding is carefully moved in order to minimize the transmission of airborne particles, such as dust or droplets that could carry contagious material.

Barrier nursing must be continued until subsequent cultures give a negative report.

12. CLEANING OF EQUIPMENT AND ARTICLES.

Contaminated disposable articles are bagged appropriately in leak proof bags and disposed.

Critical reusable medical equipment is disinfected or sterilized after use.

Non-critical equipment is cleaned, disinfected after use.

a. 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.

b. EATING UTENSILS -

Routine cleaning with detergent and hot water is sufficient.

c. TERMINAL CLEANING

Terminal cleaning of walls, blinds, and curtains may be done. Disinfectant fogging is not recommended.

d. CONCEPT OF STANDARD PRECAUTIONS: 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 and also may be in window period, REGARDLESS OF THEIR ACTUAL SEROSTATUS ALL PATIENTS ARE APPROACHED AS HAVING POTENTIALLY INFECTIOUS BLOOD AND BODY FLUIDS AND "Universal Safety Precautions" taken for each and every patient. Precautions may vary based on anticipated exposure. Before/while providing services to patients, “No” any serotesting(of patients) should be practised for benefit of health care worker/provider.

Features of universal precautions:

i. Use of. Personal protective equipment and gloves (discussed)

   ii. Prevention of injury with sharps: Sharps injuries commonly occur during use of needles and surgical instruments and after use during disposal. Precautions to be observed:

      • Needles should not be recapped, bent or broken by hand.
• Disposable needles & other sharps should be discarded into puncture resistant containers at the site of procedure
• Sharps should not be passed from one HCW (Health Care Worker) to another. The person using the equipment should discard it. If necessary a tray can be used to transport sharps.
• All sharps containers to be discarded when 3/4th full.

iii. Hand washing (as mentioned above).

e. Disinfection of equipment
Re-use instruments, tubing, etc only after decontamination and sterilization or decontamination, as appropriate (Refer to the chapter on Sterilization and Disinfection).
Do not touch equipment with soiled gloves or gloves used for patient care. Surfaces of large equipment should be disinfected with a 1:100 dilution of sodium hypochlorite or an approved disinfectant. Heavy soiled equipment may require additional cleaning with detergent and water. Gloves must be worn while cleaning the equipment.

f. Waste disposal:
Non plastic items soiled with blood, bloody drainage or potentially infected material must be placed in the yellow biohazard plastic bags. Items that may tear the bag must not be placed in the plastic bag. For further details, please refer to the section on ‘BioMedical Waste disposal GOI 2016’ (Appendix III).
Infected plastic items should be discarded into Red bag.
Excreta, blood or body fluids must be emptied down the drain with adequate amount of water.

g. Linen
Linen soiled with blood or potentially infectious body fluid must be placed in a leak proof bag and then sent for autoclaving. The autoclaved Lenin is then sent for laundry.

h. Spill clean up
Cover spills of blood or body fluids with 1% of freshly prepared sodium hypochlorite for 10 minutes. Then mop dry. A second decontamination may be done if required. Wash the area with detergent and water. Gloves must be worn during clean-up and decontamination procedures.
No environmentally mediated transmission of HIV has been documented to date.

13 PRECAUTIONS AGAINST BLOOD BORNE TRANSMISSION:
a. Instruction for wards
i. 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.

ii. Preparation of patients:
It is the responsibility of the attending physician (maintaining confidentiality) to ensure that patients testing positive/negative are informed about the result and receive (pre & post test) counselling as per prevailing GOI law.
As per NACO GOI, HIV lab test reports (positive/negative) will be handed over to HIV-counsellor who will hand it over (with post test counselling) to only the concerned adult patient/client in person and no body else (including close relatives and treating doctors).
The nursing staff will explain to patients, attendants and visitors (when necessary), the purpose and methods of handwashing, body substance and excreta precautions, and other relevant precautions.
iii. Specimens:
Adequate precautions are to be taken while collecting specimens. The specimens along with duly filed and signed requisition forms are to be transported in leak-proof sterile 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.

iv. 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.

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

14. PRECAUTIONS AGAINST AIRBORNE TRANSMISSION
These precautions are designed to reduce the risk of airborne and droplet transmission of infectious agents, and apply to patients known or suspected to be infected with epidemiologically important pathogens that can be transmitted by these routes.

a. Components of respiratory isolation:
i. Place the patient in a single / private room with closed doors. Patients with same illness (but no other infection) can be cohorted in one room.
ii. Masks to be worn by those who enter the patient’s room. Susceptible persons should not enter the room of patients known or suspected to have measles or varicella (chicken pox).
Gowns are not routinely necessary. Use gowns if soiling is likely.
iv. Gloves are necessary while handling patients.
Hand must be washed after touching the patient or potentially contaminated articles and before taking care of another patient.
vi. Articles contaminated with infective material must be discarded or bagged and labeled before being sent for decontamination and reprocessing.

15. 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.

a. Components:
i. Gowns are indicated if soiling is likely.
ii. Gloves are indicated for touching infected material / area
iii. Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient.
iv. When possible, dedicate the use of non critical patient – care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients.
If use of common equipment or items is unavoidable, then adequately clean and disinfect them before use for another patient.
Articles contaminated with infective material must be discarded or bagged and labeled before being sent for decontamination and reprocessing.
16. ISOLATION ROOMS
A private room is indicated for patients with infections that are highly infectious or are caused by microorganisms that are likely to be virulent when transmitted.

When an infected patient shares a room with non-infected patients, patients and personnel shall take measures to prevent the spread of infection. Personnel shall wear gloves and wash hands when indicated and ensure that contaminated articles are discarded or returned for decontamination and reprocessing.

a. Isolation policy for special groups of organisms
   Methicillin Resistant Staphylococcus aureus (MRSA): The microbiology department shall send an alert to the head of the concerned unit in case the microbiology report ascertains existence of MRSA. Measures will be immediately ascertained by the Hospital Infection Control Committee for isolation of MRSA.
   b. Use respiratory (contact with mask) precautions.
      Accommodate these patients away from those with open wounds or immunocompromised.
      i. Handwashing is the single most important factor in controlling MRSA.
      ii. Linen—sheets, pillow cases, and blankets should be changed on a daily basis and more often if soiling occurs.
         Linen should not be shaken in order to prevent dissemination of micro-organisms into the environment.
         Linen should be autoclaved before being sent to the laundry. The same will apply to masks, gowns and gloves.
   c. Pulmonary tuberculosis:
      i. Respiratory precautions should be taken for smear positive tuberculosis patients.
      ii. A separate room is recommended only for adult patients with sputum positive pulmonary tuberculosis.

17. CARE OF SYSTEMS AND INDWELLING DEVICES
   General guidelines to be followed for all procedures:
   1. Hand washing is mandatory before, after and in-between procedures and patients.
   2. Each health care worker has to ensure the personal protection (Universal precautions) required for each procedure. These precautions should be strictly adhered to.
   3. Follow proper waste segregation & disposal after each procedure.

