Annexure

HOSPITAL INFECTION CONTROL MANUAL FOR SMALL HEALTHCARE ORGANIZATIONS
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1. INTRODUCTION

The Hospital Infection Control (HIC) Manual for Small Healthcare Organizations (SHCOs) is a reference guide containing policies as well as procedures to prevent nosocomial infection among patients and staff. Nosocomial infections or hospital acquired infections are defined as infections acquired during or as a result of hospitalization. Any patient who develops an infection after 48 hours of hospitalization is considered to have nosocomial infection.

It may not be possible to eradicate all hospital-related infections. However, an effective infection control program provides optimum protection for both the SHCO’s clientele and the SHCO staff. The purpose of this manual is to help all SHCOs achieve the best possible infection control measures.

The overall aim of this document is to provide evidence-based information on the prevention and control of infection. To fulfill this aim a Hospital Infection Control Committee (HICC) needs to be formed that will look after the infection control needs of the SHCO. An HICC provides a forum for multidisciplinary input and cooperation, and information-sharing. The HICC should include representatives from the management, consultant doctors, a microbiologist (if available), a pathologist (if available), nursing supervisors, a biomedical engineer (if available), and central sterilization department in-charge (if available), and maintenance in-charge. The HIC Team should consist of an Infection Control Officer and an Infection Control Nurse.

The Committee should have a reporting relationship directly with administration and the medical staff to promote program effectiveness. In an emergency (such as an outbreak), this Committee must be able to meet promptly.

This document will be reviewed and updated at regular intervals by the HICC.
2. OBJECTIVES

The primary aim of the Hospital Infection Control (HIC) program is to prevent or minimize the potential for nosocomial infections in patients as well as in staff by breaking the chain of transmission.

The program should have the following objectives:

   i. To develop written policies and procedures for standards of cleanliness, sanitation, and asepsis in the SHCO.
   ii. To interpret, uphold, and implement the HIC policies and procedures in the SHCO.
   iii. To review and analyze data on infections that occur, in order to take corrective steps.
   iv. To review and input into investigations of epidemics.
   v. To develop a mechanism to supervise infection control measures in all phases of hospital activities and to promote improved practice at all levels of the SHCO.
   vi. To ensure continuing education of employees on aspects of infection control.
3. STANDARD PRECAUTIONS

3.1 Universal Precautions

Rules of universal precautions
3.1.1 Consider ALL patients potentially infectious.
3.1.2 Assume ALL blood and body fluids and tissue to be potentially infectious.
3.1.3 Assume ALL unsterile needles and other sharps to be similarly contaminated.

3.2 Standard Precautions

These precautions should be followed in all patient care situations. All staff should be informed of the need to report exposure to blood or potentially infectious body fluids to the duty doctor without any delay. Certain standard precautions should be taken in all healthcare settings as given below:

3.2.1 Wash hands before and after all patient or specimen contact.
3.2.2 Handle the blood of all patients as potentially infectious.
3.2.3 Wear gloves for potential contact with blood and body fluids.
3.2.4 Prevent needle stick/sharp injuries.
3.2.5 Wear personal protective equipment (PPE) while handling blood or body fluids.
3.2.6 Handle all linen soiled with blood and/or body secretion as potentially infectious.
3.2.7 Process all laboratory specimens as potentially infectious.
3.2.8 Wear a mask for TB and other contagious respiratory infections (HIV is not air-borne).
3.2.9 Correctly process instruments and patient care equipment.
3.2.10 Maintain environmental cleanliness.
3.2.11 Follow proper waste disposal practices.

3.3 Reducing Person-To-Person Transmission

3.3.1 Hand Washing and Antisepsis (hand hygiene)

Appropriate hand hygiene can minimize microorganisms acquired on the hands during daily duties and when there is contact with blood, body fluids, secretions, excretions, and known and unknown contaminated equipment or surfaces (Figure 1).

Wash or decontaminate hands:
a. After handling any blood, body fluids, secretions, excretions, and contaminated items,
b. Between contact with different patients,
c. Between tasks and procedures on the same patient to prevent cross contamination between different body sites,
d. Immediately after removing gloves,
e. Using a plain soap, antimicrobial agent, such as an alcoholic hand rub or waterless antiseptic agent.

![Figure 1: Hand Washing and Antisepsis](http://www.emed.ie/Infections/Hand_Washing.php)

3.3.2 “My Five Moments for Hand Hygiene” Approach

The newly developed “Five Moments for Hand Hygiene” approach has emerged from the *WHO Guidelines on Hand Hygiene in Health Care* to add value to any hand hygiene improvement strategy. This includes:

a. **Before touching a patient**
   
   WHEN? Clean your hands before touching a patient.
WHY? To protect the patient against harmful germs carried on your hands.

b. **Before clean or aseptic procedure**
   WHEN? Clean your hands immediately before performing a clean or aseptic procedure.
   WHY? To protect the patient against harmful germs, including the patient's own.

c. **After body fluid exposure risk**
   WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
   WHY? To protect yourself and the healthcare environment from harmful germs of the patient.

d. **After touching a patient**
   WHEN? Clean your hands after touching a patient and patient’s immediate surroundings.
   WHY? To protect yourself and the healthcare environment from harmful germs from the patient.

e. **After touching patient surroundings**
   WHEN? Clean your hands after touching any object or furniture in the patient’s immediate surroundings– even if the patient has not been touched.
   WHY? To protect yourself and the healthcare environment from harmful germs from the patient.

f. **System change:** Ensuring that the necessary infrastructure is in place to allow healthcare workers to practice hand hygiene. This includes two essential elements:
   - Access to safe, continuous water supply as well as to soap and towels.
   - Readily accessible alcohol-based hand rubs at the point of care.

g. **Training / Education:** Providing regular training on the importance of hand hygiene, based on the “My Five Moments for Hand Hygiene” approach, and the correct procedures for hand rubbing and hand washing, to all healthcare workers.

h. **Evaluation and feedback:** Monitoring hand hygiene practices and infrastructure.

i. **Reminders in the workplace:**
- Posters prompting and reminding healthcare workers about the importance of hand hygiene and about the appropriate indications and procedures for performing it.

- Creating an environment and a perception for awareness-raising about patient safety issues while guaranteeing consideration of hand hygiene improvement as a high priority at all levels.

3.3.3 Steps on how to use alcohol-based hand rub (duration of the entire procedure is 20-30 seconds) (Figure 2).

Step 1 - Apply a palm full of the product in a cupped hand, covering all surfaces.

Step 2 - Rub hands palm against palm.

Step 3 - Right palm over left dorsum with interlaced fingers and vice versa.

Step 4 - Palm against palm with fingers interlaced.

Step 5 - Backs of fingers to opposing palms with fingers interlocked.

Step 6 - Rotational rubbing of left thumb clasped in right palm and vice versa.

Step 7 - Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.

Once dry, your hands are safe.
3.3.4 Steps on how to wash hands when visibly soiled (otherwise, use hand rub. Duration of the entire procedure is 40-60 seconds):

Step 0 - Wet hands with water.

Step 1 - Apply enough soap to cover all hand surfaces.

Step 2 - Rub hands palm against palm.

Step 3 - Right palm over left dorsum with interlaced fingers and vice versa.

Step 4 - Palm against palm with fingers interlaced.

Step 5 - Backs of fingers to opposing palms with fingers interlocked.

Step 6 - Rotational rubbing of left thumb clasped in right palm and vice versa.

Step 7 - Rotational rubbing, backwards and forwards, with clasped fingers of right hand in left palm and vice versa.

Step 8 - Rinse hands with water.

Step 9 - Dry hands thoroughly with a single use towel.
Step 10 - Use towel to turn off faucet; your hands are now safe.

3.3.5 Gloves (Figures 3 and 4)

a. Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, nonintact skin, or potentially contaminated intact skin (for example, with stool or urine in an incontinent patient) could occur.

b. Wear gloves with fit and durability appropriate to the task.

c. Wear disposable medical examination gloves for providing direct patient care.

d. Wear disposable medical examination gloves or reusable utility gloves for cleaning the environment or medical equipment.

e. Remove gloves after contact with a patient and/or the surrounding environment (including medical equipment) using proper technique to prevent hand contamination.

f. Do not wear the same pair of gloves for the care of more than one patient.

g. Do not wash gloves for the purpose of reuse since this practice is associated with transmission of pathogens.

h. Change gloves during patient care if the hands are moved from a contaminated body site (for example, perineal area) to a clean body site (for example, face).
Figure 3: Steps to Wearing Gloves

Source: http://medical.tpub.com/14295/img/14295_110_1.jpg
3.3.6 REMEMBER
   a. Remove all jewellery from the hands when working in the hospital.
   b. Do not wear artificial fingernails or extenders when in direct contact with patients.
   c. Keep natural nails short.

3.3.7 Hand washing could be of two types:
   a. Hand washing before general procedures called Routine Hand Washing.
   b. Hand scrubbing before a surgical procedure.

3.3.8 Surgical hand scrubbing: The aim of surgical hand scrubbing with an antiseptic agent is to minimize the number of microorganisms on hands under the gloves. This reduces the risk of infection to a client if gloves develop a small hole, tears or nicks during the procedure.
   a. Remove all jewelry on hands and wrists.
   b. Hold the hands above waist level and wet hands in water.
   c. Apply sufficient antiseptic solution; use firm, circular motions to wash hands and arms up to the wrists, covering all areas including palms, back of the hands, fingers, between
fingers, and lateral side of thumb, knuckles, and wrists for at least three to five minutes by watch.
d. Repeat the procedure twice.
e. Rinse both hands one-by-one and keeps the hands above waist level at all times.
f. Dry the hands with a sterile towel keeping them above waist level.
g. Do not touch anything except the gloves after washing hands for a surgical procedure.

