SAIDEEP
HEALTHCARE & RESEARCH PVT. LTD.

HOSPITAL INFECTION CONTROL MANUAL

Saideep Healthcare and Research Pvt. Ltd.
Ahmednagar

Completed by

Department of Hospital Infection Control

	SAIDEEP HOSPITAL HOSPITAL INFECTION CONTROL MANUAL	Doc No	SDH/HIC/01
		Issue No	01
		Rev No.	01
		Date	05-03-2021
	Amendment Sheet		

Sr. No	Page No	Clause No	Date of Amendment	Amendment Made	Reason	Signature of Approval Authority
1	42 to 46	HIC.1. b	22-06-2022	High risk activities	Procedures Update	
2	197	HIC. 7.b	04-08-2022	Oxygen humidifier bottle cleaning	Information purpose	
3	198 to 199	HIC.4.c	20-08-2022	Sodium Hypochlorite dilution	Information purpose	

Recommended By	Signature	Approved By	Signature
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Chief medical Administrator		Chairman & Managing Director	

Contents

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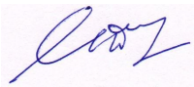
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

1. Introduction

In order to provide better and safer hospital facilities for its patients and personnel, Saideep Hospital has adopted a programme of infection control involving all sections of the hospital community.

A satisfactory infection control programme requires the co-operation of all personnel involved with patients and also non-patient care activities. Any break in technique or lapse in discipline on the part of one person can render the efforts of a number of conscientious individuals ineffective

It may not be possible to eradicate all hospital-related infections. However, an effective infection control programme will provide optimum protection for both the hospital patients, guests and the hospital staff. The purpose of this programme is to help all health care providers achieve the best possible infection control measures, as required by professional standards.

The departmental heads and all staff are responsible for becoming familiar with and implementing hospitals policies and procedures that are designed to achieve the objectives of the infection control programme. It is only through the co-operative efforts of every member of the staff that nosocomial infections can be prevented.

2. Abbreviations / Terminologies

HICC- Hospital Infection Control Committee
ICO -Infection Control Officer
ICN- Infection Control Nurses CSSD -Central Sterile Supplies Department

HICO -Hospital Infection Control Officer

HICN -Hospital Infection Control Nurse

HAI -Hospital Acquired Infection

PPE -Personal Protective Equipment

CAUTI -Catheter Associated Urinary Tract Infection

CLABSI -Central Line Associated Blood Stream Infection

VAP -Ventilator Associated Pneumonia

SSI -Surgical Site Infection

MRSA -Methicillin-Resistant Staphylococcus Aureus

MSSA -Methicillin-Susceptible Staphylococcus Aureus

I/C - In charge

OT-Operation Theatre

TSSU -Theatre Sterile Supply Unit

NICU -Neonatal Intensive Care Unit

MICU- Medical Intensive Care Unit

CCU - Coronary Care Unit

HBV -Hepatitis B Virus

HCV – Hepatitis C Virus

HIV- Human Immunodeficiency Virus

ICTC -Integrated Counselling & Testing Centres

IV- Intra Venous

OR – Operating Room

CSF- Cerebral Spinal Fluid

HD - Haemodialysis

CAPD- Continuous Ambulatory Peritoneal Dialysis

RO - Reverse Osmosis

AAMI – Association for The Advancement of Medical Instrumentation

CABG- Coronary Artery Bypass Graft

ICU - Intensive Care Unit

UTI- Urinary Tract Infection

WBC – White Blood Cell

RTI - Respiratory Tract Infections

MAP - Mean Arterial Pressure

IABP – Intra Aortic Balloon Pump

AMBU Bag – Artificial Manual Berating unit

BSI - Blood Stream Infection

CDC- Centre for Disease Control & Prevention

NHSN – National Healthcare Safety Network

COPD – Chronic Obstructive Pulmonary Disease

DM – Diabetes Mellitus

CVC -Central Venous Catheter

CBD – Closed Bladder Drainage

IPD -In Patient Department

CVTS – Cardio Vascular& Thoracic Surgery

AHU – Air Handling Unit

HEPA Filter– High Efficiency Particulate air filter

HCW- health Care Workers

AIIR - Airborne Infection Isolation Room

VRE – Vancomycin Resistant Enterococcus

RSV- Respiratory Syncytial Virus

TPN- Total Parenteral Nutrition

RT- Ryles Tube

IPCT - Infection Prevention & Control Team

OCG- Outbreak Control Group

ICD- Infection Control Department

ETP- Effluent Treatment Plant

AEB- Accidental exposure to blood

PE- Percutaneous exposure

AIDS- acquired immunodeficiency syndrome

OHC- Occupational Health Clinic

SSHC- Specialist in Safety & Health Certificate

MDR-TB – Multidrug Resistant Tuberculosis

AFB- Acid Fast Bacillus

ATT – Anti-tubercular treatment

LFT – Liver Function Test

SGPT- Serum Glutamine Pyruvic Transaminase

HOD- Head of Department

HCP- Health Care Personnel

SUD- Single use Devices

3. Goals and Objectives

As stated above, the goal of the hospital infection control programme is to prevent or minimise the potential for hospital acquired infections, in patients as well as in staff.

The programme will have the following objectives:

I. To develop written policies and procedures for standards of cleanliness, sanitation and asepsis in the hospital.
II. To interpret, uphold and implement the hospital infection control policies and procedures in specific situations.
III. To ensure surveillance for hospital acquired infections
IV. To review and analyse data on infections that occur, in order to take corrective steps.
V. To develop a mechanism to supervise infection control measures in all phases of hospital activities.
VI. To ensure continuing - education of employees on infection control aspects.

4. Components of Infection Control Programme

- Infection Control Committee
- Infection Control Team Consisting of Infection Control Officer / Microbiologist, Infection Control Nurses and Link Nurses
- Infection Control Manual documenting various protocols for infection prevention and control within the hospital
- Infection Control Surveillance Activities
- Microbiology Laboratory
- Environmental; and Engineering Controls for Infection Prevention
- Monitoring and Evaluation Activities

5. Infection Control Committee.

5.1. Name: The name of the Committee shall be the Hospital Infection Control Committee (HICC)

5.2. The nature of authority of HICC: The hospital Infection Control Programme is to be organised and run by the Medical Superintendent (MS). For the implementation of the programme the MS constitutes the HICC. The Chairperson of the HICC is nominated by the MD.

5.3. Terms of reference of HICC: The HICC will supervise the implementation of the hospital infection control programme. Specifically, the committee shall:

i. Maintain surveillance over hospital acquired infections.
ii. Develop a system for identifying, reporting, analysing, investigating and controlling hospital acquired infections.
iii. Develop and implement preventive and corrective programmes in specific situations where infection hazards exist.
iv. Advise the Medical Superintendent on matters related to the proper use of antibiotics, develop antibiotic policies and recommend remedial measures when antibiotic resistant strains are detected.
v. Review and update hospital infection control policies and procedures from time to time.
vi. Help to provide employee health education regarding matters related to hospital acquired infections.
vii. Shall meet regularly not less than once a month and as often as required
viii. Regulate vaccination of the staff members.

5.4. Composition

The Committee will consist of the following:

Chairperson

- Secretary
- Representative of the Dept of Microbiology/Virology
- Representatives from General Medicine
- Representative of Surgery
- Representative of Paediatrics
- Representatives from Other Specialities
- Nursing Superintendent
- Hospital Infection Control Officer (ICO)
- Hospital Infection Control Nurses (ICN)
- Representative of Central Sterile Supplies Dept (CSSD)
- Hospital Maintenance Engineer
- Housekeeping supervisor

Committee members meet once a month. The Minimum quorum for the meeting is 50 percent.

Chairperson

- Act as liaison between the committee and the hospital administration as and when the need or opportunity arises.
- Constitute expert committees/subcommittees for specific purposes related to the investigation or control of infection or to antibiotic policies.
- Receive surveillance reports and other hospital acquired infection related information and assists the MS to initiate appropriate action.
- In the absence of the Medical Superintendent, the Chairperson shall assume the responsibilities of the MS with regard to the hospital infection control programme.

Secretary

- Calls all meetings in consultation with the Chairperson
- Ensures that the minutes of the previous meeting and agenda for next meeting are distributed before the next meeting.
- Ensures that the committee functions according to the bye-laws.
- In the absence of the Chairperson, the Secretary shall assume all duties and responsibilities of the Chairperson.
- Performs other responsibilities delegated by the Chairperson.

Hospital Infection Control Officer (HICO)

- Monitors the surveillance of HAI done by the Infection control Nurses
- Monitors Biomedical waste management.
- Training the medical, Nursing and allied health sciences, staff and students in areas of infection control practices.
- Investigates outbreaks

Hospital Infection Control Nurse (HICN)

- Supervises surveillance of hospital acquired infection (HAI)
- Assists the Medical Superintendent in identifying, reporting, analysing, investigating and controlling hospital acquired infections.
- Supervises preventive and corrective programmes.
- Carries out other responsibilities given to the HICO by the MS and activities given by the HICC.

Hospital Infection Control Team

The team consists of

- The Hospital Infection Control Officer
  - The Hospital Infection Control Nurses
  - Link Nurses

The team conducts active and passive surveillance regularly

Technical activities of HICC: The Hospital infection control committee shall have the following functions:

- Define nosocomial infections for surveillance purposes; to establish the modus operandi for early identification and reporting of HAI and to determine the prevalence rates of defined infections.
  - To analyse, interpret and disseminate data arising out of surveillance and to recommend remedial measures and to ensure follow up action.
  - To establish the ongoing evaluation and review of all aseptic, isolation, and sanitation techniques employed in the hospital. Such techniques shall be defined in written policies and procedures.
  - To develop written policies defining the specific indications for patient isolation requirements.
  - To ensure the proper conduct of sterilisation and disinfection practices and to ensure that the central services, housekeeping, laundry, engineering maintenance, food sanitation, and waste management are in conformity with the hospital infection control policies. The necessary procedures shall be evaluated and revised periodically.
  - To guide the scope and content of the Staff health programme.
  - To help in the education and orientation of all new employees as to the importance of infection control and the relevant policies and procedures.
  - To act upon recommendations related to infection control, received from the administration, departments, service units and other hospital committee.

Summary of Activities Under Infection Control Program

Structures / Program Component	Scope
Hospital Infection Control Committee	- Establish guidelines and protocols - Monitor and evaluate infection Control activities - Introduce new infection control and prevention measures - Provide guidance on infection control materials, products and techniques to be used
Hospital Infection Control Team	- Conduct various surveillance activities - Conducts various infection control audits to monitor compliance at unit levels - Conduction in-service education and training activities - Support clinical teams in isolation patients handling - Manage outbreak situations
Prevention of Infection	- Safe Hands / Hand washing compliance - Universal Precautions - PPE Use Program - Safe Injection and Infusion Practices - Cleaning, Disinfection and Sterilisation - Antibiotic Policy Implementation and Monitoring - Housekeeping, Linen and Laundry – Guidelines and Monitoring - Kitchen Sanitation and Food handling – Guidance and Monitoring - Engineering Controls - Isolation - Pre-Exposure Prophylaxis to Staff - Needle Stick Injury/ Blood and Fluid Exposure reporting - Post Exposure Prophylaxis regimen

HAI Surveillance	- Environment Surveillance - Passive Surveillance - ICN Lead Surveillance for HAI (SSI, VAP, CAUTI, CLABSI) - WHO Hand Hygiene Compliance Audits - Housekeeping / Area Inspections – ICN - BMW – Segregation and Practices Audit - Kitchen / F&B Audit - Notifiable Diseases Tracking & reporting
Outbreak Prevention and Control	- Identification - Investigation and Monitoring - Corrective Actions
Biomedical Waste management	- Point of Care Segregation - Safe Transport and Storage - Staff Training - BMW Handling Staff Safety - Regulatory Compliance
Program Management & Training	- In-service Training - Annual Budget - Annual program review and updating - Publications and Dissention of Infection Control Data

ANNEXURE -A

Risk categorization of hospital areas

All healthcare environments should pose minimal risk to patients, staff and visitors. However, different functional areas represent different degrees of risk and, therefore, require different cleaning frequencies, and levels of monitoring and evaluation. A functional area refers to any area in a healthcare facility that requires cleaning. Consequently, all functional areas should be assigned in one of the following three categories:

- High risk areas
- Moderate risk areas
- Low risk areas.