18. VASCULAR CARE
   a. Hand washing
      Wash hands before every attempted intravascular catheter insertion. Antimicrobial handwashing soaps are desirable, and are preferred before attempted insertions of central intravenous catheters, catheters requiring cutdowns, and arterial catheters.
   b. Preparation of skin
      Povidone-iodine (PVP) or 70% alcohol may be used for cleaning the skin. Insertion sites should be scrubbed with a generous amount of antiseptic. Beginning at the centre of the insertion site, use a circular motion and move outward. Antiseptics should have a contact time of at least 30 seconds prior to catheter insertion. Antiseptics should not be wiped off with alcohol prior to catheter insertion.
   c. Applying dressings
      Sterile dressings should be applied to cover catheter insertion sites. Unsterile adhesive tape should not be placed in direct contact with the catheter-skin interface.
   d. Inspecting catheter insertion sites
      Intravascular catheters should be inspected daily and whenever patients have unexplained fever or complaints of pain, tenderness, or drainage at the site for evidence of catheter related complications. Inspect for signs of infection (redness, swelling, drainage, tenderness) or phlebitis and also palpate gently through intact dressings.
e. Manipulation of intravascular catheter systems

Strict aseptic technique should be maintained when manipulating intravascular catheter systems. Examples of such manipulations include the following:

- Placing a heparin lock
- Starting and stopping an infusion
- Changing an intravascular catheter site dressing
- Changing an intravascular administration set

f. Flushing IV lines

Solutions used for flushing IV lines should not contain glucose which can support the growth of microorganisms. Do not reuse syringes used for flushing. One syringe is used for flushing only one IV line once.

g. Peripheral IV sites (short term catheters):

i. Dressing changes.

Peripheral IV site dressings should not usually require routine changes, since peripheral IV catheters, should be removed within 72 hours.

ii. Replacement of Peripheral IV Catheters

Peripheral IV catheters should be removed 72 hours after insertion, provided no IV-related complications, requiring catheter removal are encountered earlier. A new peripheral IV catheter, if required, may be inserted at a new site.

h. Central intravascular catheters (long term catheters)

i. Dressing changes.

Central IV catheter dressings should be changed every 72 hours.

ii. Replacement of central IV catheters

Central IV catheters do not require routine removal and reinsertion. The catheter can be kept for a maximum of 3 months, provided there is no sign of catheter related infection or other complications.

iii. Catheter related Infection:

At the time of catheter removal, the site is examined for the presence of swelling, erythema, lymphangitis, increased tenderness and palpable venous thrombosis. Any antimicrobial ointment or blood present on the skin around the catheter is first removed with alcohol. The catheter is withdrawn with sterile forceps, the externalized portion being kept directed upward and away from the skin surface. (If infection is suspected, after removal, the wound is milked in an attempt to express purulence. For 5.7 cm catheters, the entire length, beginning several millimeters inside the former skin surface catheter interface, is aseptically cut and sent for culture. With longer catheter, (20.3 cm and 60.9 cm in length), two 5-7 cm segments are cultured a proximal one beginning several millimeters inside the former skin catheter interface and the tip. Catheter segments are transported to the laboratory in a sterile container.)

Three way with extension is used only when multiple simultaneous infusates or Central Venous Pressure monitoring are required.

19. RESPIRATORY CARE

In addition to the general guidelines that are to be adhered to, the following should also be noted with regard to respiratory care:

Mouth flora influences development of nosocomial pneumonia in ventilated patients. Frequent chlorhexidine mouthwashes minimise the chances of pneumonia.

a. Ventilator

i. Sterile water is to be used in nebulizers and humidifiers. This should be replaced once or twice a day.
ii. Pneumatic circuits (masks, Y connection and tubes) are to be changed every 24-48 hours. Condensate in tubing should not be drained into the humidifier or airway as they contain large numbers of pathogenic organisms. This should be drained only into water traps. Use disposable circuits if cost permits.

iii. Use heat and moisture exchanging filter (HMEF) at Y connection for all patients if feasible and cost permits. Heat and moisture exchanging filter (HMEF) is to be changed every 24-48 hours. It should not be removed from circuit except at the time of changing.

iv. Oxygen masks, venture devices and nebulizer chambers are cleaned carefully and then sterilized.

v. Humidifier domes are sterilized. Ambu bags are cleaned thoroughly and are then sent for Sterilization.

vi. Microbiological surveillance of respiratory therapy equipment is practised in our hospital.

b. Tracheostomy Care / Endotracheal Tube

i. Careful attention to post-operative wound care is mandatory.

ii. The patient should receive aerosol therapy to prevent dessication of the tracheal and bronchial mucosa or the formation of crusts. The skin around the tracheostomy tube should be cleaned with betadine (Povidone-iodine 5%) every four hours or more frequently, if necessary.

iii. In case of metal tracheostomy tubes, the inner cannula should be cleaned every four hours and more often if necessary to prevent the formation of crusts. The inner cannula is cleaned with water, immersed in hydrogen peroxide for 15 minutes and then rinsed with fresh & sterile normal saline. The plastic tracheostomy tubes are removed, another plastic tube is inserted, and the tube is cleaned, with hydrogen peroxide, and rinsed well before reuse.

iv. The tracheostomy tape securing the tube should be changed every 24 hours. This tape must be tied securely at all times.

v. The first complete tube change should be performed no earlier than 4-5 days to allow time for the tract to be formed. Subsequent changes should be done weekly or as necessary.

vi. Clean technique should be used to change the tracheostomy tube unless there is a medical indication for sterile technique.

vii. The obturator should be at the bedside (preferably taped to the head of the bed) to be used if the tracheostomy tube accidently is dislodged or is removed for any reason.

c. Suctioning of endotracheal / tracheostomy tube

Employees should be instructed and supervised by trained personnel in proper technique before performing this procedure on their own. Assess the patient using auscultation, ECG, (if available) and vital signs prior to suctioning.

d. Sterile Suctioning

i. Wash your hands.

ii. Use a catheter with a blunt tip.

iii. The wall suction should be set no higher than 120 mm Hg for adults and between 60 and 80 mm Hg for children.

iv. Attach the suction catheter to the suction tubing; do not touch the catheter with bare hands (leave it in its protective covering).

v. Put on sterile gloves. The wearing of a mask is also strongly recommended.
vi. However, if saline does need to be instilled, ‘1/2 cc of sterile saline is put into the tracheostomy tube on inspiration only.

vii. If on a respirator, pre-oxygenate the patient by connecting the resuscitation bag to the artificial airway and ventilating the patient with three or four deep breaths. A mechanical ventilator on 100% oxygen may also be used by depressing the manual ventilation button three or four times.

viii. Insert the catheter gently through the inner cannula until resistance is met. Do not apply suction during insertion.

ix. Withdraw the catheter approximately 1 cm and institute suctioning.

x. Carefully withdraw the catheter, rotating it gently between the thumb and forefinger applying intermittent suctioning.

xi. Continuous suctioning for longer than 10 seconds may create an unacceptable level of hypoxia.

xii. The patient should be given time to rest between suctioning episodes. If possible, this time should be from two to three minutes. If the patient is receiving oxygen or ventilatory support, reapply the oxygen or ventilator for at least two minutes before re-suctioning.

xiii. Observe for unfavourable reactions such as increased heart rate, hypoxia, arrhythmia, hypotension, cardiac arrest, etc.

xiv. If oral suctioning is necessary, it should be done after the tracheostomy is suctioned.

xv. When suctioning is completed, clear the catheter and tubing of mucous and debris with sterile water or saline.

xvi. Discard the catheter, water container, and gloves appropriately.

xvii. Wash hands.

xviii. The tubing and suction canister should be changed every 24 hours. The canister should be labeled with the date and time when they are changed. If debris adheres to the side of the tubing or the canister, either or both should be changed. The tubing should be secured between suctioning periods so that it will not fall to the bed, floor, etc.