3.4 **Personal Protective Equipment (PPE)**

Personal protective equipment should be used by:

- Healthcare workers who provide direct care to patients and who work in situations where they may have contact with blood, body fluids, excretions, and secretions.
- Support staff including medical aides, cleaners, and laundry staff in situations where they may have contact with blood, body fluids, secretions, and excretions.
- Laboratory staff, who handle patient specimens.
- Family members who provide care to patients and are in a situation where they may have contact with blood, body fluids, secretions, and excretions.

Personal protective equipment includes:

- Gloves
- Protective eye wear (goggles)
- Mask
- Apron
- Gown
- Boots or shoe covers
- Cap or hair cover

3.4.1 **Gown (Figure 5)**

a. Wear a gown that is appropriate to the task, to protect skin and prevent soiling or contamination of clothing during procedures and patient care activities when contact with blood, body fluids, secretions, or excretions is anticipated.
b. Wear a gown for direct patient contact if the patient has uncontained secretions or excretions.
c. Remove the gown and perform hand hygiene before leaving the patient’s environment.

d. Do not reuse gowns, even for repeated contacts with the same patient.

e. Routine donning of a gown when entering a high-risk unit (for example, ICU, NICU, HSCT unit) is not indicated.

![Figure 5. Steps to Wearing a Gown](http://medical.tpub.com/14295/css/14295_109.htm)

3.4.2 Mouth, Nose, Eye Protection

a. Use PPE to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.
b. During aerosol-generating procedures (for example, bronchoscopy, suctioning of the respiratory tract [if not using in-line suction catheters], endotracheal intubation) in patients who are not suspected of being infected with an agent for which respiratory protection is otherwise recommended (for example, M. tuberculosis, SARS or haemorrhagic fever viruses), wear one of the following: a face shield that fully covers the front and sides of the face, a mask with attached shield, or a mask and goggles (in addition to gloves and gown).

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.

### 3.5 Guidelines for Collection of Blood Samples

Use gloves and take special care if there are cuts or scratches on the hands.

Take care to avoid contamination of hands and surrounding area with the blood.

3.5.1 Use disposable or autoclaved syringes and needles.

3.5.2 Use 70 percent ethanol or isopropyl alcohol swabs or sponges for cleaning the site of needle puncture.

3.5.3 Use thick dressing pads or adsorbent cotton below the forearm when drawing blood and tourniquet above.

3.5.4 Tourniquet must be removed before the needle is withdrawn.

3.5.5 Place dry cotton swab and flex the elbow to keep the swab in place till bleeding stops.

3.5.6 Place used needles and syringes in a puncture-resistant container containing disinfectant.

3.5.7 Do not recap used needles.

### 3.6 Proper Disposal of Needles and Sharps

3.6.1 Needles and sharps are the commonest mode of transmission of blood-borne pathogens to the healthcare worker.

3.6.2 Precautions should be taken to prevent injuries by sharp instruments, especially hollow bore needles that have been used for venipuncture or other vascular access procedures.

3.6.3 Needles should not be recapped, bent or broken by hand. Disposable needles and other sharps should be disposed immediately after use into puncture-resistant containers which should be located at the site of the procedure.
3.6.4 When a needle has to be removed from a syringe, do it with utmost care.
3.6.5 Do not overfill a sharps container.

3.7 Good Practice for Safe Handling and Disposal of Sharps

3.7.1 ALWAYS dispose of your own sharps.
3.7.2 NEVER pass used sharps directly from one person to another.
3.7.3 During exposure-prone procedures, the risk of injury should be minimized by ensuring that the operator has the best possible visibility; for example, by positioning the patient, adjusting the light source, and controlling bleeding.
3.7.4 Protect fingers from injury by using forceps instead of fingers for guiding suturing.
3.7.5 NEVER recap, bend or break disposable needles.
3.7.6 Directly after use, place needles and syringes in a rigid container until ready for disposal.
3.7.7 Locate sharps disposal containers close to the point of use, for example, in patient’s room, on the medicine trolley, and in the treatment room.
4. ISOLATION POLICIES AND PROCEDURES

Isolation procedures are meant to prevent or interrupt transmission of pathogenic microorganisms within the hospital. Selected patients may require specific precautions to limit transmission of potential infecting organisms to other patients.

4.1 Recommended Isolation Precautions: Routes of Transmission

Microorganisms are transmitted by three main routes:

- Contact
- Air
- Droplet

In nosocomial infections, transmission by contact, droplet, and air plays a major role.

4.1.1 Infection by direct or indirect contact: Infection occurs through direct contact between the source of infection and the recipient or indirectly through contaminated objects.

4.1.2 Air-borne infection: Infection usually occurs by the respiratory route, with the agent present in aerosols (infectious particles less than 5 µm in diameter).

4.1.3 Droplet infection: Large droplets carry the infectious agent (greater than 5 µm in diameter).

4.2 Contact Precautions

These apply to patients with any of the following conditions and/or diseases:

4.2.1 Presence of stool incontinence (may include patients with norovirus, rotavirus, or *Clostridium difficile*), draining wounds, uncontrolled secretions, pressure ulcers, or presence of ostomy tubes and/or bags draining body fluids.

4.2.2 Presence of generalized rash or exanthemas.

4.2.3 Prioritize placement of patients in an examination room if they have stool incontinence, draining wounds and/or skin lesions that cannot be covered, or uncontrolled secretions.

4.2.4 Perform hand hygiene before touching the patient and prior to wearing gloves. Also perform hand hygiene after touching the patient and after removing gloves.

4.2.5 PPE use

a. Wear gloves when touching the patient and the patient’s immediate environment or belongings.
b. Wear a gown if substantial contact with the patient or the patient’s environment is anticipated.

c. Perform hand hygiene after removal of PPE. Use soap and water when hands are visibly soiled (for example, with blood, body fluids), or after caring for patients with known or suspected infectious diarrhea (for example, *Clostridium difficile*, norovirus).

d. Clean or disinfect the examination room accordingly.

e. Instruct patients with known or suspected infectious diarrhoea to use a separate bathroom, if available; clean or disinfect the bathroom before it can be used again.

f. IN ADDITION to Standard Precautions, use contact precautions 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 or patient care items.

4.2.6 Patient placement

A single room is preferable. Cohort only with patients who are affected by the same organism.

4.2.7 Patient transport

Limit the movement and transport of the patient from the room for essential purposes only. Where necessary ensure that adequate precautions are taken to minimize the risk of transmission to others, and contamination of environmental surfaces or equipment.

4.2.8 Patient care equipment

Where possible dedicate the use of patient care equipment to a single patient. Otherwise, ensure that all items are adequately cleaned or disinfected before use for another patient.

4.3 Droplet Transmission

In the case of droplets (large particle droplets more than 5µm in size), the mechanism of transfer of the organism is quite distinct from either direct or indirect contact transmission. Droplets are generated from the patient primarily during coughing, sneezing, and during certain procedures such as suctioning and bronchoscopy. Transmission occurs when droplets containing microorganisms generated from the infected person are propelled a short distance through the air
and deposited on the host’s conjunctivae, nasal mucosa, or mouth. Because droplets do not remain suspended in the air, special air handling and ventilation are not required.

4.3.1 Droplet precautions
These should be applied to patients known or suspected to be infected with a pathogen that can be transmitted by the droplet route. These precautions include, but are not limited to:

- Respiratory viruses (for example, influenza, parainfluenza virus, adenovirus, respiratory syncytial virus, human metapneumovirus).
- Bordetella pertussis.
- For first 24 hours of therapy: *Neisseria meningitides*, group A streptococcus.

Place the patient in an examination room with a closed door as soon as possible (prioritize patients who have excessive cough and sputum production); if an examination room is not available, the patient should be provided a face mask and placed in a separate area as far from other patients as possible while awaiting care.

4.3.2 PPE use
a. Wear a face mask, such as a procedure or surgical mask, when in close contact with the patient; don the face mask upon entering the examination room.

b. If substantial spraying of respiratory fluids is anticipated, gloves and gown as well as goggles (or face shield in place of goggles) should be worn.

c. Perform hand hygiene before and after touching the patient and after contact with respiratory secretions and contaminated objects or materials. Use soap and water when hands are visibly soiled (for example, with blood, body fluids).

d. Instruct the patient to wear a face mask when exiting the examination room, avoid coming into close contact with other patients, and practice respiratory hygiene and cough etiquette.

e. Clean and disinfect the examination room accordingly (in addition to Standard Precautions).

4.3.3 Patient placement
Single Room. Special air handling or ventilation is not necessary. Only cohort with patient/patients who are infected with the same organism.

b. Mask. Wear a mask when working within three feet of a patient with meningitis.

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

4.3.4 Patient transport

4.3.5 Limit the movement and transport of the patient from the room for essential purposes only. If transport or movement is necessary minimize dispersal of droplets from the patient.

4.3.6 Patient care equipment. Where possible, dedicate the use of patient care equipment to a single patient. Otherwise, ensure that all items are adequately cleaned/disinfected.

4.4 Air-Borne Transmission

This occurs through dissemination of either air-borne droplet nuclei (small particle residue less than 5µm in size) of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time, or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may be inhaled by a susceptible host within the same room or over a longer distance from the source patient. Microorganisms transmitted by air-borne transmission include mycobacterium tuberculosis, measles, and the varicella virus.