Regular monitoring should take place in areas where standards are considered poor or where routine monitoring reveals consistent weaknesses. These functional area risk categories are explained below

1 High Risk Areas

Consistently high cleaning standards must be maintained in these areas. Required outcomes will only be achieved through intensive and frequent cleaning. Both informal monitoring and formal evaluation of cleanliness should take place continuously. Patient care areas and other facilities designated as high- risk categories should be evaluated at least once a week until the Officer I/C Sanitation and Infection Control Team are satisfied that consistently high standards are being maintained, after which the frequency of evaluation may be reduced to once monthly. This will be in addition to the routine monitoring done by the Hospital Administrator and Sanitation Department i.e., Sanitation Officer, Sanitary Inspector, nursing staff, etc.

High risk functional areas typically include operating theatres (OTs), ICUs, HDUs, Emergency department, post operative units, surgical ward, labour room, haemodialysis unit, Central sterile supply department (CSSD)/Theatre sterile supply unit (TSSU) and other facilities where invasive procedures are performed or where immuno-compromised patients are receiving care. Bathrooms, toilets, staff lounges, offices and other areas adjoining high-risk functional areas should be treated as having the same risk category, and receive the same intensive levels of cleaning.

2 Moderate risk areas

Outcomes in these areas should be maintained by regular and frequent cleaning with ‘spot cleaning’ in-between. Both informal monitoring and formal evaluation should take place continuously. Patient care areas in this category should be evaluated at least once a month until the Officer in charge, Sanitation and Infection Control Team are satisfied that consistently high standards are being maintained, after which the evaluation frequency may be reduced to once in two months. This will be in addition to the daily monitoring done by the Hospital administrator and Sanitation Department i.e., Sanitation Officer, Sanitary Inspector, nursing staff, etc.

Moderate -risk areas may include medical wards, Laboratory areas, Blood bank, Pharmacies, Dietary services, laundry services, Mortuary, Nurses/ Doctors rest rooms, Rehabilitation Areas and Psychiatric wards. Bathrooms, toilets, staff lounges, offices and other areas adjoining high-risk functional areas should be treated as having the same risk category and receive the same regular levels of cleaning.

3 Low-risk areas

In these areas, high standards are required for aesthetic and to a lesser extent, hygiene reasons. Outcomes should be maintained by regular and frequent cleaning with 'spot cleaning' in-between. Both informal monitoring and formal evaluation of standards should take place continuously. Patient care and other areas within a low-risk area should be evaluated every three months. This will be in addition to the daily monitoring done by the sanitation department i.e. Hospital administrator, Sanitation Officer, Sanitary Inspector, nursing staff etc.

Low-risk functional areas may include administrative areas, faculty and doctor offices, seminar rooms, stores, staff rooms, non- sterile supply areas, record storage and archives etc. Additional internal areas bathrooms, staff lounges, offices and other areas adjoining low-risk functional areas should be treated as having the same risk category and receive the same level of cleaning.

The following given table describes the various hospital areas stratified according to risk categories:

Table 1: Classification of Hospital areas into risk categories

Risk Level	Areas	Frequency
High Risk areas	Operation theatre units including recovery area – Major & minor	Before & After Operate
High Risk areas	Intensive care units/ Cardiac care units/Neonatal ICU etc.	Per Shift 3 times in day
High Risk areas	High dependency units	Per Shift 3 times in day
High Risk areas	Emergency department/casualty	Per Shift 3 times in day
High Risk areas	Labour room	Per Shift 3 times in day
High Risk areas	Post operative units	Per Shift 3 times in day
High Risk areas	Surgical wards	Per Shift 3 times in day
High Risk areas	Central sterile supply department/Theatre sterile supply unit	Per Shift 3 times in day
High Risk areas	Isolation wards/ rooms & attached internal areas like bathrooms / toilets	Per Shift 3 times in day

The following given table describes the various hospital areas stratified according to risk categories:

Moderate risk areas	Medical and allied wards	Per shift 2 times in day
Moderate risk areas	Laboratory areas	Per shift 2 times in day
Moderate risk areas	Pharmacies	Per shift 2 times in day
Moderate risk areas	Dietary services	Per shift 2 times in day
Moderate risk areas	Laundry services	Per shift 2 times in day
Moderate risk areas	Mortuary	Per shift 2 times in day
Moderate risk areas	Nurses/ Doctors rest rooms	Per shift 2 times in day
Moderate risk areas	Psychiatric wards	Per shift 2 times in day

Low risk areas	Departmental areas/office areas	Twice a day
Low risk areas	Outpatient department	Twice a day
Low risk areas	Non sterile supply areas	Twice a day
Low risk areas	Libraries	Twice a day
Low risk areas	Meeting Rooms	Twice a day
Low risk areas	Medical records section	Twice a day
Low risk areas	Stores section	Twice a day
Low risk areas	Manifold services/room	Twice a day
Low risk areas	Telephone rooms, electrical, mechanical, External surroundings	One a day
Low risk areas	Staff areas	Twice a day

Outpatient wards

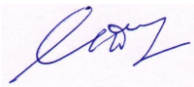
General outpatient or ambulatory care wards include waiting areas, consultation areas, and minor procedural areas.

Recommended Frequency, Method and Process for Outpatient Wards

Area	Frequency	Method	Process
Waiting / Admission	At least once daily (e.g., per 24-hour period)	Clean	High-touch surfaces and floors
Consultation / Examination	At least twice daily	Clean	High-touch surfaces and floors
Procedural (minor operative procedures; e.g., suturing wounds, draining abscesses)	Before and after (i.e., between) each procedure	Clean and disinfect	High-touch surfaces and floors, with an emphasis on the patient zone, procedure table
Procedural (minor operative procedures; e.g., suturing wounds, draining abscesses)	End of the day (terminal clean)	Clean and disinfect	All surfaces and the entire floor Handwashing sinks, thoroughly clean (scrub) and disinfect Sluice areas/sinks or scrub areas
All	Scheduled basis (e.g., weekly, monthly) and when visibly soiled.	Clean	Low-touch surfaces;

ANNEXURE -B

Recommended routine cleaning for health care setting				
Element / Areas	**Cleaning frequency**			**Method**
	High risk	**Moderate risk**	**Low risk**	
Ceiling	Spot clean, & quarterly	Spot clean, & quarterly	Spot clean, & yearly	Clean
Floor	Spot clean, Dry mop and wet mop three times per shift	Spot clean, Dry mop and wet mop two times per shift	Twice a day	Clean (unless otherwise specified within specific patient care area)
Walls	spot clean, wash quarterly	spot clean, wash quarterly	spot clean, wash yearly	Clean
Bed	Clean frame daily, clean whole on discharge and transfer	Clean frame daily, clean whole on discharge and transfer	N/A	Clean and disinfect
Bed rails	Clean three times daily and after Discharge and transfer	Clean twice times daily and after Discharge and transfer	N/A	Clean and disinfect
Bedside table/trolly	Clean twice day and after use	Clean daily and after use	Clean daily	Clean and disinfect
Chair	Clean twice day	Clean twice day	Clean daily	Clean
Ventilator Monitor/ switch boards	Clean daily and in between patients	N/A	N/A	70% Isopropyl alcohol
TV/ Monitor screens	Clean daily per shift two times	Clean daily per shift two times	Clean daily	Clean

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		**Dr. S.S. Deepak**	
Chief medical Administrator		**Chairman & Managing Director**	

Recommended routine cleaning for health care setting				
Element	**Cleaning frequency**			**Method**
	High risk	**Moderate risk**	**Low risk**	
Curtains	clean weekly change yearly	clean weekly change yearly	N/A	Wash with detergent
Door knob/ handle,	Per shift three times	Per shift two times	Clean daily	Clean and disinfect
IV stand	Clean daily and in between patients	Clean daily and in between patients	N/A	Clean and disinfect
Computer And keyboard	per shift One time	per shift One time	clean daily	Clean
Locker/ cupboard	Clean contact points twice daily	Clean contact points daily	Once in day	Phenolic germicidal detergent solution
Sink, Hand washing	Twice daily and as needed	Twice daily and as needed	Once a day as needed	Clean floors with neutral detergent and water.
Telephone	Clean twice a day	Clean twice a day	Clean daily	Clean
Toilet	Clean three times daily	Clean twice daily	Clean daily	Clean and disinfect
Dressing trolley	Clean before and after use	Clean before and after use	N/A	Clean with 70%alcohol

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Recommended routine cleaning for health care setting				
Element	**Cleaning frequency**			**Method**
	High risk	**Moderate risk**	**Low risk**	
Wheelchair/ stature	Clean daily and after use	Clean daily and after use	N/A	Clean and disinfect
Blood pressure cuff	Clean after use	Clean after use	N/A	70% Isopropyl alcohol wipes
General procedure rooms (e.g., radiology, endoscopy)	Before and after (i.e., between) every patient	N/A	N/A	Clean and disinfect:
Mortuary	N/A	Before and after (i.e., between) every patient & weekly	N/A	Clean and disinfect

Chemical agent list used

SR NO	Chemical Name	Dilution	Contents	pH-value	
1	R1 Bathroom Cleaner	20 ml in 1000ml mixture in water	alkyl alcohol ethoxylate 5 - 15% 2-aminoethanol < 5% propan-2-ol	9.5-11.0	Alkaline
2	R2 Hard Surface Cleaner	20 ml in 1000ml. mixture in water	alkyl alcohol ethoxylate (5 - 15%) 2-aminoethanol (< 5%) propan-2-ol	9.5-11.0	Alkaline
3	R3 Glass Cleaner	Ready to Use	3-butoxypropan-2-ol 10 - 20%	6.5-7.5	Neutral
4	R4 Furniture Polish	Ready to Use	Furniture Polish	5.0-7.0	Acidic
5	R6 Toilet Bowl Cleaner	Ready to Use	Hydrochloric acid (OES) (5-15%) Quaternary ammonium compounds, Trimethyl Tallow Alkyl, chlorides (<5%)	2.00	Acidic
6	R7 Floor Cleaner	20 ml in 1000ml. mixture water	SODIUM CARBONATE <5% SODIUM HYDROXIDE <5% DODECYLBENZENE SULPHONIC ACID <5% ETHOXYLATED ALCOHOL <5% COCONUT FATTY ACID - DISTILLED <1%	10 (1%solution)	Alkaline
7	D7 Steel Polish	Ready to Use	alkyl alcohol ethoxylate 3-10 % 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one < 0.01	8(neat)	Acidic
8	Bacillol 25	Ready to Use	ethanol >=3-<10, propan-2-ol>=3-<10, propan-1-ol >5-10	3.5	Acidic
9	Sodium Hypochlorite	As per manufacturer recommendation	Sodium Hypochlorite, 5% w/v	11.3	Acidic

National Guidelines for Clean Hospitals Applicable to Tertiary Care Hospitals, Hospitals associated with Medical Colleges & Super-specialty Hospitals in India

https://main.mohfw.gov.in

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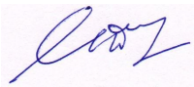
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
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Specific High-Risk Areas of Patient Care

Intensive Care Units

1. Surgical procedures and Anaesthesia
2. Obstetrics and Labour Room
3. NICU
4. Haemodialysis unit
5. Cardiac catheterisation Laboratory

Specific Areas of Patient Care

Universal Precautions should be followed strictly

INTENSIVE CARE UNITS

Medical Intensive Care Unit (MICU) / Coronary Care Unit (CCU)

Design of the unit

Space around and between beds should be adequate for placement and easy access to equipment and to patients.

- A single, closed cubicle is used only for patients needing isolation; e.g., open tuberculosis, anthrax, enteric fever, cholera, MRSA colonization or infection with other multidrug resistant organisms.

- Good housekeeping practices should be followed. This includes regular cleaning of all areas, maintenance, linen and curtain changes etc.

Procedures to be followed by health care personnel:

- Hand washing: Importance of this cannot be over-emphasized in the ICU setting.

- Universal Precautions: as appropriate, should be followed by all staff while handling patients or samples. Wear plastic aprons and gloves for all procedures. Remove and discard them immediately after each patient. Use gloves for all patient contact. Remove and discard them immediately after each patient. Wear masks while examining patients with uncertain diagnosis.

B. Surgical Intensive Care Unit.

- Any patient, with communicable diseases or infection or considered potentially infected should be isolated.
- Patients without any respiratory or overt wound infection are transferred directly from recovery room to the clean area.
- All personnel working in the area must be free from respiratory and any overt wound infection. Universal Precaution must be followed (Refer to the chapter on prevention of transmission of blood borne pathogens)
- All personnel working in ICU are expected to change into the clothes and put on the slippers provided in the changing room, before entering patient care area.
- All visitors (medical and non-medical) are expected to remove their foot wear or wear overshoes before entering the ICU.
- Entry of other personnel (Laundry, Dietary, CSSD, Stores) is not allowed. They are to use entry points provided at different places for supplying and receiving goods.
- ICU personnel and other members of the caring team should strictly wash their hands with either soap or a disinfectant after all patient contact.
- 8Aseptic precautions are to be followed for all techniques (Refer to the chapters on Techniques & care of systems and indwelling devices)
- Housekeeping: Refer to the section on housekeeping.