20. URINARY CATHETER

a. Urethral catheterization

i. Personnel

Only persons who know the correct technique of aseptic insertion and maintenance of catheters should handle catheters.

ii. Catheter Use

Urinary catheters should be inserted only when necessary and left in place only as long as medically necessary.

iii. Hand washing

Hand washing should be done immediately before and after any manipulation of the catheter site or apparatus.
iv. Catheter Insertion

Catheters should be inserted using aseptic technique and sterile equipment.

Use an appropriate antiseptic solution for periurethral cleaning.

As small a catheter as possible, consistent with good drainage, should be used to minimize urethral trauma.

Indwelling catheters should be properly secured after insertion to prevent movement and urethral traction.

v. Anchoring the catheter

Strapping of the catheter is done to the lower anterior abdominal wall in male patients. This is to prevent direct transmission of the weight of the bag on the catheter, so that pulling and inadvertent dislodgment of the catheter does not occur. This also helps to prevent stricture of the penile urethra if the patient is on a catheter for a long duration.

21. WOUND CARE

a. Surgical wounds

i. Surgical wounds after an elective surgery are inspected on the third post-operative day, or earlier if wound infection is suspected.

ii. All personnel doing dressings should wash their hands before the procedure. Ideally, a two member technique is followed. One to open the wound, and one to do the dressing.

iii. If two health care workers are not available, then, take off the dressing, wash hands again before applying a new dressing.

iv. A clean, dry wound may be left open without any dressing after inspection.

v. If there is any evidence of wound infection, or purulent discharge, then dressings are done daily, using povidone-iodine to clean the wound and applying dry absorbent dressings.

22. DISINFECTION AND STERILISATION

a. DISINFECTION

Disinfection is a process where most microbes are removed from defined object or surface, expect bacterial endospores.

i. Disinfectants can be classified according to their ability to destroy different categories of microorganisms

- High Level disinfectants: glutaraldehyde2%, ethylene oxide.
- Intermediate Level disinfectant: alcohols, chlorine compounds, hydrogen peroxide, chlorhexidene, glutaraldehyde(short term exposure)
- Low level disinfectants: benzalkonium chloride, some soaps.
ii Levels of action of disinfectants:

- Bacteria: low
- Lipid viruses: low
- Fungi: intermediate
- Non lipid viruses: intermediate
- Mycobacteria: intermediate
- Spores: high

23. GENERAL GUIDELINES FOR DISINFECTION:

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

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

Non-critical instruments /equipments (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. e.g. ECG electrodes

a. Disinfectants :

- **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

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

- **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.

- **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

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

- **Sodium Hypochlorite 10% 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%.

  **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.

**i. 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.

**ii. Alcohol -99%**

  Used for preparation of cotton swabs in phlebotomy cell etc.

**l. Endoscopes - cleaning and disinfection**

  1. **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.

  2. **Disinfection:** The endoscope and all internal channels should be soaked in 2% glutaraldehyde for 20 minutes.

  3. **Rinsing:** Following disinfection, rinse the instrument internally and externally to remove all traces of disinfectant.

  4. **Drying:** Dry the endoscope externally. Flush air through each channel.

**24. STERILIZATION**

Sterilization is defined as a process where all microbes are removed from a defined object, inclusive of bacterial endospores.

**i. STEAM**

Autoclaves (gravity displacement) are used in CSSD for instruments, certain plastics linen gauze and other items. Flash sterilization is used for OT in emergency situations.
Decontamination autoclave is available separately for laboratory glassware.

ii. **ALDEHYDE**

Glutaraldehyde may be used in places like the endoscopy unit, cardiac catheterization labs.

For steam and gas methods, chemical as well as microbiological indicators are used to check the effectiveness of sterilization.

Microbiological indicators are used once a week: namely spores of *Bacillus stearothermophilus* for steam sterilizers and *Bacillus subtilis* for ethylene oxide. Vials are removed from sterilizers and sent to microbiology laboratory where they are incubated at relevant temperatures for 48 hours. Report is sent to CSSD.

An expiry date is given for sterile articles based on the packing material used.

iii. **FUMIGATION:**

Eco-shield is used for fumigation using Dyna Fog spraying machine.

For details see above, Operation theatres are fumigated once a month and if necessary such as in case of a septic wound being drained.

Other patient care areas are not regularly fumigated and not recommended.

Decision as to necessity is taken by in charge of concerned patient care area.

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**25. HOSPITAL WASTE MANAGEMENT**

a. **OBJECTIVES:**

i. To prevent infection by maintaining good hygiene and sanitation.

ii. To protect the patient, patient attendants and all health care personnel from avoidable exposure to infection.

iii. To prevent environmental pollution.

iv. To manage waste in a clean, healthy, economical and safe manner.

v. To minimize waste

For further details please refer to the Biomedical Waste Management Policy of the hospital.

<table>
<thead>
<tr>
<th>Category</th>
<th>Type of Waste</th>
<th>Type of Bag or Container to be used</th>
<th>Treatment and Disposal options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>(a) Human Anatomical Waste</td>
<td>Yellow colored non-chlorinated plastic bags</td>
<td>Incineration or Plasma Pyrolysis or deep burial*</td>
</tr>
<tr>
<td></td>
<td>(b) Animal Anatomical Waste</td>
<td>Yellow colored non-chlorinated plastic bags or containers</td>
<td>In absence of above facilities, autoclaving or microwaving/</td>
</tr>
<tr>
<td></td>
<td>(c) Soiled Waste</td>
<td>Yellow colored non-chlorinated plastic bags or containers</td>
<td>sent back to manufacturer or disposed by incineration, cytotoxic drugs to be returned to the manufacturer OR incineration at &gt;1200°C / Encapsulation/Plasma Pyrolysis at &gt;1200°C</td>
</tr>
<tr>
<td></td>
<td>(d) Expired or Discarded Medicines: Pharmaceutical waste like antibiotics, cytotoxic drugs</td>
<td>Yellow colored non-chlorinated plastic bags or containers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(e) Chemical Waste</td>
<td>Yellow colored containers or non-chlorinated plastic bags</td>
<td>Incineration / Plasma Pyrolysis/ Encapsulation</td>
</tr>
<tr>
<td></td>
<td>(f) Chemical Liquid Waste: disinfectants, X-ray liquid, secretions, lab etc.</td>
<td>Separate collection system leading to effluent treatment system</td>
<td>pre-treat before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in Schedule III.</td>
</tr>
<tr>
<td></td>
<td>(g) Discarded linen, beddings contaminated with blood or body fluid</td>
<td>Non-chlorinated yellow plastic bags or suitable packing material</td>
<td>Non-chlorinated chemical disinfection followed by incineration or Plasma Pyrolysis</td>
</tr>
<tr>
<td></td>
<td>(h) Microbiology, Biotechnology and other clinical laboratory waste</td>
<td>Autoclave safe plastic bags or containers</td>
<td>Pre-treat to sterilize with non-chlorinated chemicals on-site as per NACO or WHO guidelines thereafter for Incineration</td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>a) Contaminated Waste (Recyclable)</td>
<td>non-chlorinated plastic bags or containers</td>
<td>Autoclaving or micro-waving followed by shredding or mutilation</td>
</tr>
<tr>
<td>White</td>
<td>Waste sharps including Metals</td>
<td>Puncture proof, Leak proof, tamper proof containers</td>
<td>Autoclaving or Dry Heat Sterilization followed by shredding or mutilation or encapsulation</td>
</tr>
<tr>
<td>Translucent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>a) Glassware</td>
<td>Cardboard boxes with blue colored marking</td>
<td>Disinfection (by soaking the washed glass waste in Sodium Hypochlorite) or through autoclaving or microwaving and then sent for recycling</td>
</tr>
<tr>
<td></td>
<td>b) Metallic Body Implants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Biomedical waste
in Yellow BAG

Biomedical waste
in Red BAG

Biomedical waste
in Blue/White puncture proof containers

Biodegradable wastes like general domestic waste from kitchen/office in Green BAG

WASTE SEGREGATION

Body Parts

Infectious Bio Medical waste

Sharps

General Waste

WASTE TREATMENT

Incinerator

Autoclave and Shredding

WASTE DISPOSAL

Secured Landfill

Recycling Industry

Municipality Dump

STEPS OF WASTE MANAGEMENT IN HEALTH CARE FACILITY
Municipal Waste Management (in Hospital)

According to Gazette of INDIA-Ministry of Environment and Forest New Delhi, notification dated 25th September 2000-Management and Handling of Municipal solid waste –:
- Bins for storage of Biodegradable wastes shall be painted Green.
- Bins for storage of recyclable wastes shall be painted White.
- Bins for storage of other waste shall be painted Black.