4.4.1 Air-borne precautions

Apply to patients known or suspected to be infected with a pathogen that may be transmitted by the air-borne route; these include, but are not limited to:

- Tuberculosis
- Measles
- Chickenpox (until lesions are crusted over)
• Localized (in immunocompromised patient) or disseminated herpes zoster (until lesions are crusted over)
  a. Have the patient enter through a separate entrance to the facility (for example, dedicated isolation entrance) if available, to avoid the reception and registration area.
  b. Place the patient immediately in an air-borne infection isolation room (AIIR).
  c. If AIIR is not available, provide a face mask (for example, procedure or surgical mask) to the patient and place the patient immediately in an examination room with a closed door.
  d. Initiate protocol to transfer patient to a healthcare facility that has the recommended infection-control capacity to properly manage the patient.

4.4.2 PPE use
  a. If substantial spraying of respiratory fluids is anticipated, gloves and gown, as well as goggles or face shield should be worn.
  b. Perform hand hygiene before and after touching the patient and after contact with respiratory secretions and/or body fluids and contaminated objects or materials. Use soap and water when hands are visibly soiled (for example, with blood, body fluids).
  c. Instruct patient to wear a face mask when exiting the examination room, avoid coming in close contact with other patients, and practice respiratory hygiene and cough etiquette.
  d. Once the patient leaves, the examination room should remain vacant for generally one hour before anyone enters; however, adequate wait time may vary depending on the ventilation rate of the room and should be determined accordingly.
  e. If staff must enter the room during the wait time, they should use respiratory protection (in addition to Standard Precautions).

4.4.3 Patient Placement
  a. Single room. Negative air pressure.
  b. Self-closing devices on doors to keep the door closed.
  c. Ventilation system should provide a means to discharge air from the room to the outside, such as an exhaust fan. Exhaust fan should be on emergency power.
d. Ensure that all doors and windows remain properly closed in the isolation room. The slit at the bottom of the door is sufficient to provide a controlled airflow path.

e. The TB isolation room needs to be checked for negative pressure.

f. Tissues Test to check negative pressure: A thin strip of tissue should be held parallel to the door with one end of the tissue in front of the gap. The direction of the tissue’s movement will indicate the direction of air movement.

4.4.4 Respiratory Protection

a. Heavy duty N95 or N97 masks should be used for Open Pulmonary Tuberculosis or suspected Pulmonary Tuberculosis, Surgical Mask for Meningococcal or suspected Meningococcal Meningitis.

b. Nonimmune or pregnant staff should not enter the room of patients known or suspected to have rubella or varicella. Persons with immunity to varicella and rubella do not require masks.

4.4.5 Patient Transport

a. Limit movement or transport of patient from the room to essential purposes only.

b. If transport or movement is necessary, minimize patient dispersal of organisms.

4.5 Isolation Policy for Special Groups of Organisms

4.5.1 MRSA (Methicillin Resistant Staphylococcus Aureus)/VRE(Vancomycin Resistant Enterococcus). The following procedures should be followed in addition to Standard Precautions:

a. Isolate the MRSA/VRE positive patient under Contact Isolation with mask category. Accommodate such patients away from those with open wounds or those who are immunocompromised.

b. Hand washing is the single most important factor in containing MRSA.

c. The bed used by the patient, and other equipment used for the patient should be disinfected before use for another patient.

d. Disinfection procedures should be carried out on a daily basis, as outlined under Isolation Procedures.

e. 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 microorganisms to the environment. The same applies to masks, gowns and gloves. Soiled linen should be placed in a laundry bag in the patient’s room or at the location where it was used. It should be placed in bags that prevent leakage.

f. Disposable dishes and utensils used for eating are not required for patients in isolation. Reusable dishes may be used for patients in isolation, because the combination of dishwasher detergents and high water temperature adequately decontaminates dishes.

g. Procedures for decolonization of the patient which include daily bath with an antimicrobial soap should be followed.

h. When the patient is discharged, terminal disinfection should be carried out as outlined under Isolation Procedures.

**DURATION OF CONTACT PRECAUTIONS**

For patients, colonized or infected with microorganisms like MRSA or VRE, three negative cultures taken one week apart can be used to discontinue contact precautions. In other patients, resolution of symptoms that lead to the isolation (such as diarrhoea in the case of *C. difficile* infection) may be a reasonable time to stop the isolation.

**4.5.2 Tuberculosis**

a. Respiratory precautions should be taken for smear-positive pulmonary tuberculosis.

b. A separate room is recommended for such patients.

c. Elective surgery for patients with active TB infection is recommended.

Elective operative procedures on patients with active pulmonary or laryngeal TB should be postponed until the patient is no longer infectious.
4.6 Visitor's Policy When Patient is in Isolation

4.6.1 The ward sisters and doctors concerned have the responsibility of informing the patients’ relatives of the measures to be taken and the importance of restriction of visitors.

4.6.2 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.

4.6.3 Hand washing after all contact with the patient has to be stressed.

4.6.4 Visitors need to wear an N95 respirator. Be aware of restrictions on visitation due to outbreak or other conditions within the facility.

4.6.5 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.

4.6.6 Children below 12 years of age should not be allowed into isolation areas.

- Visitors’ footwear, bags, and other belongings should be left outside the room.
- Visitors should not be 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.
- Any prophylactic medication or active immunization for attendants should be conducted by the physician in charge.
5. DISINFECTION AND STERILIZATION

5.1 Sterilization

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

5.1.2 Methods of Sterilization Used
   i. Steam autoclave
   ii. Hot air oven

<table>
<thead>
<tr>
<th>STERILIZATION</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Air Oven</td>
<td>160 °C for 1 hr, 180 °C for 30 min</td>
</tr>
<tr>
<td>Autoclave</td>
<td>Gravity-Displacement:</td>
</tr>
<tr>
<td></td>
<td>• 30 min holding time at 121 °C</td>
</tr>
<tr>
<td></td>
<td>• 1.1 kg/cm² or 15 lb/in² (PSI)</td>
</tr>
<tr>
<td></td>
<td>Pre-vacuum:</td>
</tr>
<tr>
<td></td>
<td>• 3 min holding time at 134 °C</td>
</tr>
<tr>
<td></td>
<td>• 2.2 kg/cm² or 32 lb/in² (PSI)</td>
</tr>
</tbody>
</table>

5.2 Disinfection

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

Disinfectants may be classified according to their ability to destroy different categories of microorganisms. The agent which destroys only vegetative bacteria is termed a low level disinfectant. If the agent is capable of rendering mycobacteria nonviable, it is termed as an intermediate level disinfectant. It is safe to assume that all the other categories of microbes which are classified more susceptible are also destroyed if efficacy against mycobacteria can be
demonstrated. High level disinfection is in other words sterilization wherein all microbial life is destroyed inclusive of endospores.

Classification of disinfectants:

5.2.1 High level disinfectants: glutaraldehyde 2 percent, ethylene oxide.

5.2.1 Intermediate level disinfectants: alcohols, chlorine compounds, hydrogen peroxide, chlorhexidine, glutaraldehyde (short-term exposure).

5.2.2 Low level disinfectants: benzalkonium chloride, some soaps.

5.3 General Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Frequency of Change</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Thermometer</td>
<td>Single for all IPD patients</td>
<td>After each use, the thermometer is disinfected by wiping with a swab saturated with 70 percent isopropyl alcohol.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For OPD: Each thermometer is kept in a separate dry holder. After each outpatient session, the thermometer holder is washed in warm water and detergent, and the thermometer is disinfected in 70 percent alcohol for 5 minutes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other methods for thermometer: immersion in glutaraldehyde, or hexachlorophene and cetrimide for at least 10 minutes.</td>
</tr>
<tr>
<td>Equipment</td>
<td>Recommendation</td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Rectal Thermometer</td>
<td>Thoroughly wash with detergent and water, then dry. Store dry and separately from oral thermometers. Disinfect with 70 percent alcohol for 5 minutes.</td>
<td></td>
</tr>
<tr>
<td>Auriscope</td>
<td>Disposable earpieces should be used where possible; when not available clean in detergent and water. Disinfect in CSSD or 70 percent alcohol for 5 minutes.</td>
<td></td>
</tr>
<tr>
<td>Ear pieces</td>
<td>Wash with hot water and detergent, store dry. Disinfect in CSSD or 70 percent alcohol for 5 minutes.</td>
<td></td>
</tr>
<tr>
<td>Patient shaving (preop)</td>
<td>Use disposable OR shaver blade, not a razor.</td>
<td></td>
</tr>
<tr>
<td>Sphygmomanometer Cuffs</td>
<td>Change covers regularly (1 per week) and wash inflatable section in detergent and water, dry thoroughly or use 70 percent alcohol. Change after each use in infected patients.</td>
<td></td>
</tr>
<tr>
<td>Bed ends and frames, Bedside locker, Cardiac table, Baby bassinets</td>
<td>Mop with 1 percent sodium hypochlorite. Allow to dry.</td>
<td></td>
</tr>
<tr>
<td>Bowls-Bedpans / Urinals</td>
<td>Heat disinfection in a rinse temperature of minimum 82°C for 2 minutes. If not possible, bed pans, urine pots, and kidney trays should</td>
<td></td>
</tr>
</tbody>
</table>
be kept in 7 percent lysol for 24 hours or 3-5 percent sodium hypochlorite solution for 30 minutes; then they are washed with soap and water and dried in sunlight.