Microbiological Monitoring:

- Swabs are taken for cultures from all dust settling areas, air conditioners, monitors and lights, once a month.

Surgical Procedures & Anaesthesia

Universal Precautions are to be followed for all patients and all procedures. Testing for HBV, HCV and HIV are not to be considered completely protective, the reasons being:

Tests cannot detect 100% of infections due to HBV, HCV and HIV

There are other pathogens besides HBV, HCV and HIV that can be transmitted through blood and body fluid contact. Hence, all patients must be considered as potentially infectious and preventive measures taken.

The patient should be informed when testing for HIV is done. Patients testing positive should be informed of the result by the surgeon before surgery. The patient is then sent for counselling to the ICTC clinic.

No patient will be denied appropriate care because they test positive for any blood borne pathogen.

Hepatitis B vaccination is mandatory for all staff coming into contact with blood or body fluids.

Gloves should be worn for all invasive procedures done on patients (including venepuncture and starting IV lines). Gloves should be changed BETWEEN procedures. Gloves should not be used to handle any equipment. Health care workers should not leave the operating room with gloved hands. Gloves are to be used to sort soiled linen.

Examination gloves are sufficient for-

- starting IV lines
- Intubation
- sorting out used linen or other unsterile items

Sterile gloves are to be used only for surgery
Plastic aprons, which are to be worn below the sterile gowns, are recommended for the surgical team. They are mandatory in areas where large column splashes are expected. These are to be removed before leaving the operating room.

Masks are to be worn, covering the nose and lower part of the face completely. Cotton masks are to be changed if visibly soiled or has been soaked due to continuous use.

Goggles or other eye protection are recommended where there is a risk of splash. Protection for the feet (sole and dorsum) is recommended.

All invasive procedures however minor they are should be carried out with utmost care to prevent injury with sharps.

Hand to hand passing of sharps during surgery should be avoided. Utmost care should be taken to ensure safe disposal of sharps.

The OT supervisor ensures that appropriate containers for sharps disposal are available in all the operating rooms.

Smaller sharps disposal containers are to be present on all anaesthesia trolleys.

Health care workers with any open wounds or weeping skin lesions should refrain from activities which may result in exposure to blood or infectious body fluids.

Health care workers with blood or body fluids on their clothing should change before they use the staff lounge or before scrubbing for the next case.

Recommendations for administration of anaesthesia:

Masks and laryngoscope blades used for GA should be cleaned and disinfected using Glutaraldehyde for 15 minutes and then cleaned again with soap and water before use on another patient.

i. Cover handles of laryngoscope blades with a plastic cover while in use, and clean with detergent solution before use on another patient.
ii. Endotracheal tubes and other equipment which come into contact with the mucosa of the patient or which are visibly contaminated with blood or infectious body fluids, should be discarded after single use. If there is a need to reuse any such equipment, it should be done after disinfection with Glutaraldehyde or after autoclaving, but ET tubes, tracheostomy tubes, mouth & nasal airways are for single use only.
iii. Routine use of bacterial/viral filters is not recommended, but these may be used for selected patients, for example, those with respiratory infection. These filters have not been proved to prevent bacterial/viral infection, although in - vitro studies have demonstrated their efficacy in preventing bacteria from passing through. There are no such studies done on viruses.
iv. As a general infection control measure, the corrugated tubing from the patient up to the soda lime canister must be washed in soap and running water and dried before reuse. In addition, these tubes must be decontaminated by immersing in Glutaraldehyde for ten minutes and then washed and dried once a day or when there is visible contamination with blood. Alternatively, ETO sterilization method can also be used.

Internal circuits in the anaesthetic machine may be cleaned when the soda lime containers are changed.

Care of the environment:

The operating team should take absolute care regarding disposal of blood-stained items.

•All swabs, sponges, etc should be discarded/placed only in the assigned containers.

• Gloves should be discarded directly into the bin lined by a yellow plastic cover.

• Used instruments should be carefully segregated.

• Used linen should be collected directly in an assigned area immediately after the surgery, fastened carefully and removed from the operating room.

• If blood or fluid spill is expected, appropriate measures are to be taken before surgery. For example, small plastic containers for small spills (Neurosurgery) and buckets to collect draining fluids (Urology) are necessary.

Protection for furniture and equipment:

• A plastic cover should be used for tables, arm boards, etc and should be mopped clean with soap and water between cases.

• Equipment should not be handled with gloves that have been used for invasive procedures.

Waste segregation should be in accordance with the guidelines given in the chapter on Hospital Waste Management.

Cleaning theatres after a case:

Minor spills of blood or infectious body fluid are to be disinfected by pouring sodium hypochlorite (Diluted Sodium hypochlorite 1 % solution) over the spill and leaving it for ten minutes. The area of the spill should be cleaned with water and soap. The OR supervisor keeps a stock of bleach available for use in emergencies.

For major spills, disinfect as above, and clean the whole room with soap and water.

At the end of the day, thorough cleaning of the floor with soap and water is necessary.

Microbiological Monitoring

Swabs are taken for cultures every month from all dust settling areas, air conditioners, operating tables, monitors and lights.

Septic cases in the operating room:

A separate operating room is used for septic cases. The following cases are considered septic:

Situations where frank pus is present

- Cases for debridement

This theatre has the facility for being sealed air-tight for fumigation. If the septic OR is closed for some reason, septic cases will be taken up at the end of the regular list in the main OR.

Additional steps to be taken in this area:

Minimise equipment to be used

Remove all items from the OR which cannot be properly sterilized or disinfected and those which are not likely to be used.

Cover the bed and armrest with plastic sheets, which will be discarded after the surgery.

Keep sufficient containers for collecting used items.

Handle used items with forceps or after wearing examination gloves.

Post one person to wait outside the OR to obtain additional equipment, supplies and help.

At the end of the surgery, the scrub nurse stays in the OR without removing gloves and makes sure that the used items are carefully disposed.

5 Obstetrics and Labour Room

Housekeeping has to be meticulous:

- Clean the floor at least four times in 24 hours. One of these should be with detergent and copious amounts of water.
- Any spill of blood or fluids should be immediately decontaminated with 1 % Na Hypochlorite Solution for ten minutes, mopped dry and then cleaned thoroughly with detergent and water.
- Environment and equipment should be maintained dust free.
- Strip the bed and wipe clean with detergent and water. Wear gloves for this procedure.
- Use fresh linen for each patient.

Personnel:

Follow Universal Precautions with absolute care

- Sterile gloves, gown, plastic apron, goggles, mask and impervious foot wear (covering dorsum and sole) are recommended while conducting delivery and any other procedure where spill/splash is expected.
- Wear gloves and plastic apron for performing vaginal examination and preparing parts.
- Anyone with open wounds or exudative skin lesions should not be involved in invasive procedures. Wash hands after each procedure and between patients

Procedures:

In addition to Precautions mentioned above, the following are required for specific procedures. Pads are recommended for hygienic collection of secretions and discharge. Vaginal examination and ARM

Use pre prepared set for vaginal examination.

Delivery:

Conduct delivery in the middle of the cot, to minimise spill onto the floor.

- Spread a maternity pad under the patient and covering the edge of the cot. Make sure the end of the sheet leads into the bucket placed under the cot, for collection of blood and amniotic fluid.
- Keep a bucket under the cot, to minimise direct contamination of the floor.
- Take care to minimise splash and spillage onto the floor.
- Perform episiotomies only when indicated taking care to avoid injury to the fingers.
- Person receiving the newborn should wear gown and gloves. Receive the baby using clean sheet.
- Placenta should be collected into the assigned bowl.
- Discard potentially infectious solid waste into the bucket lined with a yellow bag.

Care of the newborn:

- Follow Universal Precautions (use gloves, plastic aprons or gowns)
- Wipe vaginal secretions and discard along with infectious waste.
- Resuscitation is to be done in the specially designated area.
- Refer to the section on NICU given in this chapter.

Disinfection/sterilization:

- Rubber tubing, metal cups, forceps etc: Wash and then send for autoclaving

Waste Disposal

This should be in accordance with the hospital rules.

- Placenta should be sent to the disposal yard for incineration in a yellow bag.

Patients known to be infected with a blood borne pathogen:

These patients are admitted in a specially assigned area in the labour room.

- Follow instructions as for similarly infected persons in other areas
- Since HIV and HBV status can influence the management of individual cases with a view to minimise transmission to the infant, counselling and voluntary testing should be offered to all pregnant women.

NICU

Personnel:

a) Personnel assigned to the NICU should not be posted in other areas of the hospital.

b) Personnel should be fully immunised. Rubella vaccination is recommended.

c) Personnel with upper respiratory tract infections, gastrointestinal tract infections, fever, open lesions or any suspected infection should not be permitted to work in nurseries during their period of illness.

d) Preferably, only those immune to chicken pox (had a history of chicken pox or with adequate Varicella Ab titres) should be posted in the NICU. Non-immune roommates of personnel with chicken pox should not work in the NICU.

Attire

Scrub attire should be worn by nursery personnel. Short sleeved garments are advised to encourage hand washing.

Gowns are not necessary to enter nurseries (e.g. for mothers entering the nursery briefly) Gowns with long sleeves should be worn when caring for infants requiring isolation. Sterile long-sleeved gowns are required by all personnel involved in surgical procedures.

Universal Precautions must strictly be adhered to when handling blood and body fluids.

Hand Washing

- Nursery personnel should wash hands and forearms with Chlorhexidine, antiseptic solutions, or soap and water for 2 minutes at the beginning of every shift. Also, wash hands for 15 seconds or more before and after handling any infant. Dry with a fresh towel. Commercially available hand disinfectants such as hand-rub may be used.
- Mothers who come into the nursery to handle or feed their babies should have bathed and changed that day. They should wash their hands with soap and water in the nursery, before handling the infant.

Equipment

a) Incubators and Ventilators:

In the absence of sterilizing facilities, these should be washed and decontaminated with an approved disinfectant between occupancies and at least once in 72 hours when in use for prolonged periods.

- The water in the humidifier is to be changed every day.
- The air filter in the incubator is to be changed every three months.

Infant Feeding formulae:

Readymade standardized Infant formulae, on prescription of the neonatologist are preferred.

- If these are not available then individualized formulae must be prepared and stored with surgical asepsis.
- Infant formulae should be tested once a week to see that no more than 25 organisms/ml are present.

Cleaning

Refer to the section on housekeeping. The following additional points are to be noted:

- Invasive procedures and feeding should not be done at the time of cleaning.
- A disposable cover gown is to be used while cleaning the nursery.
- Cradles are to be cleaned every day with soap and water.
- Mattresses should be exposed to the sun every week for six hours, biweekly if possible.
- Wash sinks during each shift.
- Clean other fridges weekly and discard old medicines, blood samples, CSF bottles.
- Humidifier bottles and water and tubing need to be changed every day, even if not used. The bottle, water and tubing should be changed again if oxygen is discontinued on one patient is brought to the same point. Oxygen hoods are to be cleaned every day and between babies. The suction apparatus jar should be cleaned every day with a change of the disinfectant fluid and the tubing.

Linen and Infant's clothing:

Linen for use in the newborn nursery should be free of laundry chemicals that may cause toxic effects and skin irritation.

- New linen should be laundered before initial use.
- Soiled linen should be handled with standard precautions to avoid contamination.
- Soiled diapers should be placed in covered containers lined with a yellow plastic bag.

Skin, Cord and Eye care:

After initial observation and stabilization, meconium and blood may be wiped off with sterile cotton sponges with warm water to remove potential blood- borne pathogens.

a) The skin should then be carefully dried to minimize heat loss.
b) The skin and cord may be kept dry for the rest of hospital stay. This reduces heat loss and skin trauma, and avoids exposure to topical agents with possible adverse effects.
c) Bacterial colonization of the cord may be limited by local application of acriflavine in spirit. Alternatives include triple dye, Betadine lotion/ointment. Dry care of the cord margins is an acceptable regimen.
d) Routine use of topical antiseptics such as chlorhexidine for skin and cord care is not required.
e) Eyes can be cleaned with sterile water.