Bins for Municipal solid waste do not have on them Biohazard and cytotoxic symbol, while bags/containers for Biohazardous waste have on them A).unwashable biohazard and cytotoxic symbol and B).Label for transport of Biomedical waste bags/containers as specified in Schedule III and IV of Ministry of Environment and Forest-Government of INDIA notification on Bio-Medical waste, Dated 20th July 1998.

Biohazard waste bags are to be filled with only 2/3rd of capacity, sealed and labeled from source of generation.

Time of transportation to treatment option site of Hospital Biohazardous(20%) waste & Hospital Municipal(80%) solid waste should be different.

Untreated biomedical waste should only be transported in a vehicle as may be authorised for the purpose by competent authority.

No untreated biomedical waste should be stored beyond a period of 48 hours.

If it needs to be stored beyond this period then the authorised person should take permission from the competent authority.

If biohazardous [i.e. infectious(15%) plus non-infectious(5%)] hospital waste is allowed to mix with general non-hazardous(80%) hospital waste then it will render all (100%) hospital waste potentially hazardous.

**Hospital waste**

- **Non-hazardous (80%)**
  - Biodegradable wastes like general domestic waste from kitchen, offices, public areas, stores and catering areas
  - In Green coloured Bins/Bags
  - Municipal dump
  - Special treatment [as per schedule I and II of Biomedical waste management and other related Government notifications]

- **Bio-Hazardous (20%)**
  - Infectious (15%)
    - Depending on the method of disposal of biomedical waste, waste is collected in accordingly either in yellow bag/red bag/white or blue bag or puncture proof container all having unwashable label with biohazard, cytotoxic symbol
  - Non-infectious but other hazardous (5%)
    - In Black bag having unwashable label with biohazard, cytotoxic and other hazard to health related symbol

  - Non sharp, sharps, plastic disposable, liquid
  - Radioactive, Discarded glass waste, Discarded medicine, cytotoxic drugs, Incineration ash

Due to collection and segregation of biohazard waste in different coloured bag at the point of waste generation, a waste handler (who carries the waste from the site of generation and ultimately disposes off the waste) without opening the specific coloured bag is aware of what type of specific biohazardous waste is inside the bag so that (without mixing it with other type of waste) specific and appropriate treatment options for biomedical waste as mentioned in schedule I and II of Bio-Medical Waste management, can be applied.
b. HOUSE KEEPING

i. House Keeping in Wards

A patient admitted to the hospital can develop infection due to bacteria that survive in the environment. Therefore, it is important to clean the environment thoroughly on a regular basis. This will reduce the bacterial load and make the environment unsuitable for growth of micro-organisms.

- The floor is to be cleaned at least twice times in 24 hours. Detergent and copious amounts of water should be used during one cleaning. Ecoshield may be used to mop the floor for the remaining times.
- The walls are to be washed with a brush, using detergent and water once a week.
- High dusting is to be done with a wet mop.
- Fans and lights are cleaned with soap and water once a month.
- All work surfaces are to be disinfected by wiping with Ecoshield and then cleaned with detergent and water twice a day.
- Cupboards, shelves, beds, lockers, IV stands, stools and other fixtures are to be cleaned with detergent and water once a week.
- Curtains are to be changed once a month or whenever soiled. These curtains are to be sent for regular laundering. In certain areas, eg. Transplant units and ICUs, more frequent changes are required.
- Patient’s cot is to be cleaned every week with detergent and water. 1% hypochlorite to be used when soiled with blood or body fluids. In the isolation ward, cleaning is done daily.
- Store rooms are to be mopped once a day and high dusted once a week.
- The floor of bathrooms is to be cleaned with a broom and detergent once a day and then disinfected.
- Toilets are cleaned with a brush using a detergent twice a day (in the morning and evening). Disinfection and stain removal solution may be used.
- Wash basins are to be cleaned every morning.
- Regular AC maintenance is required. The AC section should draw up a protocol for this.

ii. Patient linen

- Bed linen is to be changed daily and whenever soiled with blood or body fluids.
- Dry dirty line is to be sent to the laundry for regular wash.
- Line soiled with blood or body fluids, and all linen used by patients diagnosed to have HIV, HBV, HCV and MRSA, is to be decontaminated by autoclaving before being sent to the laundry.

- The hospital does not provide any patient gown (except for patient prepared for surgery) however patient and their relatives are encouraged to change the patient's clothes every day.

iii. Miscellaneous items

Kidney basins, basins, bed pans, urinals, etc to be cleaned with detergent and water and disinfected with 7% Lysol.
c. HOUSE KEEPING IN THE OPERATION THEATRE

Theatre complex should be absolutely clean at all items. Dust should not accumulate at any region in the theatre.

Soap solution is recommended for cleaning floors and other surfaces. Operating rooms are cleaned daily and the entire theatre complex is cleaned thoroughly once a week.

Before the start of the 1st case:

Wipe all equipment, furniture, room lights, suction points, OT table, surgical light reflectors, other light fittings, slabs etc with soap solution. This should be completed at least one hour before the start of surgery.

i. Linen & gloves

Gather all soiled linen and towels in the receptacles provided. Take them to the service corridor (behind the theatre) and place them in trolleys to be taken for sorting. The dirty linen is then sent to the laundry. Use gloves while handling dirty linen.

ii. Instruments

Used instruments are cleaned immediately by the scrub nurse and the attender. 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 tray 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.

iii. Environment

Wipe used equipment, furniture, OR table etc., with detergent and water. If there is a blood spill, disinfect with sodium hypochlorite before wiping.

Empty and clean suction bottles and tubing with disinfectant.

iv. After the last case

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

- Wipe over head lights, cabinets, waste receptacles, equipment, furniture with ecoshield.
- Wash floor and wet mop with liquid soap and then remove water and wet mop with Bacilloflor solution.

- Clean the storage shelves scrub & clean sluice room.

v. Weekly cleaning procedure

- Remove all portable equipment.
- Damp wipe lights and other fixtures with detergent.
- Clean doors, hinges, facings, glass inserts and rinse with a cloth moistened with detergent.
• Wipe down walls with clean cloth mop with detergent.
• Scrub floor using detergent and water or Bacilloflor.
• Stainless steel surfaces – clean with detergent, rinse & clean with warm water.
• Replace portable equipment: Clean wheel castors by rolling across toweling saturated with detergent.
• 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)
• After washing floors, allow disinfectant solution to remain on the floor for 5 minutes to ensure destruction of bacteria (Bacilloflor)

vi. Maintenance and Repairs
• Machinery and equipment should be checked, cleaned and repaired routinely
• Urgent repairs should be carried out at the end of the days list
• Air conditioners and suction points should be checked, cleaned and repaired on a weekly basis.
• Preventive maintenance on all theatre equipment to be carried out weekly and major work to be done at least once every year.