<table>
<thead>
<tr>
<th>Bowls (washing)</th>
<th>Clean with detergent and water and store dry or as above.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning cloths, Brushes, and Equipment</td>
<td>Supplied daily from the laundry. They are provided for use and then discarded to wash. Wash brushes and buckets in detergent and water, then hang or invert to dry, then store dry. Disposable cloths are also available.</td>
</tr>
<tr>
<td>Curtain Rails</td>
<td>As for bed ends.</td>
</tr>
<tr>
<td>Hand Basins</td>
<td>Clean with detergent and water.</td>
</tr>
<tr>
<td>Lockers</td>
<td>Detergent and water as necessary and after patient discharge.</td>
</tr>
<tr>
<td>Mattresses and Pillows</td>
<td>All should be covered with an impervious plastic cover and should be wiped over with detergent and water if visibly contaminated. Mattresses should be cleaned regularly, and if contaminated, with the covers removed. If possible keep in sunlight for 24 hours. Plastic and rubber covers of mattresses and pillows should be washed with soap and water, cleaned with a suitable disinfectant, for example, 7 percent Lysol.</td>
</tr>
<tr>
<td>Mop Heads</td>
<td>Daily cleaning of mops. At the completion of each task of floor mopping, the mops should be thoroughly washed in a bucket containing HOT water and detergent. Squeeze as much water out of mop as possible and shake strands loose; leave hanging to dry in the sun if possible, or alternatively, in the cleaner’s room. The bucket should be turned upside down to allow overnight drainage. Detachable mop heads should be sent to the laundry, while reusable mops should be cleaned in hot soapy water, then left to dry ideally in the sun.</td>
</tr>
<tr>
<td>Nail Brushes</td>
<td>The use of nail brushes is discouraged as they cause skin damage that may cause an increase in bacterial flora.</td>
</tr>
</tbody>
</table>
If a nailbrush is required, a sterile, antiseptic impregnated brush may be used. Reusable brushes require autoclaving between uses.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet Bowls</td>
<td>At least daily brushing with a commercial bowl cleanser. Additional cleaning as necessary for stubborn stains.</td>
</tr>
<tr>
<td>Toilet Brushes</td>
<td>Should be rinsed in flushing water, and stored to dry.</td>
</tr>
<tr>
<td>Walls</td>
<td>Remove visible soiling with detergent as necessary.</td>
</tr>
<tr>
<td>Clinic Trolleys</td>
<td>Clean with a cloth dampened with detergent and water.</td>
</tr>
<tr>
<td>Ampoules/ vials</td>
<td>Wipe neck (ampoule) or top surface of rubber cap (vials) with a 70 percent isopropyl alcohol impregnated swab and allow to dry before opening or piercing.</td>
</tr>
<tr>
<td>Cardiac monitors,</td>
<td>If patient contact, then surface is cleaned and disinfected.</td>
</tr>
<tr>
<td>Defibrillators and ECG</td>
<td></td>
</tr>
<tr>
<td>equipment</td>
<td></td>
</tr>
<tr>
<td>Fixtures and fittings</td>
<td>In clinical areas wipe damp, dust daily with detergent solution.</td>
</tr>
<tr>
<td>Furniture and ledges</td>
<td>In known contaminated and special areas, wipe damp dust with a disinfectant solution.</td>
</tr>
</tbody>
</table>

Disinfection of Specialist Outpatient Equipment
A toothbrush may be used for cleaning the instruments. Workers should be asked to wear utility gloves while cleaning instruments.

5.4 Decontamination

The objective of decontamination is to protect individuals who handle surgical instruments and other items which have been in contact with blood or body fluids, from serious diseases. Once instruments and other items have been decontaminated, they can be safely further processed. This consists of cleaning and finally either sterilization or high-level disinfection.

5.4.1 Decontamination Tips: Use a plastic container for decontamination to help prevent:

- Dulling of sharps (for example, scissors) due to contact with metal containers.
- Rusting of instruments due to a chemical reaction (electrolysis) that can occur between two different metals (that is, the instrument and container) when placed in water.
• Do not soak metal instruments that are electroplated (that is, not 100 percent stainless steel) even in plain water for more than an hour because rusting will occur.

5.4.2 How to prepare a disinfectant cleaning solution: A disinfectant cleaning solution is one that contains both a disinfectant and a detergent (soap).

5.4.3 Precautions when using chlorine solutions: Although chlorine-containing solutions (sodium hypochlorite) are excellent, inexpensive disinfectants, they should NOT be mixed with cleaning solutions containing an acid (for example, phosphoric acid), ammonia or ammonium chloride (NH\(_2\)Cl). Doing this will release chlorine gas and other by-products that can result in temporary illness (nausea, tearing, headache or shortness of breath) to staff breathing fumes in a poorly ventilated area.

NOTE: To find out if a cleaning solution contains ammonia, first check the label. If it does not say there is ammonia, you may be able to detect ammonia when opening the product by its pungent, burning smell.

If you are exposed to chlorine gas or ammonium chloride or other unpleasant (noxious) gases with strong odors, leave the room or area immediately until the room can be completely ventilated.

5.4.3 Instructions

Step 1: Prepare a 0.5 percent chlorine solution from liquid concentrates or from chlorine compounds.

Step 2: Add enough detergent to the 0.5 percent chlorine solution or other disinfectants to make a mild, soapy cleaning solution.

5.4.4 After decontamination, instruments should be rinsed immediately with cool water to remove visible organic material before being thoroughly cleaned. For example, some healthcare facilities now keep two buckets in the procedure areas or operating rooms, one filled with 0.5 percent chlorine solution and one with water, so that the instruments can be placed in the water after soaking in the chlorine solution for 10 minutes. Although this will help to prevent corrosion, even leaving the instruments in plain water for more than 1 hour can lead to rusting.
WHO recommends 0.5 percent chlorine solution to be used for decontaminating instruments before cleaning them. The objective of **decontamination** is to protect individuals who handle surgical instruments and other items which have been in contact with blood or body fluids, from serious diseases. Once instruments and other items have been decontaminated, they can safely be further processed. This consists of **cleaning** and finally either **sterilization** or **high-level disinfection**.

### 5.5 Fumigation or Fogging

**Bacillocid Fumigation:**

5.5.1 Fumigation can be done using 2 percent Bacillocid (100 ml in 5 litres of water). The room must be kept closed for 6 hours before use by housekeeping personnel.

5.5.2 Fumigation is done only in the high-risk areas like ICU, PICU, NICU, Labour room; OT wards are excluded for fumigation (done only if required).

5.5.3 Surface cleaning for the wards may be done using 2 percent Bacillocid (100 ml in 5 litres of water).
6. **LAUNDRY SERVICES**

Soiled linen can be a source of large amounts of microbial contamination which may cause infections in hospital patients and personnel. In addition, improperly processed linen can cause chemical reactions or dermatitis in those who come in contact with the linen. A hospital’s linen service should process soiled linen such that the risk of disease to patients who may be unusually susceptible or to employees who may handle linen, is avoided. Adequate procedures for collecting, transporting, processing, and storing linen should therefore be established.

Washing with hot water and detergent has been shown to result in adequate cleaning of laundry. If needed for other reasons, bleach or ironing will reduce microbial contamination. Textile softeners added in the final rinse, though of no value in preventing infections, make linen easier to handle and rewash, and reduce lint.

6.1 **Principles and Key Steps in Processing Linen**

6.1.1 Housekeeping and laundry personnel should wear gloves and other PPE as indicated when collecting, handling, transporting, sorting, and washing soiled linen.

6.1.2 When collecting and transporting soiled linen, handle it as little as possible and with minimum contact to avoid accidental injury and spreading of microorganisms.

6.1.3 Consider all cloth items (for example, surgical drapes, gowns, wrappers) used during a procedure as infectious. Even if there is no visible contamination, the item must be laundered.

6.1.4 Carry soiled linen in covered containers or plastic bags to prevent spills and splashes, and confine the soiled linen to designated areas (interim storage area) until transported to the laundry.

6.1.5 Carefully sort all linen in the laundry area before washing.

6.2 **Recommended PPE for Processing Linen**

6.2.1 Gloves (preferably household utility gloves) and closed shoes that protect feet from dropped items (sharps) and spilled blood and body fluids, should be used when:

- Handling disinfectant solutions
- Collecting and handling soiled linen
• Transporting soiled linen
• Sorting soiled linen
• Hand washing soiled linen
• Loading automatic washers

6.2.2 Plastic or rubber apron and protective eyewear should be worn when
• Sorting soiled linen
• Hand washing soiled linen
• Loading automatic washers

6.3 Sorting Soiled Linen

6.3.1 Soiled linen should be handled as little as possible with a minimum amount of agitation to prevent gross microbial contamination of the air and of personnel handling the linen.

6.3.2 The processing area for soiled linen must be separate from other areas such as those used for folding and storing clean linen, patient care areas, and food preparation areas.

6.3.3 In addition, there should be adequate ventilation and physical barriers (walls) between the clean and soiled linen areas.

6.3.4 Safe sorting of linen is extremely important. Sorting must be carefully performed because soiled linen (large drapes and towel drapes) from the operating room or other procedure areas, frequently contain sharps (for example, scalpels, sharp-tipped scissors, hypodermic and suture needles, and sharp-tipped towel clips). In addition, bedding from patients’ rooms may contain soiled dressings and be blood-stained or wet with other body fluids.

6.3.5 Soiled linen and items containing sharps must be handled carefully by wearing protective gloves, protective eyewear and plastic or rubber apron, and should be disposed of properly. Though infrequent, infections related to sorting have been attributed to failure of hand washing and proper use of PPE.

REMEMBER: Disposable sharps (suture needles, scalpel blades, and hypodermic needles) must be placed in sharps containers located near the point of use.

Soiled linen may also contain non-infectious items such as dentures, eye glasses, and hearing aids. These items pose no threat of infection and require no special handling.
6.4 Laundering Linen

6.4.1 Washing and Drying
   a. All linen items (for example, bed sheets, surgical drapes, masks, gowns) used in the direct care of a patient must be thoroughly washed before reuse.
   b. Decontamination prior to washing is NOT NECESSARY, unless linen is heavily soiled and will be hand washed (repeated soaking of linen in chlorine, even dilute solutions, will cause the fabric to deteriorate more quickly).
   c. In addition, workers should not carry wet, soiled linen close to their bodies even if they are wearing a plastic or rubber apron.