IV Infusions:

IV fluid infusion bottles, burette sets, syringes and IV tubing should be changed simultaneously to a fresh one at least once every 24 hours.

a. Sterile needles used as airways from bottles should be removed immediately after pouring out the required quantity of fluid. A fresh sterile needle should be used each time.

b. When IV fluids are disconnected for any length of time, cap the tip of the tubing with a sterile needle/cap.

c. Parenteral fluid bottles, vials, and ampoules should be used only once. Any remaining solution should be discarded immediately.

d. IV cannula should be changed every 72 hours.

e. Splints used to restrain the limp should be clean and dry at all times.

Cardiac Catheterisation Laboratory

Follow universal precautions for all patient care

1. Patient Preparation

Before leaving the ward, the insertion site hair is clipped and washed with soap. The patient is then sent to the lab in clean ward clothes. In the lab, the insertion site is cleaned as follows.

Brachial Approach - Betadine

- Femoral approach -Cleaned thrice with Betadine solution. The catheter sites are draped with sterile towels and a sheet.

2. Lab personnel:

- Entry to the lab is restricted to the minimum essential.
- Street shoes are not allowed in the lab area. Washable slippers covering the dorsum and sole are to be worn by all personnel within the lab.

3.Lab Disinfection

The floor of the lab is cleaned daily (at the end of all the Cath procedures) using detergent and water. Mop in the morning.

- Blood spills should be immediately covered with 1% sodium hypochlorite for ten minutes and then cleaned.
- Instrument trolley, IV stand, pressure injector stand etc, are washed twice weekly with detergent and then disinfected.

Instruments:

Instrument tray, guide wires, suture needles, arteriotomy set, glass syringes and Angio syringes are autoclaved.

- Metal Instruments such as metal connectors and connecting tubes, which do not come into patient contact, may be reused after thorough cleaning and boiling for 20 minutes. Plastic items like transducer and dome, Teflon syringe used with Angio syringe and pick up clamps are subjected to high level disinfection by immersing in 2% glutaraldehyde solution for at least 20 minutes. These instrument s are to be washed thoroughly with water before and after immersion in glutaraldehyde. Adhere to manufactures instructions for use of glutaraldehyde.

- Cardiac catheters, pacemakers, endotracheal tubes, pressure extension tubes and angioplasty material are subjected to ETO sterilization.

Cleaning of cardiac catheters

- After use Cardiac catheters are immersed immediately in enzymatic cleaner.
- Then they are flushed with water three to four times.
- Hydrogen peroxide is then flushed through the catheters.
- The whole catheter is then immersed fully in glutaraldehyde solution for 45 minutes.
- The catheters are then flushed again with water and completely dried.
- They then undergo ETO sterilization. After ETO sterilization the catheters are placed on a clean shelf for at least three days for residual ETO in the packing to be reduced to acceptable levels. The catheters are then stored in an area free from dust and moisture.

Balloon Catheters:

- All angioplasty balloon catheters should be ETO sterilized before reuse.
- Valvuloplasty balloon catheters (with the exception of inove type A balloon catheters) are sterilised by filling the balloon and the guidewire lumens with 2% Glutaraldehyde and then immersing the entire catheter in Glutaraldehyde for thirty minutes. After that,

the exterior, balloon lumen and wire lumen are thoroughly rinsed with distilled water and dried.

Waste disposal: As per hospital guidelines (refer to the chapter on hospital waste disposal)

Microbiological Monitoring: Cultures are done once a month from floor and equipment, and depending on the report further actions are undertaken.

DIALYSIS

Infection control may be dividing into three major areas

1) Prevention of transmission of blood borne pathogens (HIV, Hepatitis B and C) from patient to patient, and patient to staff or vice versa. The technique of haemodialysis per se is believed to provide a mode of transmission of these pathogens.

2) Prevention of spread of microbial infection between patients, especially those with vascular accesses. Specific emphasis is on spread of MRSA.

3) Maintenance of water quality within microbiological standards.

A. Blood Borne Pathogens

Control Measures

1) It is mandatory for all employees working with dialysis patients to have a complete course of immunization with hepatitis B vaccine, with demonstration of protective levels of antibody.

2) All categories of health care workers must be educated on the precautions to prevent transmission of hepatitis B, C and HIV. Strict supervision of all work areas is essential.

3) Unless the situation is a dire emergency, it is mandatory to test all patients for HBsAg, HCV antibody and HIV antibody before haemodialysis.

4) Patients positive for hepatitis B, C or HIV are to be dialyzed in an area separate from those who are negative.

A patient may be shifted from the positive side to the negative side if the serological markers for HBsAg and HCV revert and test negative consistently. If available, respective PCRs also should be negative and liver enzymes normal.

Hepatitis B & C

1) Disposable gloves, masks and gowns or aprons should be used when caring for patients. Gloves should be worn when taking BP, injecting saline or heparin and for touching dialysis machine knobs. Use a fresh pair of gloves for each patient.

2) Gloves must be used while taking blood or handling potentially infectious body fluids.

3) Blood and other specimens from patients infected with a blood borne pathogen should be labelled as Biohazard when sent the various laboratories for testing.

4) Wash hand immediately after each contact with all patients or their blood and other body fluids. Hands should again be washed after removing gown and gloves and before leaving the room.

5) Transducer protectors should be used to prevent blood contamination of venous and arterial pressure monitors. They should not be reused.

6) Utmost care must be taken to avoid accidental needle pricks with sharp instruments which may be contaminated by the patients' blood. Also avoid contact with open skin lesions in these patients.

7) If there is accidental blood spillage the staff presents should pour 1% sodium hypochlorite over the spill. Wait for ten minutes and then clean the area.

8) The dialysis machine should be cleaned carefully and thoroughly after the dialysis treatment is over with 1% bleach solution.

10)Use only disposable hypodermic and fistula needles. These should be discarded into the sharp's container immediately after use.

10) Constant vigil should be maintained by the staff to minimize the risk of infections.

11) Non disposable items in the hepatitis serology positive area should be sent to CSSD in the white bag with label.

12) No food or drink should be consumed inside the dialysis room by the staff.

13) Reuse areas for dialysers and tubing are divided into separate areas based on the serologic status of the patient. While cleaning these items, staff is advised to wear aprons and masks as protection from splashing of infective material.

HIV positive patients

HIV positive patients are routinely not offered maintenance haemodialysis (HD). However, if a known HIV positive patient were to develop acute renal failure or require HD in preparation for a surgical or other procedure the unit policy is to offer them dialysis

support. CAPD may be the more appropriate mode of maintenance dialysis for HIV sero positive individual. Should an HIV positive patient require dialysis support, the following measures are adopted.

Label all documents (case sheet, dialysis folder progress sheets etc) with a biohazard sticker.

2) Isolate these patients and do not reuse the designated machine without thorough disinfection.

3) Therapist and nurse are designated. There should not be rotation of staff to other categories of patients during the HD session. Wear gloves, aprons, overshoes and masks.

4) Follow items from the section on Hepatitis B & C.

B. Prevention of spread of microbial infection between patients especially with vascular accesses.

Specific emphasis on spread of MRSA needs to be remembered here, since this forms an important cause of hospital acquired vascular access infection in dialysis patients.

Masks, aprons and gloves are indicated during handling of vascular accesses.

- Hand washing and the use of disinfectant hand rub is mandatory before opening any access and between patients. Use of hand rub is not a substitute for hand washing, but a supplementary measure.
- Sterile technique is to be used during procedures involving handling of vascular accesses.
- Access site is to be cleaned thoroughly with disinfectant before starting dialysis. Sterile dressing is to be used over the access site.
- Use separate sets for each patient.
- If MRSA has been isolated from the patient, contact isolation procedures are to be practiced. Masks, gloves and aprons to be discarded into white plastic bags. Staff assigned to this patient should not rotate to other patients during the HD session.

Maintenance of water quality

During dialysis each patient is exposed indirectly to 1500 litters of water per month. Therefore, the clinical and microbiological quality of water used for haemodialysis should be within acceptable standards. The use of water filters, softeners and reverse osmosis (RO) are necessary to ensure chemical purity, if the distribution delivery system is made of inert material (e.g. stainless steel, or synthetic material) Reverse osmosis is also effective in minimizing both bacterial counts and endotoxin, concentration in the water. However, stagnation in the delivery system, presence of loops and bends, use of bicarbonate concentrate -a good nutrient medium -and warming of the dialysate to 37 degrees C are all factors that potentiate microbial contamination of water.

AAMI standards for water used for the preparation of dialysis fluid is followed:

Contaminant	Maximum Concentration (mg/l)
Calcium	2
Magnesium	4
Potassium	8
Sodium	70
Arsenic	0.005
Barium	0.01
Cadmium	0.001
Chromium	0.014
Lead	0.005
Mercury	0.0002
Selenium	0.09
Silver	0.05
Aluminium	0.01
Chloramines	0.1
Free chlorine	0.5
Copper	0.1
Fluoride	0.2
Nitrate	2
Sulphates	100
Zinc	0.1

If endotoxin level is found high then nephrologist, microbiologist and Facility management team are to be informed.

Cleaning of the RO water plant & the piping system should be done.

Retesting of the RO water is to be done and only if the levels are within normal limits, RO water should be used.

Otherwise, RO plant and piping system are to be checked for contamination and re-cleaned thoroughly.

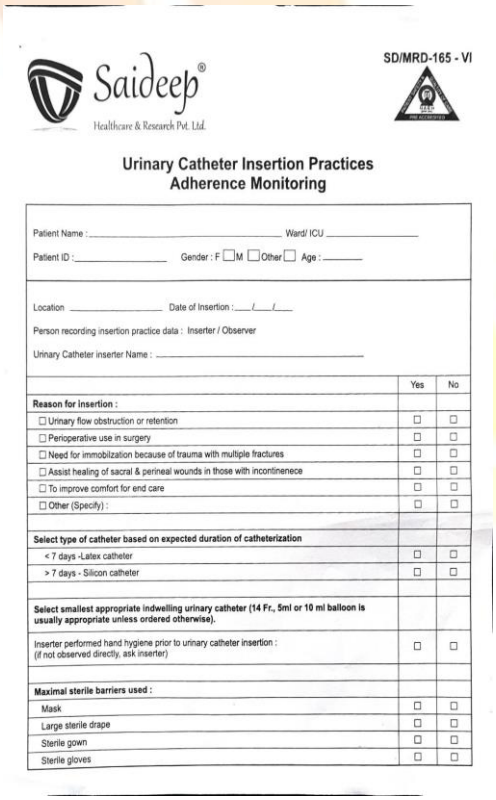
❖ High risk Activities

1. Urinary Catheter Insertion
2. Central Line Insertion
3. Intubation
4. ICD Insertion
5. Tracheostomy
6. Wound Dressing

Following high risk activities are identified for prevention of infection among care worker and patients

1. Urinary Catheter Insertion-

Insertion bundle form is maintained for these activities and evaluated monthly for any breech practices.



