Guidelines on Infection Control Practice in the Clinic Setting

ISOLATION PRECAUTIONS

Isolation Precautions is a two-tier system that applies to healthcare environment in hospital and community. The first tier Standard Precautions is designed for all patients regardless of their diagnosis, that mainly prevent the transmission of microorganisms via contact of blood, body fluid, secretion, excretion, mucous membrane and non-intact skin. In conditions that Standard Precautions does not adequately confer protection against acquisition of infections e.g. some respiratory infections, the second tier Transmission-Based Precautions is necessary in addition to Standard Precautions.

Standard Precautions

Standard Precautions define all the steps that should be taken to prevent spread of infection from person to person or from contaminated environmental surfaces/healthcare items, when there is an anticipated contact with:

- Blood
- Body fluids
- Secretions
- Excretions, such as urine and faeces (not including sweat) whether or not they contain visible blood
- Non-intact skin, such as an open wound
- Mucous membranes, such as the mouth cavity

Standard Precautions is designed to reduce the risk of transmission of bloodborne pathogens and pathogens from moist body substances. It is applied to all patients regardless of their diagnosis or presumed infection status. The application of Standard Precautions during patient care is determined by the nature of contact/interaction with the patient which includes:

- Hand hygiene
- Personal protective equipment (PPE)
- Respiratory hygiene/cough etiquette
- Patient care equipment
- Environmental control
- Handling and disposal of sharpș
- Waste Management

INFECTION CONTROL MEASURES

I. Hand Hygiene

Many infections are spread by contact. Hand hygiene is the most important method of preventing spread by this route. Hand hygiene can be achieved by hand washing or hand-antisepsis.

(A) Indications for Hand washing and Hand-Antisepsis

(i) Wash hands with soap and water when hands are visibly soiled or contaminated with proteinaceous material, blood or other body fluids, or if exposure to potential spore-forming organisms is strongly suspected or proven or after using the restroom. Ordinary liquid soap and water are sufficient for non-invasive procedures. Use antimicrobial soap prior to surgical procedures. Containers for liquid soap must be thoroughly cleansed and dried before refill. Do not top up.

(ii) Preferably use an alcohol-based handrub for routine hand-antisepsis if hands are not visibly soiled. When alcohol-based handrub is already used, do not use antimicrobial soap concomitantly.

(iii) Perform hand hygiene:

- before and after having direct contact with patients if hands are likely to be contaminated
- after removing gloves, masks, uniform, white coats and when leaving the clinic area.
- before handling an invasive device for patient care regardless of whether or not gloves are used
- after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings
- if moving from a contaminated body site to a clean body site during patient care

(B) Hand Hygiene Technique

(i) Hand washing Technique with Soap and Water:

- Wet hands with water and apply the amount of liquid soap necessary to cover all hand surfaces. Vigorously rub all surfaces of the hands for at least 20 seconds before rinsing under running water.
- Dry hands thoroughly with paper towel.
- The whole procedure usually takes about 40-60 seconds.

(ii) Hand Hygiene Technique with Alcohol-Based Handrub

- Apply a palmful of alcohol-based handrub and cover all surfaces of the hands. Rub all hand surfaces for at least 20 seconds until hands are dry.

II. Personal Protective Equipment (PPE)

The use of PPE provides a physical barrier between micro-organisms and the wearer. It reduces but does not completely eliminate the risk of acquiring an infection. It also does not replace basic infection control measures such as hand hygiene.

(A) Use of PPE

(i) Gloves

- Should be worn when contact with blood or body fluids, secretions, excretions, and contaminated items.
- Must be readily available and well fitting.
- Should be changed after contact with each patient.
- Should also be changed between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms.
- Should be removed promptly after the procedure with hand hygiene performed before handling telephones or performing office work.
- Does not replace the need for hand hygiene.
- Sterile gloves should be used for surgical procedures.

(ii) Masks

Surgical masks

- Should be worn by staff or patients with fever or respiratory symptoms.
- Should be worn by staff working within 1 metre of patients on droplet precautions.