REMEMBER: The storage time for soiled linen before washing is related to practical issues, such as available storage space and aesthetics, NOT to infection prevention concerns.

6.4.2 Washing Linen by Hand
   Step 1: Wash heavily soiled linen separately from nonsoiled linen.
   Step 2: Wash the entire item in water with liquid soap to remove all soilage, even if not visible.

REMEMBER: Pre-soak in soap, water and bleach ONLY if linen is heavily soiled.
   • Use warm water if available.
   • Add bleach (for example, 30–60 ml [about 2–3 tablespoons], of a 5 percent chlorine solution) to aid cleaning and bactericidal action.
   • Add sour (a mild acid agent) to prevent yellowing of linen, if desirable.
   Step 3: Check the item for cleanliness. Rewash if dirty or stained.
   Step 4: Rinse the item with clean water.

6.4.3 Machine Washing
   Step 1: Wash heavily soiled linen separately from nonsoiled linen.
   Step 2: Adjust the temperature and time cycle of the machine according to manufacturer’s instructions and the type of soap or other washing product being used.
Both cold and hot water washing cycles that include bleach reduce bacterial counts in the linen.

Hot water washing:
   a. Use hot water above 71°C (160 F) and soap to aid in loosening soil.
   b. Washing linen at 80-90°C for over 20 minutes with a detergent in water is an effective method for cleaning and killing most vegetative bacteria.
   c. Add bleach.
   d. Adjust the time cycle of the machine according to the manufacturer’s instructions.

Step 3: When the wash cycle is complete, check the linen for cleanliness. Rewash if it is dirty or stained. (Heavily soiled linen may require two wash cycles.)

NOTE: Uniforms and scrub suits or gowns worn by housekeeping or cleaning staff can be safely laundered at home (that is, home laundering does not increase the risk of infection to patients or staff).

Lower temperatures or cold water washing are satisfactory if the cleaning products (type of soap or detergent, amount of bleach and other additives) are appropriate and used in proper concentrations. Using cold water also saves energy.

6.5 Processing Linen

6.5.1 Drying, Checking and Folding Linen

For both hand and machine washed linens, the steps are the same.

   Step 1: Completely air or machine dry before further processing. Air dry in direct sunlight, if possible, keeping the fabric off the ground, away from dust and moisture.
   Step 2: After linen items are totally dry, check for holes and threadbare areas. If these are present, the item must be discarded or repaired before reuse or storage. (If there are any holes or many repaired areas, the item should not be used as a drape. It can be cut into pieces to be used as cleaning rags.)

Setting standards helps determine when drapes (lap sheets) or linen wrappers should be made into rags. For example, a drape should have no more than 5 patches per 1 foot (12 inches) square area or when 20 percent of the drape is covered with patches. Patches should be avoided because
they increase the thickness of the linen item and decrease steam penetrability if sterilization is required.

Step 3: Clean and dry linen should be ironed as needed and folded. For example, if a clean, dry drape is acceptable, the drape can be ironed before placing it on a shelf or in a container for storage.

NOTE: If surgical drapes are to be sterilized, do not iron. Ironing dries out the material, making autoclaving more difficult. If sterile linens are required, prepare and sterilize wrapped packs.

6.5.2 Sterile Linen

Only linen used in procedures requiring sterile technique should be sterilized. This process is done in the TSSU and CSSD.

If tap water is contaminated, use water that has been boiled for 10 minutes and filtered to remove particulate matter (if necessary), or use chlorinated water, that is, water treated with a dilute bleach solution (sodium hypochlorite) to make the final concentration 0.001 percent.

6.6 Storing, Transporting, and Distributing Clean Linen

6.6.1 Storing Clean Linen
a. Keep clean linen in clean, closed storage areas.
b. Use physical barriers to separate folding and storage rooms from soiled areas.
c. Keep shelves clean.
d. Handle stored linen as little as possible.

6.6.2 Transporting Clean Linen
a. Clean and soiled linen should be transported separately.
b. Containers or carts used to transport soiled linen should be thoroughly cleaned before being used to transport clean linen. If different containers or carts are used to transport clean and soiled linen, they should be labelled.
c. Clean linen must be wrapped or covered when transporting to avoid contamination.

6.6.3 Distributing Clean Linen
a. Protect clean linen until it is distributed for use.
b. Do not leave extra linen in patients’ rooms.
c. Handle clean linen as little as possible.
d. Avoid shaking clean linen. It releases dust and lint into the room.
e. Clean soiled mattresses before putting clean linen on them
7. HOUSEKEEPING

7.1 General Principles

Routine cleaning is necessary to ensure a hospital environment which is visibly clean and free from dust and soil.

7.1.1 90 percent of microorganisms are present within “visible dirt”, and the purpose of routine cleaning is to eliminate this dirt. Neither soap nor detergents have antimicrobial activity, and the cleaning process depends essentially on mechanical action.

7.1.2 The frequency of cleaning and cleaning agents used for walls, floors, windows, beds, curtains, screens, fixtures, furniture, baths and toilets, and all reused medical devices must be specified.

7.1.3 Methods must be appropriate for potential contamination, and the necessary level of asepsis. This may be achieved by classifying areas into one of four hospital zones:

Zone A: No patient contact. Normal domestic cleaning is recommended (for example, administration, and library).

Zone B: Care of patients who are not infected, and not highly susceptible, should be done by a procedure that does not raise dust. Dry sweeping or vacuum cleaners are not recommended. The use of a detergent solution improves the quality of cleaning. Disinfect any areas with visible contamination with blood or body fluids prior to cleaning.

Zone C: Infected patients (isolation wards). Clean with a detergent or disinfectant solution, with separate cleaning equipment for each room.

Zone D: Highly susceptible patients (protective isolation) or protected areas such as operating suites, delivery rooms, intensive care units, premature baby units. Clean using a detergent or disinfectant solution and separate cleaning equipment.

All horizontal surfaces in Zones B, C, and D, and all toilet areas should be cleaned daily.

7.1.4 Disinfectant or detergent formulations registered with the Environment Protection Agency (EPA) are used for environmental surface cleaning, but the actual physical removal of microorganisms and soil by wiping or scrubbing is as important, if not more so, than any antimicrobial effect of the cleaning agent used.
7.1.5 Housekeeping surfaces can be divided into two groups – those with minimal hand contact (for example, floors, and ceilings), and those with frequent hand contact (“high touch surfaces”).

7.2 Housekeeping in Wards

7.2.1. The floor should be cleaned at least three times in 24 hours. Detergents and copious amounts of water should be used during one cleaning. Germ-free solution (floor cleaning) or any other equivalent disinfectant may be used to mop the floor for the remaining time.

7.2.2. The walls should be washed with a scrubber, using detergent and water whenever necessary.

7.2.3. High dusting should be done once in a month and whenever necessary.

7.2.4. Fans and lights should be cleaned with soap and water once a month. This should be handled by the electrical department.

7.2.5. All work surfaces should be disinfected by wiping with 2 percent bacillocid and then cleaned with detergent and water twice a day.

7.2.6. Cupboards, shelves, beds, lockers, IV stands, stools and other fixtures should be cleaned with detergent and water once a week (by Nursing Aides).

7.2.7. Curtains should be changed once a month and once every 15 days in critical areas or whenever soiled.

7.2.8. In certain high-risk areas such as the ICU, more frequent changes of curtains are required.

7.2.9. Patients’ cots should be cleaned every day with 0.5 percent bacillocid solution. Orite should be used when soiled with blood or body fluids. In the isolation ward, cleaning should be done daily.

7.2.10. Storerooms should be mopped once a day and high dusted once a month.

7.2.11. Bathroom floors should be scrubbed with a broom and cleaning powder once a day and cleaned at frequent intervals. For disinfection, phenol can be used.

7.2.12. Toilets should be cleaned with a brush using a detergent thrice daily. Disinfection may be done using phenol. A stain removing liquid can be used to remove stains.

7.2.13. Wash basins should be cleaned with cleaning powder every morning and with a stain removing liquid once a month.
7.2.14. Regular air-conditioning maintenance is essential. The electrical section should draw up a protocol for this.

7.2.15. Follow proper procedures for effective uses of mops, cloths, and solutions.

7.2.16. Prepare floor cleaning solutions daily or as needed, and replace with fresh solution frequently.

7.2.17. Clean mop heads daily, at the beginning and end of each day.

7.2.18. The mop head should be changed every day and the wash sent to the laundry every day.

7.2.19. A laundered mop head to be used in the morning.

7.2.20. The water should be changed twice in a room when it appears to be dirty.

7.2.21. When cleaning patient rooms or contaminated areas at any time, washing laundry or instruments, collecting and disposing of trash, or using any type of cleaner (cleaning equipment), personnel must wear utility gloves and protective shoes. Wear a mask, rubber apron, and goggles if there are spills or when expecting anything to splash.

7.2.22. For mopping floors and cleaning blood spills, a housekeeping trolley should be used.

7.3  Patient Linen

7.3.1. Bed linen may be changed once in two days and whenever soiled with blood and body fluids.

7.3.2. Patients’ gown should be changed every day and whenever soiled with blood and body fluids.

7.3.3. Dry dirty linen should be sent to the laundry for regular wash.

7.3.4. Linen soiled with blood or body fluids and all linen should be packed in leak-proof bags and sent for primary wash.