26. FOOD HANDLING / HANDLERS

a. Guidelines to ensure that food served to patients, visitors and employees is processed in a manner that avoids contamination:-

All food is prepared and served into covered containers and set into trays in the main kitchen and then sent to wards. This activity is supervised by trained personnel.

• Hot and cold food is transported in such a manner that appropriate temperatures will be maintained during transportation.
• Food returned to the kitchen is discarded into black bags. Mouths of bags are tied before disposal.
• Housekeeping is done according to the set procedures of the department
• The arrangement of work stations in the kitchen should be such that there is no contamination of cooked food from raw food. There should be no interchange of personnel working on raw food and those on cooked food.
• Personnel handling and serving the food are trained to observe universal precautions to protect themselves.
• Personnel are also trained to protect food consumers from body substances of handling Personnel. Training should include the following aspects.
• Hand washing should cover exposed portions of arms and hands with special attention to fingernails and areas between fingers.
• Clothing should be free from obvious dirt and food spills.
• Hair nets should be used while on duty
• Food should not be consumed in preparation or serving areas.
• Utensils should be used to handle food.
• Clean gloves may be used.
Surveillance is done biannually for detection of carriage of *Salmonella* and MRSA. Stool samples and nasal swabs are submitted to the microbiology laboratory. Records are maintained by in charge of the department.

27. **LAUNDRY AND LINEN MANAGEMENT**

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.

**a. 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.
- Linen used by patients diagnosed to have HIV, HBV, HCV and MRSA is to be decontaminated by autoclaving and then sent to the laundry
- Personnel handling soiled linen should be provided with PPE.

**b. Transportation of Clean Linen:**

Clean linen should be transported and stored by methods that will ensure its cleanliness.

**c. Storage of clean linen:**

The linen is stored in the Linen Storage Room.

28. **MORTUARY PRACTICES**

**a. Guidelines:**

Contact with whole or part human remains carries potential risks associated with pathogenic microbiological organisms that may be present in human blood and tissue. Infectious conditions in the recently deceased include:

- Blood borne pathogens such as Hepatitis viruses such as HBV, HCV, HDV, HEV and the
- Human immunodeficiency virus (HIV)
- Tuberculosis
- Gastrointestinal organisms
- Group A streptococcal infection
- Possibly meningitis and septicaemia

Autopsies are not handled at the Hospital premises. Even so, a single exposure may cause infection. The primary ways to protect personnel who handle human remains against infectious diseases are:

- Use of PPE
- Observance of safety, hygiene, and infection control practices
- Proper handling and disposal of regulated medical waste
b. Immunizations recommended:

- Hepatitis B
- Tetanus

29. INVESTIGATION OF AN OUTBREAK

The occurrence of two or more similar cases relating to place and time is identified as a cluster or an outbreak and needs investigation to discover the route of transmission of infection, and possible sources of infection in order to apply measures to prevent further spread. If the cases occur in steadily increasing numbers and are separated by an interval approximating the incubation period, the spread of the disease is probably due to person to person spread. On the other hand if a large number of cases occur following a shared exposure e.g an operation, it is termed a common source outbreak, implying a common source for the occurrence of the disease.

a. Epidemiological methods

The investigation of an outbreak may require expert epidemiological advice on procedures. Formulation of a hypothesis regarding source and spread is made before undertaking microbiological investigations in order that the most appropriate specimens are collected.

i. Steps to be taken to investigation an outbreak

Step 1

- Recognition of the outbreak. Is there an increase in the number of cases of a particular infection or a rise in prevalence of an organism? Such findings indicate a possible outbreak.
- Preliminary investigation must be begun by developing a case definition, identifying the site, pathogen and affected population.
- Determination of the magnitude of the problem and if immediate control measures are required. If so general control measures such as isolation or cohorting of infected cases; strict hand washing and asepsis should be immediately applied.
- Verification of the diagnosis. Each case should be reviewed to meet the definition.
- Confirmation that an outbreak exists by comparing the present rate of occurrence with the endemic rate should be made.

Step 2

The appropriate departments and personnel and the hospital administration should be notified and involved.

Step 3

- Additional cases must be searched for by examining the clinical and microbiological records.
- Line listings for every case, patient details, place and time of occurrence and infection details should be developed.
- An epidemic curve based on place and time of occurrence should be developed, the date analyzed, the common features of the cases e.g. age, sex, exposure to various risk factors, underlying diseases etc. should be identified.

- A hypothesis based on literature search and the features common to the cases; should be formulated to arrive at a hypothesis about suspected causes of the outbreak.

- Microbiological investigations depending upon the suspected epidemiology of the causative organism should be carried out. This will include (a) microbial culture of cases, carriers and environments (b) epidemiological typing of the isolates to identify clonal relatedness.

- The hypothesis should be tested by reviewing additional cases in a case control study, cohort study, microbiological study.

**Step 4**

- Specific control measures should be implemented as soon as the cause of outbreak of identified.

- Monitoring for further cases and effectiveness of control measures should be done.

- A report should be prepared for presentation to the HICC, departments involved in the outbreak and administration

**ii. Immediate control measures**

Control measures should be initiated during the process of investigation. An intensive review of infection control measures should be made and general control measures initiated at once. General measures include:

- Strict hand washing;
- Intensification of environmental cleaning and hygiene.
- Adherence to aseptic protocols, and
- Strengthening of disinfection and sterilization.

**b. Microbiological Study**

Microbiological study is planned depending upon the known epidemiology of the infection problem. The study is carried out to identify possible sources and routes of transmission. The investigation may include cultures from other body sites of the patient, other patients, staff and environment. Careful selection of specimens to be cultured is essential to obtain meaningful data.

**c. Specific control measures**

Specific control measures are instituted on the basis of nature of agent and characteristics of the high-risk group and the possible sources. These measures may include:

- Identification and elimination of the contaminated product;
- Modification of nursing procedures;
- Identification and treatment of carriers, and
• Rectification of lapse in technique or procedure

d. Evaluation of efficacy of control measures

• The efficacy of control measures should be evaluated by a continued followed-up of cases after the outbreak clinically as well as microbiologically. Control measures are effective if cases cease to occur or return to the endemic level.

• The outbreak should be documented.

30. SPECIAL CARE UNITS

a. OBSTETRICS AND LABOUR ROOM

Policies regarding admission of pregnant women with infection.

i. Pregnant women suffering from infections:

Not in Labour: Admit in medical wards/isolation ward, just as one would admit a non-pregnant woman with similar illness.

In Labour: Admit to isolation side of labour room.

ii. Indications for admission to isolation side in labour room:

Pregnant women with at least 22 weeks of gestation and in labour with:

• Hepatitis (A, E or unknown)
• Diarrhoea (severe, watery, with blood and mucous)
• Known infection with a blood borne pathogen (HBV, HCV & HIV)
• Suspected or confirmed communicable disease requiring isolation.

b. Labour Room:

i. House Keeping has to be meticulous

• Clean the floor at least four times in 24 hours. One of these should be with detergent and copious amounts of water. Lysol 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 ecoshield after each patient. Wear gloves for this procedure.

• Use fresh linen for each patient.

ii. 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 or exudative skin lesions should not be involved in invasive procedures.