N95 respirator

- Should be worn by staff performing aerosol generating procedures e.g. nasopharyngeal aspiration for a patient with known or suspected airborne infection.
- Should be 'fit tested'. Seal check should be performed each time when using the N95 respirator.

(iii) Goggles, Face Shields and Gowns

- Should be worn by staff for high risk procedures or when there is a risk of splashing or spraying of blood or body fluids; e.g. excretion and secretion.

III. Respiratory Hygiene/Cough Etiquette

The following infection control measures should be implemented at the first point of contact with patients with respiratory symptoms to prevent transmission of respiratory infections in the healthcare settings. They include:

(A) Visual Alerts

Visual alerts such as posters should be stood at the entrance of outpatient clinics to

remind patients and their companions to practise cough etiquette as well as to inform staff of respiratory symptoms.

(B) Infection Control Measures of Respiratoy Hygiene/Cough Etiquette

- Cover mouth and nose when coughing or sneezing. Use tissue paper to contain respiratory secretions and dispose of them in lidded receptacles.
- Perform hand hygiene after hands have been in contact with respiratory secretions.
- Offer surgical masks to persons with respiratory symptoms, especially during epidemic periods.
- Encourage persons with respiratory symptoms to sit away from others in designated waiting area.

(C) Provision of Resources for Performing Cough Etiquette and Hand Hygiene

Ensure that materials for adhering to respiratory hygiene/cough etiquette and hand hygiene are available in waiting areas for patients and visitors:

- Provide lidded receptacles for used tissue paper disposal.
- Provide conveniently located dispensers of alcohol-based handrub; where sinks are available, ensure that supplies for handwashing (i.e., liquid soap and disposable towels) are consistently available.

IV. Patient Care Equipment

Disinfection and sterilization of patient care instruments are necessary to prevent transmission of organisms between patients. Disinfection is used to reduce the number of microorganisms, while sterilization is used to remove all living microorganisms including bacterial spore. Standard Precautions should be applied when handling used instruments.

(A) Cleaning

Before decontamination by any of the methods outlined below, instruments must undergo preliminary cleaning. Blood or any other substance should be rinsed off gently under running water. The instruments should then be soaked in a solution of lukewarm water and detergent, washed thoroughly and rinsed.

Appropriate personal protective equipment such as gloves and plastic apron should be worn when cleaning instruments to minimize occupational exposure. Care should be taken not to produce splashes. Goggles or face shields should be worn if splashing is likely.

(B) Choice of Decontamination Methods

Instruments should be categorized according to the risks they pose for patients. Critical items are devices that penetrate skin, enter normally sterile body areas or come into contact with non-intact mucous membranes; which require sterilization. Semi-critical items are devices that come into contact with intact mucous membranes or non-intact skin, which require disinfection. Cleaning is generally sufficient for non-critical items that come into contact with intact skin.

(C) Methods of Decontamination

The most common decontamination methods adopted in the patient care areas are using heat and chemical disinfectants. Heat is usually less selective, more penetrative and easier to control than chemicals. Heat is, therefore, the preferred method of decontamination.

(i) Sterilization

Autoclaves

Instruments which are not heat sensitive can be sterilized reliably by steam under pressure using autoclaves. Please observe the followings when using autoclaves:

- Autoclaves must be located in treatment rooms away from traffic and they must not discharge steam/vapour into waiting area.
- Autoclaves must be operated only by staff who has been adequately instructed in their use.
- Traditional table top autoclaves (gravity displacement) without vacuum extraction cycle are intended for used to sterilize solid unwrapped instruments and devices. They should be properly loaded so that surfaces of all instruments are accessible and exposed to the steam. Unwrapped instruments must be sterilized and used at point of care.
- Hollow and lumen devices, porous loads such as dressings and towels and wrapped instruments, should be placed in sterilization drums and sent to the designated central sterilization centres.
- Instruments can be sterilized in autoclave under the following minimal conditions: at a temperature of 121^{o}C for 15 min. holding time, at 132^{o}C for 4 min. holding time or at 134^{o}C for 3 min. holding time.
- Instruments should be removed from the autoclave when a cycle is completed. They should be placed on a trolley laid with sterile paper/cloth and covered with a sterile paper/cloth and used within a session.
- Persons operating the autoclave should record for each cycle the readings on the autoclave gauges in a log book specifically kept for this purpose. The temperature and pressure should be within the ranges specified.
- Water in the filter of the autoclaves should be changed weekly or as recommended by the centre in-charge
- Autoclaves must be checked monthly with spore vials placed on the bottom shelf in the area above the chamber drain. The results of spore test should be entered into a record.
- In case of unsatisfactory spore test result, EMSD should be notified. Autoclave should only be reused when spore test indicates satisfactory performance.
- Autoclaves should be serviced regularly at yearly intervals and as necessary.