7.4  Mattresses And Pillow Covers

7.4.1. Clean and disinfect moisture-resistant mattress covers between patient uses by using bacillocid.

7.4.2. If the mattress cover is completely made of fabric, change these covers and launder before patient use.

7.4.3. Launder pillow covers and washable pillows in the hot water cycle before patient use or when they become contaminated with body substances.
7.4.4. Rubber sheets: Rubber sheets should be cleaned with soap and water, disinfected, dried, powdered, rolled and stored.

7.4.5. Thermometer: In areas where a common thermometer is used like OPDs, it should be washed with plain tap water and disinfected between patients with an alcohol swab.

7.4.6. Plastic buckets and dustbins should be cleaned with detergent powder once every week.

7.4.7. Miscellaneous items: K basins, bed pans, urinals, should be cleaned with detergent powder and water once in a week.

7.5 Housekeeping in Isolation Ward

7.5.1. Before admission: The admitting physician should inform the Sister In-charge of the Isolation Ward at least one hour prior to admission, mentioning the diagnosis, sex, and the general state of the patient.

7.5.2. Prerequisites for Isolation
a. A provision for disinfecting of the hands is ideally placed prominently at the entrance of an isolation room.
b. The mattress and pillow should have an impervious cover such as mackintosh so that it can easily be damp dusted.
c. Clean gowns should always be available.
d. Separate urinals, bed pans should be used for each patient.
e. A bin lined with an appropriate colour-coded plastic cover should be available in each room for disposal of medical waste.
f. Rooms should be isolated according to disease conditions and should be well lit.

7.5.3. Cleaning Procedure for Isolation Ward
a. Linen should be stripped from the bed taking care not to shake the linen during this action. The linen should be bagged properly before being sent to the laundry in a leak-proof bag.
b. All other articles like IV stands and furniture should be cleaned with detergent and disinfected with 2 percent bacillocid.
c. Walls should be cleaned with detergent and disinfected with 2 percent bacillocid.
d. Bathrooms should be cleaned with detergent and disinfected with phenol.
7.5.4 At Discharge (terminal disinfection)
   a. The pillows and mattress should be cleaned with detergent, disinfected with 2 percent bacillocid and dried in sunlight for 24 hours.
   b. Bed sheets, curtains, gowns, and dusters must be removed, and then sent to the laundry.
   c. After disinfection, wash the room, walls, windows, doors, bathrooms, sink and furniture with soap solution after thorough high dusting in that cubicle.
   d. 1 percent sodium hypochlorite solution should be used to soak bed pan, urinal, and kidney basin for 15-20 minutes, wash with detergent, and dry.
   e. Bath basins, multibin, bucket, jugs, mugs should be washed with solution and dried in sunlight, if possible.
   f. Rubber sheets should be cleaned with detergent and dried.
   g. Soak the thermometer tray and its contents in 2 percent bacillocid after cleaning.
   h. Fumigate with bacillocid if indicated.

7.6 Housekeeping in Operating Theatre (OT)

The OT complex should be absolutely clean at all times. Dust should not accumulate on any part of the OT. Soap solution is recommended for cleaning floors and other surfaces. Operating rooms (ORs) should be cleaned daily and the entire OT complex cleaned thoroughly once a week.

7.6.1 Before the start of the first case
   a. Wipe all furniture, equipment, room lights, suction points, OR table, surgical light reflectors, other light fittings, slabs with 2 percent bacillocid solution. This should be completed at least one hour before the surgery.

7.6.2 After each case
   a. Linen: Gather all soiled linen and towels that are blood-stained, pack in a leak-proof bag or closed bin, and transport to laundry suite for wash. Other linen should also be transported to the laundry suite. Appropriate PPE should be used while handling soiled linen. Disposable drapes should be disposed of in the Biomedical Red bag.
b. Instruments: Used instruments should be cleaned immediately by the scrub nurse and the attender. All the instruments should first be decontaminated in 1 percent sodium hypochlorite solution for 20 minutes and then soaked in a multienzyme cleaner for 30 minutes followed by scrubbing with a brush using liquid soap in warm water and then dried. They should then be sent for sterilization to CSSD.

c. Environment: Wipe used equipment, furniture, OR table 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.

7.6.3. After the last case

The same procedure as mentioned above should be followed. In addition, the following should be carried out:

a. Wipe overhead lights, cabinets, waste receptacles, equipment, and furniture with a detergent.

b. Wash floor and wet mop with liquid soap and then remove water, and wet mop with a disinfectant solution.

c. Clean the storage shelves, scrub and clean sluice room.

7.6.4. Surface cleaning in OT

a. Surface Cleaning: All surfaces in OT have to be cleaned with 2 percent bacillocid thoroughly in between cases.

b. Biohazard Cleaning: After biohazard or infected cases, all surfaces must be cleaned with 2 percent bacillocid spray.

7.6.5. Primary Disinfection

Following surgery, primary decontamination should be performed before forwarding to Laundry or CSSD. Use freshly prepared disinfectant and discard disinfectant after use. Persons handling linen should be adequately protected with gloves.

7.6.6. Boyles Apparatus

a. Surface Cleaning: Use 2 percent bacillocid.

b. Biohazard Cleaning: Disinfect with 2 percent bacillocid.

7.6.7. The air-conditioner filter should be washed once a week before refixing.

7.6.8. Complete servicing for OT should be done for a week, once a year. Each OT is done in rotation.
7.7 **Housekeeping in Intensive Care Unit, Labor Room, and Postpartum Recovery Room**

In addition to routine cleaning it is suggested that thorough cleaning with soap and water should be done once a week. A brush can be used in hard-to-reach areas.

7.8 **Routine Cleaning Procedure**

7.8.1. Remove all portable equipment.
7.8.2. Damp wipe lights and other fixtures with detergent.
7.8.3. Clean doors, hinges, facings, glass inserts, and rinse with a moistened cloth.
7.8.4. Wipe down walls with clean cloth and detergent.
7.8.5. Scrub floor using detergent and water.

7.9 **Stainless Steel Surfaces**

7.9.1. Wash with detergent, rinse and clean with warm water.
7.9.2. Replace portable equipment: clean wheel castors by rolling across towelling saturated with detergent.
7.9.3. Wash (clean) and dry all furniture and equipment, such as suction holders, foot and sitting stools, Mayo stands, IV poles, basin stands, X-Ray view boxes, hamper stands, all tables in the room, hoses to oxygen tank, kick buckets and holder, and wall cupboard.
7.9.4. After washing floors, allow disinfectant solution to remain on the floor for 5 minutes to ensure destruction of bacteria.
7.9.5. Do not remove or disturb delicate equipment.
7.9.6. While wiping cabinets, see to it that the solution does not get inside and contaminate sterile supplies.
7.9.7. Operating rooms and scrub rooms should never be dry dusted.

7.10 **Maintenance and Repairs**

7.10.1 Machinery and equipment should be checked, cleaned and repaired routinely on Sundays. Urgent repairs should be carried out at the end of the days list.
7.10.2 Air-conditioners and suction points should be checked, cleaned and repaired on a weekly basis.
7.10.3 Preventive maintenance on all theatre equipment should be carried out every Saturday, and major work to be done at least once a year.
7.10.4 Surveillance of housekeeping procedures should be done on a routine basis every month by the HIC Nurse as defined by the SHCO.
7.11 Cleaning Methods for Blood Spills and Body Substances

7.11.1 Clean spills with a 0.5-1.0 percent chlorine solution.

7.11.2 Clean spills of blood, body fluids and other potentially infectious fluids immediately:
   a. Cover the area immediately with any absorbent material like tissue paper, old newspaper, and gauze piece.
   b. For small spills: While wearing utility or examination gloves, remove visible material using a cloth soaked in a 0.5-1.0 percent chlorine solution, then wipe clean with a disinfectant cleaning solution.
      For large spills: While wearing gloves, flood the area with a 0.5-1.0 percent chlorine solution, mop up the solution, and then clean as usual with detergent and water.

NOTE: Wait for a few minutes, preferably 15 minutes after pouring chlorine solution.

After disinfection thorough cleaning of the floor with soap and water is necessary.

The formula for making a dilute chlorine solution from any concentrated hypochlorite solution is:
- Check concentration (percentage of concentrate) of the chlorine product you are using.
- Determine total parts water needed using the formula below.

\[
\text{Total Parts (TP) water} = \frac{\% \text{ Concentrate}}{\% \text{ Dilute}} - 1
\]

- Mix 1 part concentrated bleach with total parts water required.

**Example:** Make a dilute solution (0.5 percent) from 5 percent concentrated solution.

Step 1: Calculate TP water: \[
\frac{5.0\%}{0.5\%} - 1 = 10 - 1 = 9
\]

Step 2: Take 1 part concentrated solution and add to 9 parts water.

**Formula for Making Chlorine Solutions from Dry Powders**
- Check concentration (percentage of concentrate) of the powder you are using.
- Determine quantity of bleach needed using the formula below.

\[
\text{Bleach (g/l) = } \frac{\% \text{ Dilute}}{\% \text{ Concentrate} } \times 1000
\]
- Mix measured amount of bleach powder with 1 litre of water.

**Example:** Make a dilute chlorine-releasing solution (0.5 percent) from a concentrated powder (35 percent).

Step 1: Calculate g/l: \( x \times 1000 = \left[ \frac{0.5 \text{ percent}}{35 \text{ percent}} \right] \times 1000 = 14.2 \text{ g/l} \)

Step 2: Add 14.2 g (approximately 14 g) to 1 litre of water.

WHO (1989) recommends 0.5 percent chlorine solution for decontaminating instruments and surfaces before cleaning. In addition, because of the potentially high load of microorganisms and/or other organic material (blood or other body fluids) on soiled items, using a 0.5 percent solution for decontamination provides a wider margin of safety.