- Wash hands after each procedure and between patients

31. VISITORS POLICY

Although 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.

- The ward sisters and the doctors concerned shall have the responsibility of informing the patients' relatives of the measures to be taken and the importance of restriction of visitors. This should be done at admission of the patient.

- The patient and the relatives must be given health education about the cause, spread and prevention of the infection, in detail. The need for isolation and restriction of visitors should be discussed with them.

- Hand washing after all contact with the patient will have to be stressed.

- No more than two adult visitors should be allowed 'at a time' during the hospital visiting hours and the length of stay should be governed by the needs of the patient.

- Children below 12 years are not allowed into the isolation areas. The policy of our hospital is to allow one female attendant to stay in the ward with the patient. The attendants are individually trained to avoid infection.

- Before entering the room, visitors must enquire at the nurses' station for instructions and for gown and mask if indicated. Visitor's footwear, bags etc., should be left outside the room. Only articles that can be discarded, disinfected or sterilized should be taken into the room.

- Visitors are not allowed to sit on the patient's bed.

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

- Active immunization of attendants and other follow up steps, where applicable must be conducted by the physician in-charge.

32. EMERGENCY SERVICE

a. Standard precautions are to be strictly adhered and all patients are to be treated as potentially infected with blood – borne pathogens. Importance of this cannot be over emphasizes in this area.

   i. Wash hands with soap and water before and after patient contact.
ii. Wear gloves preferably for all patient contact. It is a must for all invasive procedures, however minor. Examination gloves are placed in the shelves in all patient care areas.

iii. Wear masks for all situations where a splash is expected, and where infection that spreads through the respiratory route is possible diagnosis.

iv. Wear plastic aprons, in addition to a mask if splash to the body area is expected.

v. Use disposal aprons and discard them into the sharps container which is placed in all patient care areas. Dispose IV canula, stilettes, scalpel blades and razor blades into the sharps containers immediately after use.

vi. Attenders and Sweepers are to wear gloves while handling lab samples and performing sanitation work.

b. Additional precautions for patients known to harbour blood borne pathogens:
   - Use plastic aprons during procedures where body fluids may be split.
   - Disinfect all items following discharge, transfer or death of the patient (as per hospital protocol refer to the chapter on housekeeping). Mattress, pillow and mackintosh are to be disinfected with 1% sodium hypochlorite solution and dried in sunlight.

c. Infectious diseases
   Refer to the chapter on Isolation Policies

d. Wound and Skin Infections
   - Hands are to be washed before and after handling the patient.
   - Wear gloves while handling infected wounds.
   - Cover the wounds (as far as possible) before transferring the patient
   - Dispose waste as per hospital guidelines

e. Trauma
   Use protective equipment such as gloves, mask, gown, apron and goggles under appropriate situations.

f. Housekeeping
   - The treatment rooms and trauma resuscitation room is cleaned with soap and water after every patient. Blood spills are disinfected by using 1% Sodium hypochlorite for a contact time of 10 minutes.
   - Equipment and instruments that are to be reused are cleaned before sending it for sterilization.
   - Discard medical waste as per the guidelines given in the chapter on Hospital Waste Management.
Appendix I.
NACO Guidelines for Post Exposure Prophylaxis (P.E.P.) in occupational exposure

33. OCCUPATIONAL EXPOSURE

Definition:
An occupational exposure that may place a worker at risk of HIV infection is a percutaneous injury, contact of mucous membrane or contact of skin (Especially when the skin is chapped, abraded or afflicted with dermatitis or the contact is prolonged or involving an extensive area) with blood, tissue or other body fluids to which universal precaution apply.

a. OCCUPATIONAL EXPOSURE TO HIV - VERY LOW RISK
   - needle stick injuries
   - cuts from other sharps
   - contact of eye, nose, mouth or skin with blood

b. MOST EXPOSURES DO NOT RESULT IN INFECTION
   Factors affecting transmission
   - amount of blood in the exposure
   - amount of virus in patient's blood
   - whether P.E.P. taken or not

c. AVERAGE RISK OF HIV INFECTION AFTER AN OCCUPATIONAL EXPOSURE
   SMALL AMOUNT OF BLOOD ON INTACT SKIN: NO RISK
   NEEDLE STICK INJURY: 1 in 300 (0.3%)
   EXPOSURE OF EYE, NOSE OR MOUTH: 1 in 1000
   RISK WITH DAMAGED SKIN: 1 in 1000

d. RISK INCREASES IF PATIENT HAS HIGH VIRAL LOAD AS IN PATIENTS WITH ACUTE HIV INFECTION OR PATIENT NEAR DEATH
   Compare -
   risk for hepatitis B 9-40%
   risk for hepatitis C 1-10%

e. PREVENTION OF OCCUPATIONAL EXPOSURE
   - Standard precautions (universal work precautions) and safe practices
   - Wash hand after patient contact, removing gloves.
• Wash hands immediately if hands contaminated with body fluids.
• Wear gloves when contamination of hands with body substances anticipated
• Protective eyewear and masks should be worn when splashing with body substance is anticipated
• All health care workers should take precautions to prevent injuries during procedures and when cleaning or during disposal of needles and other sharp instruments.
• Needle should not be recapped
• Needles should not be purposely bent or broken by hand
• Not removed from disposable syringe nor manipulated by hand
• After use disposable syringes and needles, scalpel blades and other sharp items should be placed in a puncture resistant container.
• Health care workers who have exudative lesions or dermatitis should refrain from direct patient care and from handling equipment
• All needle stick injuries should be reported to infection control officer.
• Handle and dispose of sharps safely
• Clean & disinfect blood / body substances spills with appropriate agents
• Adhere to disinfection and sterilization standards
• Regard all waste soiled with blood/body substance as contaminated and dispose of according to relevant standards
• Vaccinate all clinical and laboratory workers against hepatitis B
• Other measures double gloving changing surgical techniques to avoid “exposure prone” procedures use of needle-less systems and other safe devices.

f. BODY FLUIDS TO WHICH UNIVERSAL PRECAUTIONS APPLY

• Blood
• Other body fluids containing visible blood
• Semen
• Vaginal secretions
• Cerebrospinal fluid (CSF)
• Synovial fluid
• Pleural fluid
• Peritoneal fluid
• Pericardial fluid
• Amniotic fluid

g. BODY FLUIDS TO WHICH UNIVERSAL PRECAUTIONS DO NOT APPLY

The risk of HIV transmission is extremely low or negligible

• Nasal secretions
• Sputum
• Sweat
- Tears
- Urine
- Vomitus
- Saliva

Unless these contain visible blood

**h. USE OF PROTECTIVE BARRIERS**

- Protective barriers reduce the risk of exposure of the HCWs skin or mucus membrane to potentially infective materials
- Protective barriers include gloves, gowns, masks, and protective eye wears.