Sending drums

- Items in drums should be loosely packed.
- The drum should be closed properly and with the autoclaving tape placed

on it.

- Close the valves of the drum during transport to sterilization centre.
- All valves of the drum should be open before autoclaving.
- Valves of drum should be closed after autoclaving process.
- Check for the colour change of the autoclaving tape.
- Place the drum in a clean and dry place.

Shelf-life of sterilized items

- The “shelf-life” of sterilized wrapped items from central sterilization centre is suggested as follows:
    - Single wrapped sterilized items to be used within 2 weeks.
    - Double wrapped sterilized items to be used within 4 weeks.
    - Single wrapped sterilized items kept in unopened drum to be used within 4 weeks.
    - Double wrapped sterilized items kept in sealed plastic bag to be used within 3 months.
- Expiry date should be written on top of every item.
- Sterilized items should be stored preferably in an enclosed and well-ventilated area to provide protection against dust, moisture, and temperature and humidity extremes.
- Maintain an effective stock management system so that sterile items are used before expired
- Instrument must be re-sterilized before use if it is expired or if there is sign of damage of the package.

Hot air ovens

Instruments and materials which are heat stable and which cannot be sterilized by steam because of deleterious effects or failure to penetrate could be sterilized by the use of hot air ovens. The transfer of heat by air is less efficient than by steam. Hot air ovens use higher temperature and longer times to sterilize than do autoclaves.

When using hot air ovens, please observe the followings:

- Hot air ovens must be located in a suitable area away from traffic.
- Hot air ovens must be operated only by staff who have been adequately instructed in their use.
- Non-perforated closed containers such as solid metal trays could be used in hot air ovens.
- Load should be packed in such a way that sufficient space remains between articles to allow hot air circulation.
- Instruments and materials can be sterilized in a hot air oven at a temperature of 160oC for 120 min. holding time or 180oC for 30 min. holding time.
- Persons operating the hot air oven should record for each cycle the reading on the indicating thermometer.

- Hot air ovens must be checked monthly with spore tests.
- In case of unsatisfactory spore test result, EMSD should be notified. Hot air oven should be reused only when spore test indicates satisfactory performance.
- Hot air ovens should be serviced regularly at yearly intervals and as necessary.

(ii) Disinfection

Hot water disinfectors

Boiling water, although being able to effectively disinfect instruments, cannot achieve sterilization since some bacterial spores can withstand boiling.

The followings must be observed when using a hot water disinfector:

- The hot water disinfector must be located in treatment rooms.
- The hot water disinfector must be operated only by staff who has been adequately instructed in their use.
- Cleansed instruments must be fully immersed in water.
- Disinfectors should not be overloaded.
- Leave instruments for a minimum of 10 minutes without interruptions after water returns to the boil e.g. do not add instruments into the hot water disinfector while boiling. Use a timer with each process.
- Disinfected instruments should be removed with disinfected forceps and placed on a trolley laid with sterile paper/cloth and covered with a sterile paper/cloth and used within a session.
- Water in the disinfector should be changed at least daily or when it is contaminated. Fill up the hot water disinfector at the beginning of the day.

Chemical disinfectants

Chemical disinfectants could be alternatives for heat labile instruments. However, they have many drawbacks such as corrosive properties, variability in their effect on different microorganisms, easy inactivation and different rates of microbiocidal action.