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SD/MRD-165 - VI

Urinary Catheter Insertion Practices Adherence Monitoring

Patient Name : _____ Ward/ ICU _____

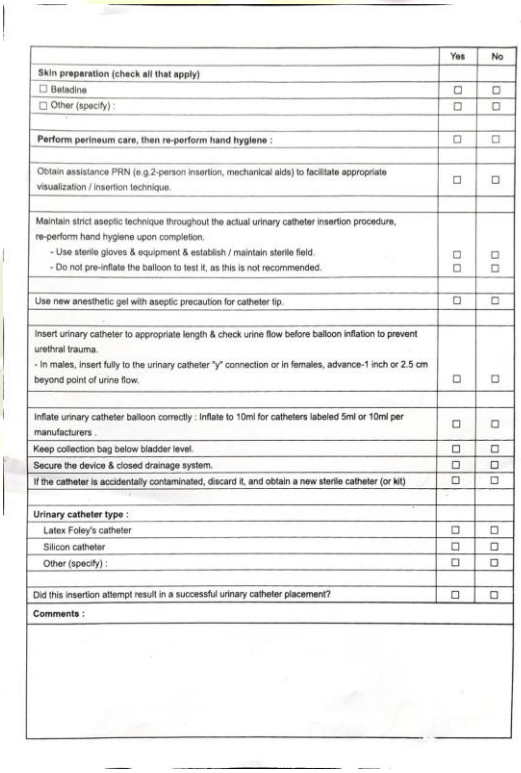
Patient ID : _____ Gender : F ☐ M ☐ Other ☐ Age : _____

Location _____ Date of Insertion : ___/___/___

Person recording insertion practice data : Inserter / Observer

Urinary Catheter inserter Name : _____

	Yes	No
Reason for insertion :		
☐ Urinary flow obstruction or retention	☐	☐
☐ Perioperative use in surgery	☐	☐
☐ Need for immobilization because of trauma with multiple fractures	☐	☐
☐ Assist healing of sacral & perineal wounds in those with incontinence	☐	☐
☐ To improve comfort for end care	☐	☐
☐ Other (Specify) :	☐	☐
Select type of catheter based on expected duration of catheterization		
< 7 days -Latex catheter	☐	☐
> 7 days - Silicon catheter	☐	☐
Select smallest appropriate indwelling urinary catheter (14 Fr., 5ml or 10 ml balloon is usually appropriate unless ordered otherwise).		
Inserter performed hand hygiene prior to urinary catheter insertion : (if not observed directly, ask inserter)	☐	☐
Maximal sterile barriers used :		
Mask	☐	☐
Large sterile drape	☐	☐
Sterile gown	☐	☐
Sterile gloves	☐	☐



	Yes	No
Skin preparation (check all that apply)		
☐ Betadine	☐	☐
☐ Other (specify) :	☐	☐
Perform perineum care, then re-perform hand hygiene :	☐	☐
Obtain assistance PRN (e.g.2-person insertion, mechanical aids) to facilitate appropriate visualization / insertion technique.	☐	☐
Maintain strict aseptic technique throughout the actual urinary catheter insertion procedure, re-perform hand hygiene upon completion. - Use sterile gloves & equipment & establish / maintain sterile field. - Do not pre-inflate the balloon to test it, as this is not recommended.	☐ ☐	☐ ☐
Use new anesthetic gel with aseptic precaution for catheter tip.	☐	☐
Insert urinary catheter to appropriate length & check urine flow before balloon inflation to prevent urethral trauma. - In males, insert fully to the urinary catheter "y" connection or in females, advance-1 inch or 2.5 cm beyond point of urine flow.	☐	☐
Inflate urinary catheter balloon correctly : Inflate to 10ml for catheters labeled 5ml or 10ml per manufacturers .	☐	☐
Keep collection bag below bladder level.	☐	☐
Secure the device & closed drainage system.	☐	☐
If the catheter is accidentally contaminated, discard it, and obtain a new sterile catheter (or kit)	☐	☐
Urinary catheter type :		
Latex Foley's catheter	☐	☐
Silicon catheter	☐	☐
Other (specify) :	☐	☐
Did this insertion attempt result in a successful urinary catheter placement?	☐	☐
Comments :		

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

2. Central Line Insertion-

Insertion bundle form is maintained for these activities & evaluated monthly for any breech practices.

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SD/MRD-164 - VI

Central Line Insertion Practices Adherence Monitoring

Patient Name : _____ Ward/ ICU _____

Patient ID : _____ *Gender : F ☐ M ☐ Other ☐ Age : _____

Location _____ Date of Insertion : ___/___/___

Person recording insertion practice data : Inserter / Observer

Central line inserter Name : _____

Reason for insertion :	Yes	No
1. Prolonged IV therapy		
a) Antibiotics	☐	☐
b) Total parenteral nutrition	☐	☐
c) Chemotherapy	☐	☐
2. Irritating medications	☐	☐
3. Poor peripheral venous access		
a) Hemodynamic monitoring	☐	☐
b) Vasoactive drips	☐	☐
4. Hemodialysis or Plasmapheresis	☐	☐
5. Replace malfunctioning central line	☐	☐
6. Suspected central line-associated infection*	☐	☐
* (In Suspected central line-associated infection, the central line is not to be exchanged over a guidewire)		
Other (Specify) :	☐	☐

	Yes	No
Inserter performed hand hygiene prior to central line insertion : (if not observed directly, ask inserter)	☐	☐
Maximal sterile barriers used :		
Mask	☐	☐
Large sterile drape	☐	☐
Sterile gown	☐	☐
Sterile gloves	☐	☐
Cap	☐	☐
Skin preparation (check all that apply)		
Chlorhexidine gluconate	☐	☐
Providone iodine	☐	☐
Alcohol	☐	☐
If skin prep choice was not chlorhexidine, was there a contraindication to chlorhexidine?	☐	☐
If there was a contraindication to chlorhexidine, indicate the type of contraindication :		
• Patient is less than 2 months of age - chlorhexidine is to be used with caution in patients less than 2 months of age.	☐	☐
• Patient has a documented/known allergy/reaction to CHG based products that would preclude its use	☐	☐
• Facility restrictions or safety concerns for CHG use in premature infants precludes its use.	☐	☐
Was skin prep agent completely dry at the time of first skin puncture? (if not observed directly, ask inserter)	☐	☐
Insertion site :		
Femoral ☐, Jugular ☐, Lower extremity ☐, Scalp ☐, Subclavian ☐, Umbilical ☐, Upper extremity ☐		
Antimicrobial coated catheter used :	☐	☐
Central line catheter type :		
☐ Non-tunneled (Other than dialysis) ☐ PICC		
☐ Tunneled (Other than dialysis) ☐ Umbilical		
☐ Dialysis non-tunneled ☐ Dialysis tunneled		
☐ Other (specify) : ("Other" should not specify brand names or number of lumens; most lines can be categorized accurately by selection from options provided.)		
***Did this insertion attempt result in a successful central line placement?**	☐	☐
Comments :		

3. Intubation-

Maintenance bundle form is used for all patients on intubated.

4. Tracheostomy-

Maintenance bundle form is used for all patients on tracheostomy.

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Affix Patient ID Label Here

SD/MRD/115

VENTILATOR MAINTENANCE BUNDLE

PATIENT NAME :_____

MRN : _____ IPD NO._____

ICU/WARD : _____

INDICATIONS : ☐ Inability to keep airway open ☐ Ventilation failure
☐ Failure to protect airway from aspiration ☐ Insufficiency in oxygenation
☐ Possible conditions that may lead to respiratory failure ☐ Other

Date & time of insertion (Day 0) :
Intubation / reintubation by :
Extubation / Re-extubation / tracheostomy by :

	Date																					
	Day																					
Sr. No.	Shift	M	E	N	M	E	N	M	E	N	M	E	N	M	E	N	M	E	N	M	E	N
1	Hand hygiene before and after respiratory care																					
2	Assessment of readiness to extubate																					
3	Every Shift oral care with chlorhexidine mouthwash																					
4	Spontaneous breathing trials given without sedation																					
5	Closed suction technique is used.																					
6	Assess patient for thromboprophylaxis																					
7	Head end of bed elevation (30 - 40 degree)																					
8	Peptic ulcer prophylaxis																					
9	Ensure cuff pressure is between (25 - 30cm H2O)																					
10	Endotracheal tubes with subglottic secretion drainage port being used																					
	Primary Nurse Initials																					
	Nursing Incharge Initials																					

5. ICD Insertion-

Aseptic precaution is to be taken & monitored for these procedures.

Chest Drain Observation Chart

AFFIX LABEL HERE	Date and time of insertion:		**Seldinger chest drain:** 12F 18F **Wide-bore chest drain:** 20F 22F 24F 26F 28F **Indication:** Pleural effusion ☐ Pneumothorax ☐ Empyema ☐ Other .....
	Ward:		
	Consultant:		

Following insertion observe chest drain:

- Every 15 minutes for the first hour; Every hour for the next 3 hours and every 4 hours until removal
- Observe site for signs of infection/disconnection/air leak and/or displacement
- Ensure drainage bottle is positioned correctly below the level of the chest
- Record the amount and type of drainage
- Ensure patient is comfortable and give analgesia as required
- Refer to Trust policy for further information

			Blue bottle (PASSIVE)										Red Bottle (SUCTION)				
	Date	Time	Swinging	Bubbling	Drainage type*	Underwater seal intact	Tubing & connections intact	Site checked	Bottle changed	HOURLY Chest drain drainage	Chest drain drainage running total	Suction prescription	Bubbling	Correct water level in suction bottle	Suction seating at wall	Signature
			y/n	y/n	C/P/B/SS	y/n	y/n	dry/wet	y/n	mls	mls	....cmH20	y/n	y/n	.....KPa	
Every 15 minutes for the first hour																
Every hour for the next 3 hours																

*Drainage type: C = clear P = purulent B = blood SS = serosanguineous

.

6. Wound Dressing-

Wound care observation form is used while dressing & monitored for any deviation

Practices	Dressing-1	Dressing-2	Dressing-3	Dressing-4	Dressing-5	Dressing-6	Dressing-7
1. All supplies gathered before dressing change • Supplies were handled in a way to prevent contamination • Supplies are dedicated to and labelled for one individual • Multi-dose medications are used appropriately1							
2.The surface of dressing trolley disinfected with 70% alcohol and allowed to dry.							
3. Hand hygiene performed properly before preparing clean field							
4. Hand hygiene performed properly before starting the procedure							
5. Clean gloves and PPE donned according to Standard or Contact precautions • Consider use of surgical mask for all wound care							
6. Barrier positioned under wound							
7. Old dressing removed and discarded immediately							
8. Dirty gloves removed and discarded							
9. Hand hygiene performed properly before accessing clean supplies							
10. Clean gloves donned							
11. Wound cleaned using aseptic non-touch technique							
12. Wound treatment completed using aseptic non-touch technique							
13. Dirty supplies discarded in trash receptacle							
14. Gloves removed and hand hygiene performed properly after dressing change is complete							
15 Reusable equipment cleaned and/or disinfected appropriately							
16.Wound assessed for signs of infection. 1-Purulent discharge at site 2-pain or tenderness (localized)3-localized swelling 4-Erytherna 5-increased local temp.6-Abscess at site							
17.The surface of the trolley disinfected. (70% alcohol)							

1.NOSOCOMIAL INFECTIONS

1. DEFINITION

Hospital-Acquired Infection, are infections acquired during hospital care which is not present or incubating at admission. Infections occurring more than 48-hours after admission are usually considered nosocomial. Definitions to identify nosocomial infections have been developed for specific infection sites (e.g.: urinary, pulmonary). They are based on clinical and biological criteria, and include approximately 50 potential infection sites.

CDC defines a Health care associated infection (HAI) as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There is must be no evidence that the infection was present or incubating at the time of admission to the acute care setting.

HAI may also be considered either endemic or epidemic. Endemic infections are most common. Epidemic infections occur during out breaks, defined as an unusual increase above the baseline of a specific infection or infection organism. Changes in health care delivery have resulted in shorter hospital stays and increased out patient care. It has been suggested that the term nosocomial infections should encompass infections occurring in patients receiving treatment in any health care setting.

Infections acquired by staff or visitors to the hospital or other health care setting may also be considered nosocomial infections. Simplified definitions may be helpful for some facilities without access to full diagnostic techniques. The following table (Table1) provides definitions for common infections that could be used for surveys in facilities with limited access to sophisticated diagnostic techniques.

2. Criteria for Surveillance: Four main HAI are: SSI, CAUTI, CLABSI, VAP.

SIMPLIFIED CRITERIA FOR SURVEILLANCE OF NOSOSCOMIAL INFECTIONS

Types of Nosocomial Infections	Simplified Criteria
Surgical site infection	Any purulent discharge, abscess, or spreading cellulitis at the surgical site during the month after the operation. For surgeries like CABG, Craniotomy & implants within 90 days of operation.
Urinary Tract Infection	Positive urine culture (1or 2 species) with at least 105 bacteria / ml with or without clinical symptoms.
Respiratory Infection	Respiratory symptoms with at least two of the following signs appearing during hospitalisation: - i. - Cough ii. - Purulent sputum iii. - New infiltrate on chest radiograph consistent with infection
Vascular Catheter Infection	Inflammation, lymphangitis or purulent discharge at the insertion of the catheter
Septicaemia	Fever or rigors and at least one positive blood culture

The ultimate aim is the reduction of nosocomial infections, and their costs.

The specific objectives of a surveillance programme include:

To improve awareness of clinical staff and other hospital workers (including administrators) about nosocomial infections and antimicrobial resistance, so that they appreciate the need for prevention action.

- To monitor trends: incidence and distribution of nosocomial infections, prevalence and, where possible, risk-adjusted incidence for intra-and inter hospital comparisons to identify the need for new or intensified prevention programmes, and evaluate the impact of prevention measures.
- To identify possible areas for improvement in patient care, and for further epidemiological studies (i.e. risk factor analysis)

Recent trends in — targeted surveillancell include:

Site-oriented surveillance:

Priorities will be to monitor frequent infections with significant impact in mortality, morbidity, costs (e.g. extra hospital days, treatment costs), which may be avoidable.