**Selection of protective barriers**

<table>
<thead>
<tr>
<th>Type of exposure</th>
<th>Examples</th>
<th>Protective barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Risk</strong></td>
<td>injections, minor wound dressing</td>
<td>Gloves helpful but not essential</td>
</tr>
<tr>
<td>contact with skin with no visible blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Medium Risk</strong></td>
<td>vaginal examination, insertion or removal of intravenous canula, handling of laboratory specimens, large open wounds dressing, venepuncture, spills of blood</td>
<td>Gloves, Gowns and Aprons may be necessary</td>
</tr>
<tr>
<td>probable contact with blood; splash unlikely</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High Risk</strong></td>
<td>major surgical procedures, particularly in orthopaedic surgery and oral surgery, vaginal delivery</td>
<td>Gloves, Water proof Gown or Apron, Eye wear, Mask</td>
</tr>
<tr>
<td>probable contact with blood, splashing, uncontrolled bleeding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The use of double gloves is not recommended. Heavy duty rubber gloves should be worn for cleanings instruments, handling soiled linen or when dealing with spills

34. **WHAT TO DO ON EXPOSURE TO HIV INFECTED BLOOD?**

a. **PROMPT MEASURES**
   - Do not Panic
   - Do NOT put cut / pricked finger into your mouth

b. **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)

   i. **Immediate measures:**
      - wash with soap and water
      - no added advantage with antiseptic/bleach

   ii. **Next step:**
      - prompt reporting
      - post-exposure treatment should begin as soon as possible
      - preferably within two hours
      - not recommended after seventy -two hours
      - late PEP? may be yes
      - Is PEP needed for all types of exposures? NO

   iii. **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.

iv. **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.

   **c. Exposure Code (EC)**
**POST EXPOSURE PROPHYLAXIS (PEP)**

**Determining Exposure code (EC) of an injury**

Is source material blood, body fluid, OPIM or contaminated instrument soiled by above?

- **YES**
  - What kind of exposure?
    - Membranous membrane or skin integrity compromised
      - Volume?
        - Few drops, short time → **EC 1**
        - Many drops, splash, several minutes → **EC 2**
    - Intact skin only → **No PEP**
    - Percutaneous exposure?
      - Severity?
        - Less severe, solid needle → **EC 2**
        - More severe → **EC 3**

- **NO** → No PEP

**(OPIM): Other potentially infectious material**

**Determining HIV status code (SC) of source**

- HIV negative → **No PEP**
- HIV positive:
  - Low titer exposure: asymptomatic, normal CD4 → **HIV SC 1**
  - High titer exposure: advanced AIDS, low CD4, high viral load → **HIV SC 2**
- Status unknown → **HIV SC unknown**
- Source unknown

**Recommendation of PEP regimens based on A). Exposure and B). Status of Source.**

A) If EC1 and SC1 → PEP may not be required
B) If EC1 and SC2 or EC2 and SC1 → Basic regimen required
C) If EC2 and SC2 → Expanded regimen warranted
D) If EC3 and SC1 or 2 → Expanded regimen warranted
E) If both EC and SC are unknown, there is possible risk and if EC is 2 or 3 → Basic regimen required
Exposure route for HIV-Risk of transmission

<table>
<thead>
<tr>
<th>Blood transfusion</th>
<th>Vaginal</th>
<th>Injecting drugs use</th>
<th>Perinatal</th>
<th>Anal</th>
</tr>
</thead>
<tbody>
<tr>
<td>90–95%</td>
<td>0.05–0.1%</td>
<td>0.65–0.5%</td>
<td>20–40%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>0.05–0.01%</td>
</tr>
<tr>
<td>Nasal</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

Note: Needle-stick exposure for HBV is 9–30% (if source is positive for both HBsAg & HBeAg risk of transmission of Hepatitis B is 37%–62%, if source is HBsAg positive & HBeAg negative risk of transmission of Hepatitis B is 23%–37%) and for HCV is 1–10%.

Steps for managing occupational exposure - All hospital staff must know whom to report for PEP in case of accidental occupational exposure.

0 hr 0 min | As soon as possible | Ideally within 2 hr, but certainly within 72 hr | 6 -12 months

- **Step 1:** First AID – Manage exposure site: Wash wound and surrounding skin with water and soap. Do not scrub or suck on wound. Encourage free bleeding OR irrigate exposed eye immediately with water or normal saline. OR Rinse the mouth thoroughly, using water or saline and spit again.

- **Step 2:** Reporting, Documentation & Counsel for PEP: Report to authorized MO who will document the details of exposure events on a case-sheet & will do pretest counseling, provide information on HIV/HBV/HCV and PEP, check immunization status for hepatitis B, other medical conditions/current medications, breast feeding. Offer HIV, HBV, HCV test Obtain consent for PEP Offer special leave from work.

- **Step 3:** Laboratory evaluation
  - Draw 5ml of blood to do HIV/HBV/HCV test, CBC, liver function tests, serum creatinine, pregnancy test if applicable.
  - Provide HIV post-test counseling

- **Step 4:** Establish eligibility for PEP: Assess exposed individual for baseline status of Antibodies for HIV, HBV, HCV, HBsAg within 72 hours of exposure. Assess exposure source for HIV/HBV/HCV. If source has positive details of latest CD4 counts, viral loads & ART of source are noted. Assess type, amount & severity of exposure. Determine risk of transmission. Determine eligibility for PEP.

- **Step 5:** Prescribe PEP for HIV within 1-2hr of exposure. If delay of more than 36 hours expert consultation advised. Prescribe PEP for HBV within 24 hours but definitely within 7 days. No active PEP for HCV. Explain side effects of ARVs. Explain post exposure measures against HBV and HCV.

- **Step 6:** Follow up and monitor adherence Record keeping.
  - Follow up visits for clinical assessment at 2 weeks. HIV/HBV/HCV test at 6 weeks. HCV in case of source is co-infected with HIV-HCV.

**Basic Post Exposure Prophylaxis regimen against HIV** – For Increased Risk of transmission

- **Zidovudine:** Two capsules (100 mg each) three times a day (a total of six capsules a day). Side effects may be decreased if you take AZT with food. + **Lamivudine:** Take one capsule (150 mg) twice a day. May be taken with food or with other medication.

**Expanded Post-Exposure Prophylaxis regimen against HIV** – For Highest Risk of transmission - as described above (AZT + Zidovudine + Lamivudine + Indinavir) Take 2 capsules (800 mg) every eight hours on an empty stomach (one hour before or two hours after a meal). Absorption of the drug is decreased if taken with food, but if you need to eat something, a light low-fat snack is OK. Begin taking these drugs immediately. If possible the first does should be taken within one hour of the exposure. If there has been a delay, you may still benefit from this medication and should begin as soon as possible. Continue taking both drugs for **four weeks.** This initial supply is enough to last until you can receive a regular prescription from your occupational health provider.

**Post-Exposure Prophylaxis Against HBV** - if source is HBsAg positive: then vaccination & response status of HCP is reqd. If previously vaccinated & antiHBs is more than 10mIU/ml then HCP is a known responder & no treatment. If HCP is not immunized against Hepatitis B then HBIG (1000-2000IU for adults: 32-48IU/Kg body wt for children) IM is given along with HBV vaccine (on different arms)as soon as possible but definitely within 72 hours.
d. Testing and Counseling

The health care provider should be tested for HIV as per the following schedule-

i) Base-line HIV test - at time of exposure

ii) Repeat HIV test - at six weeks following exposure

iii) 2nd repeat HIV test - at twelve weeks following exposure

On all three occasions, HCW must be provided with a pre-test and post-test counselling. 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 or organs/tissues and abstain from sexual intercourse. In case sexual intercourse is undertaken a latex condom is used consistently. In addition, women HCW should not breast-feed their infants during the follow-up period.

e. 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.

f. 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.

g. Side-effects of these drugs:

Most of the drugs used for PEP have usually been tolerated well except for nausea, vomiting, tiredness, or headache.

h. Steps to be undertaken by the Infection control officer on receiving information about exposure:

- All needle-stick/sharp injuries should be reported to the State AIDS Control societies giving the Exposure Code and the HIV Status code.
- The State AIDS Societies should in-turn inform NACO about the cases periodically.
- **A register should be maintained in all hospitals** and at the level of the State AIDS Control societies
- NACO has decided to supply PEP drugs to all cases in government hospitals through the State AIDS Control societies
- Infection control officers in all hospitals have been directed to ensure that PEP drugs are available at all times.
35. RESPONSIBILITIES OF INFECTION CONTROL OFFICER

- Report all needle stick injuries to State AIDS Society in proforma.
- State AIDS Society to inform NACO.
- Registry being planned in NACO.