When using chemical disinfectants, please observe the followings:

- The disinfectant containers must be thoroughly sterilized before refill. Do not top up.
- The containers should be clearly labeled with contents, in-use dilution and expiry date.
- Ensure that optimum dilution is used.
- The disinfectant containers should not be left open as they could easily be contaminated and microbes can grow in the disinfectant solution. Moreover, it may pose occupational hazard as glutaraldehyde vapourizes.

V. Environmental Control

(A) Furniture and Other Fixtures

- Furniture in the waiting rooms should be cleaned regularly or when visibly dirty.
- Examination tables should be cleaned daily or when it is visibly soiled or contaminated.
- Other structural surfaces, fixtures and fittings require regular cleaning.
- Room used by patients with symptoms suggestive of infectious diseases, should be cleaned and disinfected if environmental contamination is likely.
- Damp cleaning with scrubbing is preferred.
- Wash the bucket after use and store dry.
- Cloth should be cleaned after use in hot water and detergent, rinse with water and hang dry.
- Schedule of cleaning, operational manual and training of staff should be established and followed.

(B) Floor

- Clean the floor daily or more frequently consistent with the need in the facilities.
- Damp cleaning with scrubbing is recommended. Routinely use water and detergent.
- Cleaning should start in the clean areas and progress to the dirty areas (including the toilets, which should be the last).
- Wash the bucket after use and store dry.
- Mops should be cleaned after use in hot water and detergent. Rinse with water and hang dry
- Schedule of cleaning, training of staff and operational manual should be established and followed.

(C) Spillage

- Spills of blood and body fluids should be decontaminated promptly.
- Wear gloves and appropriate PPE if splashing is anticipated.
- For spillage of blood, cleanse the visible matter with disposable absorbent material wetted with one part of household bleach (5.25% hypochlorite solution) in 4 parts of water, leave for 10 minutes, and then rinse with water.
- For spillage of other body fluid, cleanse the visible matter with disposable absorbent material and then disinfect with one part of household bleach (5.25% hypochlorite solution) in 49 parts of water, leave for 30 minutes and then rinse with water.
- Floor mop or other cleaning utensils should be treated properly before re-use. Disinfect such utensils by immersing them in 1 in 49 diluted household bleach (5.25%) for 30 minutes, then wash with detergents and water. Re-use after drying out.

- Dispose of all contaminated waste material into appropriate plastic waste bag.
- Perform hand hygiene after removing gloves.
- Wash skin thoroughly with soap and water if accidentally contaminated with blood or body fluids.

VI. Handling and Disposal of Sharps

- Sharps must be handled with extreme caution.
- Use sharps with safety devices or engineering control to prevent percutaneous injuries as far as possible.
- Do not remove used needles from disposable syringes by hand. Do not bend, break or manipulate used needles by hand.
- Avoid recapping of needles as far as possible.
- If needles need to be recapped, use devices or methods which eliminate the risk of percutaneous injury.
- Needles and sharps must be discarded into puncture-resistant containers.
- Do not overfill sharps box. Dispose sharps box when it is ¾ full.
- Keep sharps box dry.
- Secure sharps box in an upright position and in a convenient place near to where the sharps are used.
- Seal up sharps box and discard into red plastic waste bag with biohazard label for proper disposal.

VII. Waste Management

Waste arises from outpatient settings should be segregated at sources of arising. Lidded waste bin, preferable with foot-pedal, should be used in clinical areas.

(A) Types of Waste

(i) Domestic Waste

Wrapping paper, office paper and other items should be placed in black plastic waste bags and disposed of in the same manner as domestic waste.

(ii) Clinical Waste

Sharps boxes, dressings/swabs and all other waste dripping with blood, caked with blood or containing free flowing blood and other potentially infected waste should be placed in red plastic waste bags. Human and animal tissues should be put into yellow bags.

(B) Waste Disposal

- Waste bags should be securely fastened when ¾ full. Domestic waste should be disposed of daily. Red plastic waste bags should be stored in a designated location with a visibly clear warning sign, and protected from water, rain and rodents. They should be secured from unauthorized persons.