Common priority areas are:

Surgical site infections (first for extra -hospital days and cost)

- Primary (intravascular line) blood stream infections (high mortality) •
- Multiple-drug resistant bacteria (e.g.: methicillin-resistant Staphylococcus aureus, Klebsiella spp. with extended-spectrum beta-lactamase)

This surveillance is primarily laboratory- based. The laboratory also provides units with regular reports on distribution of microorganisms isolated, and antibiotic susceptibility profiles for the most frequent pathogens.

Unit-oriented surveillance:

Efforts can focus on high-risk units such as intensive care units. Surgical units, oncology/haematology, burns units, neonatology etc.

Surveillance Protocol in our hospital:

We do three monthly / quarter surveillance cultures from the vulnerable areas like ICU 's, labour room, Cath lab and monthly surveillance cultures from different areas of the operation theatre. More frequent surveillance is done in the event of an outbreak. Necessary corrective steps are taken after surveillance culture report.

Priority-oriented surveillance:

Surveillance undertaken for a specific issue of concern to the facility (i.e. urinary tract infections in patients with urinary catheters in long- term care facilities). While surveillance is focused in high-risk sectors, some surveillance activity should occur for the rest of the hospital. This may be most efficiently performed on a rotating basis (e.g. laboratory-based).

3. Urinary Tract Infections (UTI):

Definition:

It is an infection anywhere in the urinary tract. Normally the urine is sterile. It contains fluids, salts and waste products, but it is free of bacteria, viruses and fungi. An infection occurs when microorganisms, usually bacteria from the digestive tract cling to the urethra or opening to the urinary tract and begin to multiply.

Risk factors:

Elderly

- Neurogenic bladder (Females—indwelling catheter, Males—indwelling and condom)
- Debilitation
- Immobility
- Immunosuppression

Gynae and obstetric condition

Causes of Infection:

Poor aseptic insertion

Immigration of bacteria from outer surface of catheter

Open drainage

Break in closed drainage system

Poor perineal hygiene

Cross contamination

Symptoms:

Burning on urination- urethritis

- Cystitis- fever, low abdominal pain/ discomfort
- Colour/ appearance (cloudy, dark, blood tinged)
- Smell – funny odour

Types of Infection:

- Endogenous- patients own flora
- Exogenous- due to contaminated hands of personnel

Common organisms:

E. coli (most common)

- Enterococci spp
- Pseudomonas spp
- Klebsiella spp
- Enterobacter spp
- Proteus spp
- Fungi
- Serratia marcescens
- Acinetobacter spp

Symptomatic Urinary Tract Infection

DEFINITION:

A Symptomatic urinary tract infection must meet at least one of the following criteria:

Criterion 1: patient has at least one of the following signs or symptoms with no other recognized cause of fever (>38^{0}C or 100.4^{0}F), Criteria and rates urgency, frequency, dysuria or suprapubic tenderness and Patients has a positive urine culture that is > 105 microorganisms per cm3 of urine with no more than two species of microorganisms.

Criterion 2: patients have at least two of the following signs or symptoms with no other recognised cause: fever (>38oc), urgency, frequency, dysuria or suprapubic tenderness and at least one of the following:
Pyuria (urine specimen with > 10WBC mm3 or > WBC high power field of unspun urine)

- Organism seen on Gram stain of unspun urine.
- At least two urine culture with repeated isolation of the same uropathogen (gram-negative bacteria or
- S. saprophyticus) with > 102 colonies mL in non-voided specimens < 105 colonies mL of a single uropathogen (gram negative bacteria or S. saprophyticus) in a patient being treated with an effective antimicrobial agent for a urinary tract infection
- Physician diagnosis of a urinary tract infection.
- Physician institutes appropriate therapy for a urinary tract infection

Criterion 3: patient < 1 year of age has at least one of the following signs or symptoms with no other recognized cause:

- fever (>38oc), hypothermia (<37oc), apnea, bradycardia, dysuria, lethargy or vomiting and
- Patient has a positive urine culture, that is > 105 microorganisms per cm3 of urine with no more than two species of microorganisms.

Criterion 4: patient < 1 year of age has at least one of the following signs or symptoms with no other recognized cause: fever (>38oc), hypothermia (<37oc), apnea, bradycardia, dysuria, lethargy, or vomiting and At least one of the following:

Pyuria (urine specimen with > 10WBC / mm3 or > WBC / high power field of unspun urine)

f) Organism seen on Gram stain of unspun urine
g) At least two urine culture with repeated isolation of the same uropathogen (gram-negative bacteria or S. saprophyticus) with > 102 colonies mL in non-voided specimens.
h) < 105 colonies mL of a single uropathogen (gram negative bacteria or S. saprophyticus) in a patient being treated with an effective antimicrobial agent for a urinary tract infection
i) Physician diagnosis of a urinary tract infection
j) Physician institutes appropriate therapy for a urinary tract infection

Indications for Catheterisation

Acute obstruction/retention, which cannot be treated with non-traumatic intermittent catheterization

f. Measuring urine production in critically ill patient
g. Patient undergoing rapid dieresis
h. Peri operative patients to need completely empty bladder

Risk and Contributing Factors

Catheter related factors	Patient related factors
Left in place for more than 6 days - Unsterile insertion technique - Not positioned correctly - The level of the drainage tubing is above the bladder or below the level of the drainage bag - Not maintained as a closed system	Female v. Pregnant vi. Malnourished vii. Chronic illness viii. Recurrent UTI ix. Diabetes mellitus

Precautions

Periurethral cleaning with a disinfectant

- Hand washing
- Secure catheter to avoid movement
- Closed drainage
- Collection with syringe and needle
- Do not allow the bag to stand on the floor
- Disinfectant in the urobag if infection rate is high
- Use condom catheter when indicated with penile care
- Discontinue condom catheter at first sign of penile irritation / skin breakdown
- Avoid using condom catheter for 24 hours, other methods to be preferred / diapers / absorbent pads.

Meatal Care

Perineal care twice daily

- Clean the catheter with wockdine-5% twice a day

4. RESPIRATORY TRACT INFECTIONS (RTI):

Health care associated pneumonia can be characterized by its onset of hospitalisation– Early or Late.

Early onset pneumonia- occurs during the first 9hrs of hospitalization and is often caused by M. catarrhalis, H. influenzae, pneumoniae, streptococcus pneumonia, staphylococcus aureus (methicillin sensitive), E- coli and Klebsiella

Late onset pneumonia- if pneumonia develops after 96hrs (more than 4days) of hospitalization. Causative agents include gram negative bacilli or. aureus including MRSA. Viruses (influenza A&B, RSV) cause early or late onset pneumonia, whereas yeasts, fungi, legionellae and P. jiroveciare usually pathogens of late onset pneumonia. Pseudomonas aeruginosa, Acinetobacter and staphylococcus aureus (methicillin resistant)

There are 3 specific types of pneumonia
Clinically defined pneumonia

- Pneumonia with specific laboratory findings
- Pneumonia in immunocompromised patients

Ventilator associated pneumonia: is defined as pneumonia in persons who had a device to assist or controlled respiration continuously through a tracheostomy or by endotracheal intubation within 48hr period before the onset of infection, inclusive of weaning period.

Risk Factors

Endotracheal or tracheostomy intubation and mechanical ventilation Underlying chronic lung diseases Supine position Immobilization
Surgery of head/ neck/ thorax/ upper abdomen.

Clinical Criteria Used in Diagnosing Ventilator-Associated Pneumonia:

RADIOLOGY SIGNS	CLINICAL SIGNS
Two or more serial chest radiographs with at least 1 of the following: i. new or progressive and persistent infiltrate ii. consolidation iii. cavitation	One or more of the following iv. fever (temperature > 38 C) v. leukopenia (< 4000 WBC) or leucocytosis (> 12000 WBC) vi. altered mental status, for adults 70 years or older, with no other recognized cause
MICROBIOLOGICAL CRITERIA	
At least one of the following vii. positive growth in blood culture not related to another source of infection viii. positive growth in culture or pleural field ix. positive quantitative culture from broncho alveolar lavage (> 10^4) or protected specimen brushing (> 10^3) x. five percent or more of cells with intracellular bacteria on direct microscopic examination of Gram-stained broncho alveolar lavage fluid xi. histopathological evidence of pneumonia	Plus at least two of the following xii. new onset of purulent sputum, or change in character of sputum xiii. increased respiratory secretions, or increased suctioning requirements xiv. new-onset or worsening cough, or dyspnoea, or tachypnoea xv. rales or bronchial sounds xvi. worsening gas exchange

Prevention of VAP in mechanically ventilated patients:

- Staff Education and Infection Surveillance
- Interrupting Transmission of Microorganisms
- Sterilization and Disinfect ion of equipment and devices
- Interrupting person to person transmission of bacteria
- Modifying Host Risk for Infection

Suctioning:

Hand washing

- Wear gloves to prevent cross- contamination
- Use sterile fluids to remove secretions
- Gentle suctioning as dictated by the volume and character of secretions
- Suction patients to remove secretions collecting about the endotracheal tube cuff before removing the cuff.

Medication nebulizers:

Use sterile medications and fluids for nebulization

- Dispense sterile medications aseptically and store according manufactures recommendations
- Do not use large volume nebulizers unless they can clean and reprocessed daily
- Small, hand-held nebulizers
- Minimize unnecessary use
- Between uses for the same patient disinfectant, rinses with sterile water, or air dry and store in a clean, dry place

Enteral feeding in mechanically ventilated patients:

iv. Verify placements of the feeding tube in the stomach or small intestine Elevate the head of the bed 30-45 degrees Monitor the adequacy of intestinal mobility.

Strategies for preventing aspiration:

- Semi recumbent positioning of patients

x. Patients receiving mechanical ventilation should be placed in a semi recumbent position to reduce the occurrence of aspiration

Measures to reduce unplanned extubation (e.g., appropriate use of physical) and chemical restraints and securing of the endotracheal tube to the patient) and the need for subsequent reintubation performed with the patient in the supine position may also be beneficial.

- Avoidance of Large Gastric Volumes:
  a. Reducing the use of narcotics and anticholinergic agents,
  b. Monitoring gastric residual volumes after intragastric feedings,
  c. Using agents that increases gastrointestinal motility (e.g., metoclopramide)
  d. Use sucralfate for maintaining gastric P^H

- Oral (Non-Nasal) Incubation:
- Prolonged nasal intubation (for more Than 48hrs) should be avoided because of the association between nosocomial sinusitis and ventilator- associated pneumonia.
  - Here for the preferred route of intubation is the oropharynx.
  - Continuous subglottic Suctioning:
  - Secretions that pool above inflated endotracheal- tube cuffs may be a source of aspirated material and thus ventilator- associated pneumonia
  - Thus, pressure of the endotracheal- tube cuffs should be adequate to prevent the leakage of colonized subglottic secretions into the lower airway.

Re-Processing of Respiratory Equipment

Clean all equipment

- Sterilize or use high level disinfectants for all items that come into direct or indirect contact with mucous membrane of the respiratory tract
- Rinse and dry items that have been chemically disinfected Rinsing to be done only with sterile water
- Packed and store items to prevent contamination before use.

VAP CARE BUNDLE

1. Proper hand washing Hand washing should be done -Before and after suctioning.

- If the staff come in contact with respiratory secretions.

2. Oral care

Proper oral care is mandatory includes:

Good oral hygiene

- Use of chlorhexidine rinse
- Application of mouth moisturizer
- Replacing suction line and tubing every 24 hours

3. Management of oropharyngeal and tracheal secretion

Hypo pharyngeal suctioning should be performed before repositioning the endo tracheal tube, deflating the cuff and repositioning the patient.

- Use aseptic technique for suctioning.

4. Gastro intestinal ulcer prophylaxis

H2 blockers and antacids decrease the incidence of stress ulcers.

- As the PH rises Colonization of the GI tract occurs. These organisms ascend the GI tract and gain access to the trachea.
- Sucralfate protects the lining of the stomach without increasing the pH

5. Head of bed elevation 30-45^0

- Head of bed elevation 30-45^0 unless contraindicated.
- Benefits of head of bed elevation include:

Reduces the risk of aspiration of gastrointestinal contents

a. Reduces the risk of aspiration of oropharyngeal secretions
b. Decrease the risk of aspiration of nasopharyngeal secretions
c. Improves the patient ‘s ventilation
d. Increases tidal volume
e. Promotes ventilator effort
f. Promotes ventilator effort
g. Minimize atelectasis

Contraindications of head of bed elevation include:

Hypotension MAP (mean arterial pressure < 70mm Hg)

- Tachycardia >150/min
- Presence of central line procedure
- Presence of femoral lines e.g.: IABP insertion

6. Nurse driven sedation weaning protocols

Sedation in ICU has the benefits of reducing psychological problems to the patients. But heavy sedation is harmful and predisposes to VAP by inhibiting coughing, inhibiting mobilization, decreasing immune function, promoting aspiration and prolonging time on ventilation.