### 7.12 Cleaning Soiled and Contaminated Cleaning Equipment

Step 1: Decontaminate cleaning equipment that has been contaminated with blood or body fluids by soaking it for 10 minutes in a 0.5 percent chlorine solution or other locally available and approved disinfectants.

Step 2: Wash cleaning buckets, cloths, brushes and mops with detergent and water daily, or sooner if visibly dirty.

Step 3: Rinse in clean water.

Step 4: Dry completely before reuse. (Wet cloths and mop heads are heavily contaminated with microorganisms.)

**NOTE:** Hot water may be used as an alternative to disinfection for environmental cleaning for some objects.

<table>
<thead>
<tr>
<th>Disinfection with hot water</th>
<th>Temperature</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sanitary Equipment</td>
<td>80 degree Celsius</td>
<td>45–60 seconds</td>
</tr>
<tr>
<td>2. Linen</td>
<td>70 degree Celsius</td>
<td>25 minutes</td>
</tr>
<tr>
<td>or 95 degree Celsius</td>
<td>10 minutes</td>
<td></td>
</tr>
</tbody>
</table>
8. BIOMEDICAL WASTE MANAGEMENT

Hospital waste is a potential reservoir of pathogenic microorganisms and requires appropriate, safe and reliable handling. The main risk associated with infection is sharps contaminated with blood.

There should be a person or persons responsible for the organization and management of waste collection, handling, storage and disposal. Waste management should be conducted in coordination with the infection control team.

Steps in the management of hospital waste include:

- Generation
- Segregation/separation
- Collection
- Transportation, storage
- Treatment
- Final disposal

Waste management practices must meet national and local requirements; the following principles are recommended as a general guide:

8.1 Principles of Waste Management

8.1.1 Develop a waste management plan that is based on an assessment of the current situation and which minimizes the amount of waste generated.

8.1.2 Segregate clinical (infectious) waste from nonclinical waste in dedicated containers.

8.1.3 Transport waste in dedicated trolleys.

8.1.4 Store waste in specified areas with restricted access.

8.1.5 Collect and store sharps in sharps containers. Sharps containers should be made of plastic or metal and have a lid that can be closed. Mark the storage areas with a biohazard symbol.
8.1.6 Ensure that the carts or trolleys used for the transport of segregated waste collection are not used for any other purpose – they should be cleaned regularly.

8.1.7 Identify a storage area for waste prior to treatment or being taken to final disposal area.

**Treatment of hazardous and clinical/infectious waste**

Each healthcare facility should identify a method for the treatment of clinical/infectious waste. This may consist of transportation of infectious waste to a centralized waste treatment facility or on-site treatment of waste.

a. The biomedical waste of a hospital should be outsourced to an authorized contractor for the management and handling of biomedical waste as designated by the State Pollution Control Board.

b. Biomedical waste refers to any waste which is generated during the diagnosis, treatment or immunization of human beings or animals, or in research activities pertaining to or producing or testing of biological components including categories mentioned in Biomedical Waste Management Rules 1998 or 2011.

c. Proper segregation and collection of biomedical waste from all patient care areas of the hospital should be implemented and monitored. The Biomedical Waste Treatment Facility should be outsourced to an Authorized Contractor.

d. Use appropriate PPE when segregating, packing, transporting, and storing biomedical waste.

e. Biomedical waste should be transported in a closed container.

**HIC PROTOCOL for biomedical waste disposal should be followed as defined in the State Guidelines. Different categories of waste are disposed of in different color coded bags as defined by the Pollution Control Board.**
Figure 6: Treatment of Hazardous and Nonhazardous Waste

9. PROTOCOL FOR NEEDLE-STICK INJURY

9.1 Immediate

9.1.1 For Injury: Wash with soap and running water.
9.1.2 For Nonintact Skin Exposure: Wash with soap and water.
9.1.3 For Mucosal Exposure: Wash thoroughly.

9.2 Reporting

All sharps injury and mucosal exposure MUST be reported to the immediate supervisor, and to the Casualty Medical Officer to evaluate the injury. Details of the needle-stick injury should be filled by the supervisor and handed over to the HIC nurse for further follow-up.

9.3 Management

Management is on a case to case basis.

9.4 Follow-Up

Follow-up and statistics of needle-stick injury are done by the HIC nurse on a weekly basis. This information is presented at the HICC meeting and preventive actions to avoid needle-stick injuries, if any, are recorded.

9.5 Post-HIV Exposure Management / Prophylaxis (PEP)

It is necessary to determine the status of the exposure and the HIV status of the exposure source before starting post exposure prophylaxis (PEP).

9.6 Immediate measures

9.6.1 Wash with soap and water.
9.6.2 Do not use antiseptic or bleach.

9.7 Next steps

9.7.1 Prompt reporting
a. All needle-stick/sharp injuries should be reported to the immediate supervisor, and then to the Casualty Medical Officer.

b. An entry is made in the Needle-Stick Injury Register in the Casualty.

Post exposure treatment should begin as soon as possible preferably within two hours, and is not recommended after 72 hours. PEP is not needed for all types of exposures.

9.8 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 where the exposure/infection has occurred.
10. CENTRAL STERILE SUPPLIES DEPARTMENT (CSSD)

The purpose of the CSSD is to provide all the required sterile items in order to meet the needs of all patient care areas.

10.1 Items Supplied by CSSD

10.1.1 Instrument packs for various procedures
10.1.2 Dressing pad
10.1.3 Dressing packs, cotton and gauze

10.2 Protocol

The central processing area(s) ideally should be divided into at least three zones: soiled zone (decontamination), clean zone (packaging), and sterile zone (sterilization and storage).

10.2.1. Soiled zone: In the decontamination area reusable contaminated supplies (and possibly disposable items that are reused) are received, sorted, and decontaminated.

10.2.2. Clean zone: The packaging area is for inspecting, assembling, and packaging clean, but not sterile, material.

10.2.3. Sterile zone: The sterile storage area should be a limited access area. Following the sterilization process, medical and surgical devices must be handled using aseptic technique in order to prevent contamination. Medical and surgical supplies should not be stored under sinks or in other locations where they can become wet. Sterile items that become wet are considered contaminated because moisture brings with it microorganisms from the air and surfaces. Closed or covered cabinets are ideal but open shelving may be used for storage. Any package that has fallen or been dropped on the floor must be inspected for damage to packaging and contents (if the items are breakable). If the package is heat-sealed in impervious plastic and the seal is still intact, the package should be considered not contaminated. If undamaged, items packaged in plastic need not be reprocessed.

10.3 Collection and Distribution of Items

10.3.1. All items should be collected and distributed twice a day, if necessary whenever required.
10.3.2. CSSD items should be transported to the wards in a manner so as to ensure that sterility of the items is maintained.

10.3.3. When the items are collected back from the patient care areas the quantity of each item that is collected is recorded in a book. These items are transported to CSSD. Another set of personnel transport sterile items to the various wards, depending on the requirement.

10.3.4. Items which have crossed the expiry date should be returned and new ones obtained.

10.4 Monitoring Sterilization

There are two ways of monitoring sterilization of CSSD items:

10.4.1. All sterile items can be monitored by using the chemical indicator tape which shows that the item has been adequately sterilized.

10.4.2. In addition to chemical sterilization, microbiological surveillance may be conducted using B. stearothermophilius spore suspension which is kept in the autoclave to check the efficiency.

10.5 Moist Heat Sterilization

10.5.1. This is used for steel instruments, latex rubber tubes, gloves, dressing packs, cotton and gauze.

10.5.2. CSSD has electric autoclaves, gravity type of autoclaves, and a high pressure autoclave. The high pressure autoclaves operate using a central steam supply.

10.6 Recommended Practice Guidelines for All Types of Steam Sterilizers

10.6.1. Device Preparation

Devices should be prepared for sterilization in the following manner:

a. Clean, and remove excess water.

b. Jointed instruments should be in the open or unlocked position.

c. Multipiece or sliding pieces should be disassembled unless otherwise indicated by the device manufacturer.

d. Devices with concave surfaces that retain water should be placed in a manner such that condensate does not collect.
e. Instruments with lumens should be moistened with distilled water immediately prior to sterilization.

f. Heavy items should be arranged so as to not damage lighter more delicate items.

g. Sharp instruments should have tips protected.

10.6.2. Packaging
Packaging materials for steam sterilization should:

a. Be validated for steam sterilization.

b. Contain no toxic ingredients or dyes.

c. Be capable of withstanding high temperatures.

d. Allow air removal from packages and contents.

e. Permit sterile contact with the package contents.

f. Permit drying of the package and contents.

g. Prevent the entry of microbes, dust, and moisture during storage and handling.

h. Have a proven and tamper-proof seal.

i. Withstand normal handling and resist tearing or puncturing.

10.6.3. Unloading
Upon completion of the cycle, the operator responsible for unloading the sterilizer should:

Review the sterilizer printout for the following:

a. Correct sterilization parameters.

b. Cycle time and date.

c. Cycle number matches the lot control label for the load.

d. Verify and initial that the correct cycle parameters have been met.

e. Examine the load items for:

   • Any visible signs of moisture.
   • Any signs of compromised packaging integrity.

Printed records of each cycle parameter (that is, temperature, time) should be retained in accordance with the healthcare settings requirements.
10.6.4. Load Cool-Down

Upon removal of the sterilized load the operator should:
   a. Visually verify the results of the external chemical indicators.
   b. Allow the load to cool to room temperature (the amount of time for cooling depends on the devices that have been sterilized).
   c. Ensure cool down occurs in a traffic-free area without strong warm or cool air currents.