<table>
<thead>
<tr>
<th>Work of HAICC</th>
<th>Work of HAICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a). Activities regarding infection control in hospital.</td>
<td>a). Supervising cleaning and disinfection of wards, OT, etc.</td>
</tr>
<tr>
<td>d). Formulation of new antibiotic policies according to drug resistance pattern at a particular time.</td>
<td>d). Use of personal protective measures.</td>
</tr>
<tr>
<td>e). Monitoring sterilization and disinfection practices.</td>
<td>e). Source isolation, protective isolation (immunocompromised patients are protected by separating from sources).</td>
</tr>
<tr>
<td></td>
<td>f). Detection of carriers among the hospital staff.</td>
</tr>
<tr>
<td></td>
<td>g). Monitoring performance of equipment, in use test of disinfectants, air sampling, hospital food and water from time to time.</td>
</tr>
<tr>
<td></td>
<td>g). Educating all staff in the hospital regarding “Universal Safety Precautions” and precautions to be taken for high risk procedures.</td>
</tr>
<tr>
<td></td>
<td>i). Surveillance and role of laboratory.</td>
</tr>
</tbody>
</table>

36. Hospital Antibiotic Policy :-

In countries where there is unrestricted sale “over the counter” of antibiotics, uncontrolled misuse of antibiotics is responsible for a general pool of resistant strains in the microbial population. Sales of antibiotics should be restricted to medical prescription only. Within hospitals, the unnecessary use or overuse of antibiotics encourages the selection and proliferation of resistant and multiple resistant strains of bacteria. Once selected, resistant strains are favoured by antibiotic usage and spread by cross-infection. Where resistance is encoded on transmissible plasmids, resistance can also spread between bacterial species. There is thus a link between antibiotic use (or abuse) and the emergence of antibiotic resistant bacteria causing hospital-acquired infections. It is not possible to completely eliminate this evolutionary phenomenon, but it can be slowed or modified by prudent antibiotic use. This requires the inclusion of an antibiotic policy in the infection control programme. An antibiotic policy lays down the recommendations for the rational use of antibiotics. The aim of the policy is to minimize the emergence of antibiotic resistance in a clinical setting. It also aims at conserving the existing antibiotics, reduce hospital acquired infections and thereby reduces the cost of treatment of the patient. The Hospital Dean and/or Hospital Chief Medical Superintendent should ensure that the hospital plan for prevention and control of nosocomial infection includes an official committee that has responsibility for the formulation and supervision of an antibiotic policy. This might be a subcommittee of the Hospital Infection Control Committee. The Antibiotic Committee should have the support of the Hospital Dean and/or Hospital Chief Medical Superintendent and the authority to ensure that its policies are implemented throughout the hospital.
Members of the Antibiotic Committee are:-
- The Pharmacist who will report back to the Antibiotic Committee at each meeting on drug utilisation and cost:-
- The Microbiologist who will report on antibiotic susceptibility patterns of bacteria isolated from major infections:-
- Clinical doctors and nurses responsible for direct patient care who provide a link between clinical practice and the Antibiotic Committee.
- Manager(s) who will ensure the resources are available for implementation of the antibiotic policy:-
- Reciprocal Membership between the Infection Control Committee and the Drugs Committee should be ensured:-
- Other members can be co-opted as necessary.

The committee should be responsible for producing general guidelines and policies for the health care areas after wide consultation with the users. The antibiotic committee will have to make rational choices (taking into consideration the CLSI guidelines) amongst "equivalent drugs" and classes of drugs in order to select the least expensive, most effective agents. Cost should determine the selection, when microbiological, pharmacological, and other relevant properties are similar.

Function of the antibiotic committee are:-
- to consult widely with the clinical staff to get agreement on antibiotic usage in different specialities.
- to then establish an antibiotic formulary, which may prevent the use of some drugs and restrict the use of others. This will lead to production of a formulary that restricts agents available to the minimum number needed for most effective therapy.
- to formulate guidelines for antibiotic prescribing, including indications for prophylaxis and therapy of infection, the optimum dosages, timings and duration of therapy and policies for minimising the risks of toxicity. Guidelines should be simple, clear and short, and ideally published in a booklet small enough to be carried in a pocket.
- to review the appropriateness of antibiotic use and the emergence of antimicrobial resistance and provide regular feedback on this to clinicians. Microbiology laboratory’s antibiotic susceptibility test report should indicate (as per CLSI guidelines) first and second line therapy for common infections (might limit the use of certain second line drugs to consultant prescription only). The clinician should receive reports of antibiotic susceptibility based on the drugs available in the agreed formulary. The testing should be performed with a limited number of antibiotics selected to optimise patient care and cost effectiveness. The number of antibiotics reported might be limited in order to encourage better prescribing (e.g. augmentin need not be reported if the organism is sensitive to ampicillin). The report should also indicate where organisms are invariably resistant (e.g., methicillin-resistant S. aureus are resistant to all beta-lactams). The laboratory should also alert the committees to the emergence of widespread resistance to certain agents (in a local area) so that the inclusion of those agents in the guidelines can be reviewed. Culturing of the environment or screening of staff should be discouraged and only done after authorisation by the Infection Control Team.
- to be responsible for education and dissemination of information. An effective antibiotic policy also provides and ensures education on the use of antibiotics at undergraduate and postgraduate level for medical and nursing staff.
- to work closely with the Infection Control Team and the Microbiology Department
- Consider the use of pharmacy 'stop' policies, where drugs are written up for a specified period and are then only continued if a new prescription is issued.

Minimal requirements
- List of available antibiotics agreed by all clinicians, indicating dosages, routes of administration and toxicities.
- Guidelines for therapy and prophylaxis.
- A regimen selection algorithm (taking into consideration CLSI guidelines) included in an antibiotic policy.
Members of the SSIMS Bhilai’s Hospital Antibiotic Committee are:

- **Dean:** Dr C. K. Mankikar.
- **Chief Hospital Superintendent:** Dr Gaurav Gupta.
- **Member Secretary HAICC (Professor and Head Microbiology):** Dr Amit A. Rangari.
- **Hospital Infection Control Officer HAICC (Senior Consultant Microbiologist):** Dr Aakansha Sharma.
- **The Pharmacist:** Mr Dileshwar Sahu.

**Clinical doctors**

- Head of Surgery department: Dr Gaurav Gupta.
- Head of Medicine department: Dr Subhangi Verma.
- Head of Obstetric & Gynaecology department: Dr N.K. Vashisht.
- Head of E.N.T. department: Dr Paromitra Patra.
- Head of Ophthalmology department: Dr Anand Deshpande.
- Head of Paediatrics department: Dr Vinayak Deshmukh.
- Head of Anaesthesia department: Dr Ashok Takalate.
- Head of Skin & V.D. department: Dr Neelprabha.
- Head of Chest & Tuberculosis department: Dr Pillai D. Vivekan.

**Nursing Superintendent:** Mrs. Vijayalakshmi Pillai.

- **Reciprocal member from hospital Pharmacovigilance (drug) committee:** Dr Nitin D. Pise (Head of Pharmacology department).