7. Frequency of equipment changes

Frequent ventilator circuit changes are associated with a high risk of ventilator associated pneumonia.

- Inner cannula of tracheostomy tube should be done in between 8-24 hours.
- Change Ambu bag between the patients.

General guidelines for prevention of pneumonia:

Strict adherence to Infection Control protocols and Universal precautions is required

- Use aseptic technique while carrying out tracheostomy or endotracheal care chart and report any change in secretion colour and Odor, elevated temperature, erythema, purulent stoma drainage
- Discard the endotracheal and tracheostomy suction catheter after use
- Breathing circuits:
  - Do not change routinely, on the basis of duration of use, the breathing circuit (i.e., ventilator tubing and exhalation valve and the attached humidifier) that is in use on an individual patient.
  - Change the circuit when it is visibly soiled or mechanically malfunctioning.

Periodically drain and discard any condensate that collects in the tubing of mechanical ventilator, taking precautions not to allow condensate to drain toward the patient.

Wear gloves to perform the previous procedure and/or when handling the fluid.

- Use sterile water to fill humidifier. Change the water in the humidifier daily and label it with date and time o filling discard the water if the oxygen is discontinued
- Bacterial filtrate should not be used for more than 48 hrs. It is mandatory to label it with data and time
- Change the humidifier tubing (including any nasal prongs or mask) that is in use on one patient when it malfunctions becomes visibly contaminated
- Between treatment s on the same patient clean and dry small volume in line or hand-held medications nebulizers
- Use only sterile fluid for nebulization and dispense the fluid the nebulizer aseptically.
- Whenever possible use aerosolized medications in single dose vials If multi dose medication vials are used, follow manufacturers instruction for handling storing and dispensing the medications.
- Reusable resuscitation bags should be sterilized before being used on different patients.

5. SURGICAL SITE INFECTIONS (SSI)

Definition: Infections that occur in the wounds created by an invasive surgical procedure are generally referred to as surgical site infections. SSI can be classified into 3 groups

Superficial Incision This is defined as a surgical site infection that occurs within 30 days of surgery and involves only the **skin** or **subcutaneous tissue** of the incision, **and** meets at least **one** of the following criteria:

Criterion 1: Purulent drainage from the superficial incision.
Criterion 2: The superficial incision yields organisms from the culture of aseptically aspirated fluid or tissue, or from a swab and pus cells are present.
Criterion 3*:* At least two of the following symptoms and signs:
- pain or tenderness
- localised swelling

- redness - heat

and a. the superficial incision is deliberately opened by a surgeon to manage the infection, unless the incision is culture-negative or

b. the clinician diagnoses a superficial incisional infection.

Note: Stitch abscesses are defined as minimal inflammation and discharge confined to the points of suture penetration, and localised infection around a stab wound. They are not classified as surgical site infections.

Deep incisional SSI:

Definition: this is defined as a surgical site infection involving the deep tissues (i.e. fascial and muscle layers) that occurs within 30 days of surgery if no implant is in place, or within a year if an implant is in place and the infection appears to be related to the surgical procedure, and meets at least one of the following criteria:

Criterion 1: Purulent drainage from the deep incision but not from the organ/space component of the surgical site.

Criterion 2: The deep incision yields organisms from the culture of aseptically aspirated fluid or tissue, or from a swab and pus cells are present.

Criterion 3: A deep incision that spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following symptoms or signs (unless the incision is culture-negative):

- fever (>38oC)
- localized pain or tenderness

Criterion 4: An abscess or other evidence of infection involving the deep incision that is found by direct examination during re-operation, or by histopathological or radiological examination.

Criterion 5: Diagnosis of a deep incisional surgical site infection by an attending clinician.

Note: An infection involving both superficial and deep incision is classified as deep incisional SSI unless there are different organisms present at each site

Organ / Space Surgical Site Infection:

Definition: This is defined as a surgical site infection involving any part of the anatomy (i.e. organ/space), other than the incision, opened or manipulated during the surgical procedure, that occurs within 30 days of surgery if no implant is in place, or within one year if an implant is in place and the infection appears to be related to the surgical procedure, and meets at least one of the following criteria:

Criterion 1: Purulent drainage from a drain that is placed through a stab wound into the organ/space.

Criterion 2: The organ/space yields organisms from the culture of aseptically aspirated fluid or tissue, or from a swab and pus cells are present.

Criterion 3: An abscess or other evidence of infection involving the organ/space that is found by direct examination, during re-operation, or by histopathological or radiological examination.

Criterion 4: Diagnosis of an organ/space infection by an attending clinician

Note:

1. occasionally, an organ/space infection drains through the incision. Such infection generally does not require re-operation and is considered to be a complication of the incision, and is therefore classified as a deep incisional infection.
2. Where doubt exists, refer to the Definitions of specific site of organ/space infection to determine if the organ/space infection meets the definition

The **organ/space infection** should be allocated to one of the **specific sites** in the following list:

arterial or venous

bone (osteomyelitis)

breast abscess/mastitis

endocardium (endocarditis)

female genital tract (not vaginal cuff)

includes vagina, uterus, ovaries, or other deep pelvic tissue

gastrointestinal tract - includes oesophagus, stomach, small and large bowel and rectum (excluding appendicitis and gastroenteritis.

intra-abdominal - includes peritoneum, sub-phrenic or sub-diaphragmatic space, gall

bladder, bile duct, liver (excluding hepatitis), spleen, pancreas, or other intra-abdominal tissue or area not specified elsewhere

intracranial abscess

joint or bursa

mediastinum (mediastinitis)

meninges (meningitis)

myocardium or pericardium (myocarditis or pericarditis)

spinal abscess (without meningitis)

vaginal cuff

vertebral disc space

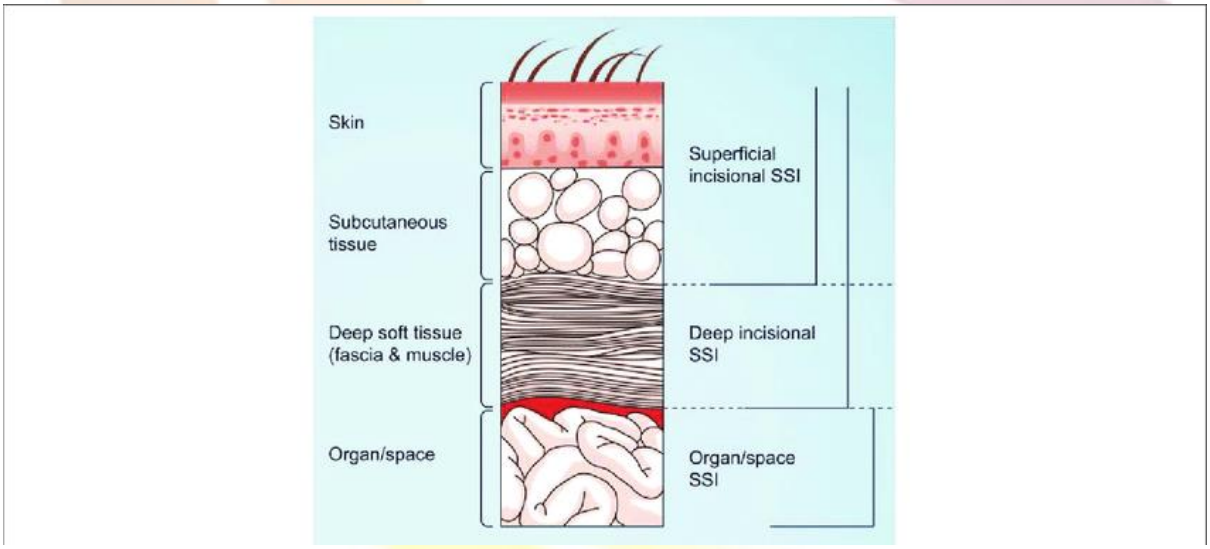


Figure: Centers for Disease Control and Prevention's National Safety Network Classification for Surgical site infection (SSI)

6. BLOOD STREAM INFECTIONS (BSI): Definition:

According to the definitions proposed by the CDC, health care associated BSI is defined in a patient with a clinically important blood culture positive for a bacterium or fungus that is obtained more than 48 hours after being admitted to the hospital.

Risk factors:

Agammaglobulinemia

- Immunosuppressive therapy
- Severe trauma
- COPD
- DM
- Resistant to microbes and antibiotic

Signs and Symptoms of BSI

Fever (>100.4°[>38oc], chills, or hypo tension, and any skin contaminants

Significant growth of a microorganism (>15 cfu) from the catheter tip, subcutaneous segment of the catheter, or catheter hub

Exit site infection

Erythema or indurations within 2 cm of the catheter exit site, in the absence of concomitant within bloodstream infection (BSI) and without concomitant purulence

Clinical exit site infection (or tunnel infection)

Tenderness, erythema or site indurations > 2 cm from the catheter site along the subcutaneous tract of a tunnelled (e.g.<Hickman or Broviac) catheter, in the absence of concomitant BSI

Pocket infection: Purulent fluid in the subcutaneous pocket of a totally implanted intravascular catheter that might or might not be associated with spontaneous rupture and drainage or necrosis of the overlaying skin, in the absence of contaminant BSI.

Infuscate-related BSI: Concordant growth of the same organism from the infuscate and blood cultures (preferably percutaneously drawn) with no other identifiable source of infection.

Catheter Related BSI: BSI is considered to be associated with a central line if the line was in use during the 48hr period before development of BSI. If the time interval between the onset of infection and device use is >48hrs, there should be compelling evidence that the infection is related to central line.
Bacteraemia/fungemia in a patient with an intravascular catheter with at least one positive blood culture obtained from a peripheral vein, clinical manifestation of infection (fever, chills, and/or hypotension), and no apparent source for the BSI except the catheter. One of the following should be present,

Criteria 1: a positive semi-quantitative culture (>15CU/catheter segment) and the same organism isolated from peripheral blood.
Criteria 2; positive quantitative (> 103CU/catheter segment) and same organism from the peripheral blood
Criteria 3: simultaneous quantitative blood cultures with a >5:1 ratio CVC versus peripheral.
Criteria 4: differential period of CVC culture versus peripheral blood culture positivity of >2hrs.
Steps to control: CLABSI bundle is a group of interventions related to patients with intravascular central catheters that, when implemented together, result in better outcomes than when implemented individually.

a. Hand Hygiene: Washing hands is the best way to prevent infection. Hand hygiene should be done before and after palpating catheter insertion sites, before and after inserting, replacing, accessing, repairing or dressing a catheter, when hands are soiled or contamination is suspected and between caring different patients.
b. Maximal barrier precautions: Maximal barrier precautions emphasises that while giving care to a patient with central line, precautions are to be followed to maximise the barrier.

The barrier precautions include:

Wear all personal protective equipment

- Do skin antisepsis - Allow time to dry completely before puncturing the site
- Should do optimal catheter selection – mostly subclavian vein preferred • Should do daily review of line

c. Chlorhexidine skin antisepsis: Prepare skin with antiseptics e.g. chloraprep2% (chlorhexidine and 70% isopropyl alcohol). Allow time for antiseptic solution to dry completely before puncturing the site (at least 2 minutes).

d. Daily review of line necessity: Use current documentation to prompt discussion of line removal. And avoid routine replacement of central lines, even over guide wires.

e. **Optimal catheter site selection:** In adult patients, a subclavian site is preferred for infection control purposes, although other factors (e.g. the potential for mechanical complications, risk for subclavian vein stenosis and catheter operator skill) should be considered when deciding where to place the catheter. Central venous catheters are life-saving and the majority of patients in intensive care units (ICUs) have them placed in order to receive medicine and fluids. However, the use of these can result in serious bloodstream infections. Bloodstream infections associated with the insertion and maintenance of central venous catheters (CVC) are among the most dangerous complications that can occur. These complications worsen patients' health, prolong hospital stay and increase the cost of care.