10.7 Troubleshooting - Wet Pack Problems

Packages are considered wet when moisture in the form of dampness, droplets or puddles is found on or within a package. There are two types of wet packs; those with external wetness and those with internal wetness. Sterility is considered compromised and the package contents considered contaminated when wet packs are found. There are several causes of wet packs. The following is a list of possible causes:

10.7.1 Packages are improperly prepared or loaded incorrectly.
10.7.2 Condensation drips from the sterilizer cart shelf above the item.
10.7.3 Condensation drips from rigid sterilization containers placed above absorbent packaging.
10.7.4 Condensate blows through the steam lines into the sterilizer chamber.
10.7.5 Instrument or basin sets are too dense or lack absorbent material to wick moisture away.
10.7.6 Linen packs are wrapped too tightly.
10.7.7 Sterilization containers with a low metal-to-plastic ratio.

10.8 Flash Sterilization / Immediate Use Steam Sterilization

This form of sterilization is used only when there is an immediate requirement for items to be sterilized. Containers used for Immediate Use Steam Sterilization of devices should be validated for that purpose.

Immediate Use Steam Sterilization should not be used to:
   a. Sterilize implants
   b. Sterilize complete sets or trays of instruments

10.8.1. Compensate for inventory shortages or scheduling difficulties.
10.9 Quality Assurance

10.9.1. All documentation should be dated and signed by the person completing the documentation and/or verifying the test results.

10.9.2. Documentation of the sterilization process should include:

10.9.3. Package label:
   a. Name of device (when necessary).
   b. Initials of technician packaging the device.
   c. Lot control information which includes a load or cycle number, sterilizer number, and the date of sterilization.
   d. Detailed list of sterilizer load contents
   e. Date, time, and results of all tests performed (for example, printout, Chemical Indicator, Biological Indicator, Bowie-Dick, leak test).
   f. Sterilizer physical parameters should be verified by the individual responsible for releasing the load prior to load release. Verification should be documented (for example, printout is initialed).
   g. If any indicator fails, the failure should be investigated. Loads may be recalled according to the results of the investigation. All actions associated with an investigation should be documented.
   h. A process to address any indicator failure, for example, printout, chemical indicator or biological indicator.
   i. Record retention according to corporate administrative directives and/or quality management system requirements.

10.10 Recall Procedure

As soon as CSSD staff receive the result from the microbiologist about biological indicators not being satisfactory, the CSSD In-charge or Staff nurse should take the following action:

   a. Inform to the Chief Nursing Officer and Hospital Infection Control Committee.
   b. Check the autoclave number, batch number, and expiry date.
   c. Trace out the department which issued the items and the specific date.
   d. Inform the ward in-charge regarding the biological indicator growth.
e. Take back all the items to CSSD.
f. Rewash all the articles and repack for reautoclave.
g. Clean the autoclave thoroughly with clean water.
h. Sterilize the items with Bowie-Dick and biological indicator.
i. Wait for the report; only then issue the items to the wards.
j. Update the register.
11. OUTBREAK INVESTIGATION

The occurrence of two or more epidemiologically related infections caused by an organism of the same type relating to place and time is defined as an outbreak. Once the factors causing the occurrence of the outbreak are defined, appropriate control and prevention measures can be formulated.

In an outbreak investigation, data are collected, collated according to time, place and person, and analysed to draw inferences. This may be done according to the following steps:

11.1.1. Identify the outbreak.
11.1.2. Describe the outbreak.
   • Formulate a hypothesis on the type of infection.
   • Identify the source and route of infection.
     Suggest and implement initial control measures.

11.1.3. Control measures and follow-up
   • Immediate control measures
   • Specific control measures

11.1.4. Evaluation and efficacy of control measures

11.1.5. Communication
12. **HIGH-RISK AREAS AND HIGH-RISK PROCEDURES**

12.1 **Introduction**

12.1.1. Nosocomial Infection rates in the intensive care units are higher than in the general population. This is related to severity of illness and greater susceptibility to acquiring microorganisms related to the ICU.

12.1.2. ICUs have higher rates of invasive procedures, patients on ventilators for prolonged periods, and a large category of health workers. The risk of transmission of Potentially Pathogenic Microorganisms (PPMs) is very high.

12.1.3. In the ICU, during urgent critical care interventions there is often a possibility of suboptimal infection control practices.

12.2 **Five Main Infection Control Manoeuvres to Control Transmission**

12.2.1. Hand hygiene

12.2.2. Personal protective equipment (gloves, gowns and aprons)

12.2.3. Isolation where required

12.2.4. Proper handling and decontamination of patient care equipment

12.2.5. Proper handling of patient care environment.

Certain areas of the hospital are identified as high-risk areas for acquisition and transmission of pathogenic microorganisms. The Manual has identified the following high-risk areas and high-risk procedures which have a high potential for healthcare associated infections.

12.3 **General Principles to be Followed in High-Risk Areas**

12.3.1 Standard precautions: Standard precautions as appropriate should be followed by all staff while handling patients or samples (refer to the section on Standard Precautions in Healthcare described in this manual).

12.3.2 Hand washing: Importance of this cannot be overemphasized in the ICU setting. Use hand rubs with 2 percent chlorhexidine between patients and clinical hand wash solution (4 percent chlorhexidine) prior to invasive procedures.

12.3.3 Aprons and gloves: Wear aprons and gloves when necessary. Remove and discard them into the appropriate bin immediately after each patient. Use gloves when in contact with body fluids (examination gloves) and invasive procedures (sterile gloves).
12.3.4 Mask: Wear a mask while examining patients with potential air-borne pathogens. Wearing a mask is mandatory when in isolation areas.

12.3.5 Goggles: Use goggles when you anticipate a splash or when handling bio hazardous materials.

12.4 Some of the High-Risk Areas

12.4.1. Intensive care units
   - Medical: Paediatric, Neonatal
   - Surgical: Postoperative ICU

12.4.2. Operation theatres

12.4.3. Obstetrics and labour room

12.4.4. Emergency Medicine

12.4.5. Hemodialysis unit

12.4.6. CSSD

12.4.7. Laboratories

12.4.8. Gastroendoscopy unit

12.4.9. Blood bank

12.4.10. Dental clinic

12.4.11. Hemodialysis and Renal transplantation

12.5 Surveillance of High-Risk Areas

High-risk areas are an important area of targeted surveillance in the SHCO.

12.5.1. The staff and doctors in high-risk areas should actively liaise with the Infection Control Department in monitoring reporting and analysing infections.

12.5.2. Surveillance is done actively in the following cases:
   a. Hospital acquired infections:
      - Catheter Associated Urinary Tract Infection (CAUTI)
      - Central Line Associated Bloodstream Infection (CLABSI)
      - Surgical site infection (SSI)
      - Ventilator associated pneumonia (VAP)
   b. Bed sore analysis
c. Needle-stick injuries

d. Multidrug-resistant organisms:
   - Methicillin Resistant Staphylococcus Aureus (MRSA)
   - Methicillin Resistant Staphylococcus Epidermidis (MRSE)
   - Vancomycin Resistant Enterococci (VRE)

e. Environmental surveillance
13. DIETARY AND KITCHEN SERVICES

13.1 Hygiene and Infection Control

13.1.1. Food service establishments are frequently identified as places that lead to outbreaks of food-borne diseases. The need for adequate food hygiene facilities is of paramount importance. Assuring safe food requires management and control of microbiological, chemical, and physical hazards.

13.1.2. Staff hygiene / health: Everyone who handles, prepares, processes and distributes food must understand the principles of basic food hygiene and the need for trained personnel and catering hygiene.

a. All food handlers should complete a pre-employment health check-up which includes stool routine examination, and past history of enteric fever.

b. All food handlers with infectious diarrhoea, GI infection, must stop working and return only after communicable disease personnel certify their fitness. Hair and nails of all food handlers should be checked weekly and recorded.

c. Routine medical check-up should be done twice in a year.

11.1.3 Inspection: Daily inspection of kitchen and food handling areas is a must for hygiene, and reports documented.

11.1.4 Kitchen: Cleaning procedures should be done on a regular basis.

11.1.5 Food stores should be generally clean and uncluttered with good access for cleaning. Shelves should be easy to clean.

11.1.6 Any food capable of supporting microbial growth should be stored either below 8°C or above 65°C. Cooked-chilled food should be stored below 3°C.

11.1.7 Food trolleys should be used to make transport easier and reduce movement of people.

11.1.8 Trolleys should be cleaned daily or more frequently if contamination occurs.

11.1.9 A cleaning schedule for the kitchen is suggested so as to ensure that hygiene is maintained.

11.1.10 Storage:

a. All dry ingredients should be cleaned before they are stored in storage containers (plastic bins).
b. All green leafy and other vegetables should be stored in the refrigerator and thoroughly washed in water before usage.

11.1.11 Milk should be purchased on a daily basis and stored in the refrigerator at (8° C).

11.1.12 Food should be prepared half an hour before service and stored in a bain-marie at a temperature of 75–100°C.

11.1.13 Vegetables like potatoes, onion, other root vegetables, should be stored in plastic trays in the store room.

11.1.14 Other vegetables should be bought at an interval of 2-3 days, as and when there is a requirement. They should be stored in the refrigerator and washed thoroughly when taken out for cooking.

11.1.15 Ingredients (all the dry ingredients) like rice, broken wheat, pulses should be washed twice in cold water and then in hot water before cooking.

13.2 Waste Disposal

13.2.1. Waste should be identified and collected in colour coded containers.

13.2.2. Left over waste, vegetable peels should be collected in the green container and sent for disposal thorough municipal authorities.