7.PREVALENCE & INCIDENCE RATES

Prevalence Rate	Example
Number of infected patients * 100 at the time of study/ Number of patients observed at the same time X100 Number of infected patients at the time of study/ Number of patients exposed at the same time X100	Prevalence (%) of nosocomial infections (NI) for 100 hospitalized patients. Prevalence (%) of urinary tract infection (UTI) for 100 hospitalized patients Prevalence (%) of UTI for 100 patients with a urinary catheter
Attack Rate (Cumulative Incidence Rate) Number of new infectious acquired in a period/ Number of patients observed in the same period X 100 Number of new infections acquired in a period/ Number of patients exposed in the same period X100	Attack rate (%) of UTI for 100 hospitalized patients Attack rate (%) of Surgical site infections (SSI) for 100 operated patients.
Incidence Rate Number of new nosocomial infections acquired in a period/ Total No: of patient-days for the same period X100 Number of new device-associated nosocomial infections in a period/ Total device –days for the same period X100	Incidence of blood steam infection (BSI) for 1000 patient-days Incidence of ventilator-associated pneumonia for 1000 ventilation days

General guidelines to be followed for all procedures:

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

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

Follow proper waste segregation & disposal after each procedure.

6.1 VASCULAR CARE

In addition to the general guidelines listed above, the following points apply to all intravascular catheters.

Hand washing

Wash hands before every attempted intravascular catheter insertion. Antimicrobial hand washing soaps are desirable, and are preferred before attempted insertions of central intravenous catheters, catheters requiring cut downs, and arterial catheters.

Preparation of Skin

Povidone-iodine (PVP) or 70% alcohol may be used for cleaning the skin. Insertion sites should be scrubbed with a generous amount of antiseptic. Beginning from the centre of the insertion site, use a circular motion and move outward. Antiseptics should not be wiped off with alcohol prior to catheter insertion.

Applying dressings

Sterile dressings should be applied to cover catheter insertion sites. Unsterile adhesive tape should not be placed in direct contact with the catheter-skin interface.

Inspecting catheter insertion sites

Intravascular catheters should be inspected thrice daily and whenever patients have unexplained fever or complaints of pain, tenderness, or drainage at the site for evidence of catheter related complications. Inspect for signs of infection (redness, swelling, drainage, tenderness) or phlebitis and also palpate gently through intact dressings.

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

Placing a heparin lock

Starting and stopping an infusion

Changing an intravascular catheter site dressing Changing an intravascular administration set

Flushing IV lines

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

1. Peripheral IV sites (short term catheters):

Dressing Changes: Peripheral IV site dressings should not usually require routine changes; wet or soiled dressing should be changed. Remove carefully to preserve line.

Write the date of insertion on the IV site dressing.

Frequency of flushing is recommended every 8 – 12hrs. Before & after every drug administration, check the patency. 0.9% NaCl or Heparin (Cath flush) are used for flushing, never use sterile water for flushing.

Replacement of Peripheral IV Catheters: - Peripheral IV Catheters should be removed 72-96 hours after insertion, provided no IV related complications requiring catheter removal are encountered earlier. A new peripheral IV catheter, if required, may be inserted at a new site.

2. Central Intravascular Catheters (long term catheters) Dressing Changes: Use either sterile gauze or sterile transparent semi permeable dressing to cover the catheter site. Assess insertion site every shift.

Central IV catheter dressings should be changed every 48 hours. Transparent dressing every 7 days if gauze is not soiled.

Replacement of Central IV Catheters: - Central IV catheters do not require routine removal and reinsertion. The catheter can be kept for a maximum of three months, provided there is no sign of catheter related infection or other complications. However, try to remove catheter as soon as possible.

3. Catheter Related Infection: At the time of catheter removal, the site is examined for the presence of swelling, erythema, lymphangitis, increased tenderness and palpable venous thrombosis.

Any antimicrobial ointment or blood present on the skin around the catheter is first removed with alcohol. The catheter is withdrawn with sterile forceps, the externalised portion being kept directed upward and away from the skin surface.

If infection is suspected, after removal, the wound is milked in an attempt to express purulence. For 5.7cm catheters, the entire length, beginning several millimetres inside the former skin surface catheter interface, is aseptically cut and sent for culture. With longer catheter, (20.3cm and 60.9cm in length), two 5-7cm segments are cultured a proximal one beginning several millimetres inside the former skin catheter interface and the tip. Catheter segments are transported to the laboratory in a sterile tube. Three way with extension should be used only when multiple simultaneous infusions or Central Venus Pressure monitoring are required.

6.2 RESPIRATORY CARE

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

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

i) Ventilator

Sterile water is to be used in nebulizers and humidifiers. This should be replaced twice a day and in between patients.

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

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

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

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

Suctioning of endotracheal/tracheostomy tube Suctioning of the tracheostomy tube should be done frequently to ensure that the airway is free of secretions. However, too frequent or excessive suctioning may irritate the trachea bronchial tree. Employees should be instructed and supervised by trained personnel in proper technique before performing this procedure on their own. Assess the patient using auscultation, ECG (if available) and vital signals prior to suctioning.

Measurement of length of suction catheter:

Centimetre markings on the ET tube should be noted.

1-1.5 cm adjustment for adapter should be added.

0.5cm beyond tip of ET tube should be added to finalize the length of the catheter.

a. Sterile Suctioning

a) Wash your hands

b) Use a catheter with a blunt tip

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

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

e) Put on sterile gloves. The wearing of a mask is also strongly recommended.

f) However, if saline does need to be instilled, 1⁄2 cc of sterile saline is put into the tracheostomy tube on inspiration only.

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

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

I) With draw the catheter approximately 1cm and institute suctioning.

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

k) Continuous suctioning for longer than ten seconds may create an unacceptable level of hypoxia.

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

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

n) Oral suctioning is necessary; it should be done after the tracheostomy is suctioned.

o) When suctioning is completed, clear the catheter and tubing of mucus and debris with sterile water or saline.

p) Discard the catheter, water container, and gloves appropriately.

q) Wash hands.

r) The tubing and suction canister should be changed every 24 hours. The canister should

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

b. Self-suctioning

Patients are taught clean suctioning techniques following the above guidelines. The importance of careful hand washing and correct catheter care must be emphasized.

6.3 URINARY CATHETER

The urinary tract is a common site of nosocomial infection. Most of these infections follow instrumentation of the urinary tract, mainly urinary catheterization. Proper technique of inserting and maintaining an indwelling catheter will reduce the chance of nosocomial infection.

Catheter associated infection is caused by a variety of pathogens, including E. coli, Klebsiella, Proteus and Pseudomonas. Many of the micro-organisms are part of the

patient ‘s endogenous bowel flora, but they can also be acquired by cross contamination from other patients or hospital personnel or by non -sterile techniques.

Urethral Catheterizations Personnel*:* Only persons who know the correct technique of aseptic insertion and maintenance of catheters should handle catheters.

Catheter Use: Urinary catheters should be inserted only when necessary and left in place only as long as medically necessary. They should not be used solely for the convenience of patient-care personnel. For selected patients, other methods of urinary drainage such as condom catheter drainage, supra pubic catheterization, intermittent urethral catheterization, and adult disposable diaper pads can be useful alternatives to indwelling urethral catheterization. Unless obstruction is anticipated, bladder irrigation is not recommended. **Changing indwelling catheter or drainage bag at routine, fixed intervals is not recommended. Rather CBD should be change based on clinical indication such as infection, obstruction, leakage or when the closed system is compromised.**

Selection of Catheter:

For less than 3 days: Foley's catheter + Urine bag (With or without urometer)

For 3 - 7 days: Foley's catheter + Urine bag (With or without urometer) + Sample collection port

For more than 7 days: Silicon Catheter + Urine bag with urometer + sample collection port.

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

Catheter Insertion: Catheters should be inserted using aseptic technique and sterile equipment. Use an appropriate antiseptic solution for peri urethral cleaning. As small a catheter as possible, consistent with good drainage, should be used to minimize urethral trauma.

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

Catheter Change Interval

If catheterization indicated for longer duration, silicon catheter should be preferred which has to be changed every third month

The urobag has to be changed when it became visibly soiled.

CBD should be change based on clinical indication such as infection obstruction or when the closed system is compromised.

Change entire assembly of catheter whenever replacement is needed.

Transportation of a patient with a urinary catheter

- The urine collecting bag has straps; make sure that these are untied before shifting the patient to avoid inadvertent pulling of the catheter with resultant trauma.
- During transit, maintain the closed drainage system. Empty urine bag before transport and record volume. The urine bag has a stopper which has to be properly replaced after emptying the bag. See that the urine bag tubing does not get pulled away from the Foley ‘s catheter.
- Though most of the commercially available urine bags have a non-return valve, maintain the level of the urine bag below the level of the bladder during transit. This is to ensure that no reflux of urine occurs from either the tubing or the bag, back into the bladder.
- Avoid inadvertent clamping or occluding of catheter or the tubing. See that the urine bag does not get entrapped beneath the patient himself. Ensure that continuous bladder drainage is maintained throughout the transit period.
- A leg bag is preferred if the patient is to be discharged on continuous bladder drainage with a Foley ‘s catheter for a long time.
- Check on the patency of the catheter to ensure continuous bladder drainage especially for patients who have undergone urinary bladder surgery.
- Look for position, and ensure a closed drainage system on receiving the patient. Also note the volume and character of urine.

6.4 SSI PREVENTION

i) Surgical wounds

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

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

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

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

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

Care of Ulcers

Dressings of ulcers, of whatever cause should be done at least daily, or more often, depending on the amount of discharge from the ulcer.

-The same technique for surgical wound dressing is used.

-After inspecting the dressing, all the devitalized tissue should be removed, using a scalpel or scissors if necessary.

-The wound should be cleaned with Povidone iodine. Other solutions that can be used include hydrogen peroxide and Diluted Sodium hypochlorite 0.5% solution.

-After debridement of the wound a sterile absorbent dressing is applied. Dressings soaked in Diluted Sodium hypochlorite 0.5% solution may also be applied if there is necrotic tissue in the ulcer.

Care of open surgical wounds, fistulae - Open surgical wounds and fistulae discharge a lot fluid. Using a wound manager or stomadhesive wafer with ostomy bags helps to keep the wound dry.

- A wound manager is useful as it facilitates regular inspection of the wound and debridement if necessary. It also helps if continuous irrigation of the wound with antiseptic solutions or normal saline is required.
- The skin around intestinal fistulae should be inspected daily for excoriation. If excoriation is present, either zinc oxide pastes or aluminium paste is applied around the skin.

- **TRASPORTATION OF PATIENTS WITH DRAINAGE OR SHUNTS**

• **PROCEDURE**	• **RATIONAL**
1.Drainage maintain a close sterile system during transportation. 4.a) Make sure that the drainage bag is closed with the attached cork / spiget. 5.b) Avoid disconnection while transporting. 6.c) Do not raise the drainage bag or bottle above. Avoid the level of the body cavity from which drainage is connected. 7.d) Do not clamp the drainage tubes or catheter or do anything to disrupt the drainage system. 8.e) Use portable stands / holders for drainage bottle / bags while transporting a patient with intercostal. 2.Shunts: - make sure that the shunt is covered with sterile dressing during transportation	• Closed sterile drainage system reduces the entrance of organisms. • Drainage apparatus must be kept at a lower level than the body cavity to prevent back flow of fluid in to the pleural space / body cavity that may cause infection. • If clamped for a long-time pressure may build up and produce tension pneumothorax. • To prevent infection

1 Infection Surveillance Programme for Hospital Acquired Infection

Surveillance encompasses collection, analysis, interpretation and dissemination of relevant data related to actual hospital acquired infection (HAI) or the risk for the same. Under the hospital infection control programme, surveillance covers infections and their microbiological causes

The surveillance for infections acquired in the hospital may be passive or active. Passive surveillance consists of the reporting of any occurrence of suspected HAI by the clinicians. Active surveillance, on the other hand is the systematic collection of data by a designated surveillance team.

Passive clinical reporting of suspected HAI:

- All high-risk areas and units are delegated with passive surveillance responsibility. Unit in charge has been given a register to notify suspected case of HAI.
- Whenever clinicians suspect the occurrence of HAI it shall be reported to the Hospital Infection Control Office (HICO). Details regarding the patients, all procedures, medications with details of duration, dates etc should be made available.
- The microbiology department shall be responsible for reporting any information about infections suspected to have been acquired in the hospital.
- Passive clinical surveillance will be correlated to relevant microbiological information by the HICO and action taken.
- Microbiology laboratory maintains a register for critical values which includes:

- IPD sputum positive cases
- IPD Blood culture positive (Smear findings are informed)
- IPD CSF culture positive (Positive growth findings)
- OT surveillance (Positive growth findings)

Active surveillance of HAI

i. ICNs are taking daily rounds with HAI surveillance form according to CDC-NHSN definitions for HAI. These forms are filled for all patients with devices. They are routinely screened by HICO for the presence of HAI.

ii. The HICO will monitor the rates of HAI in the various units. In case of any increase in the rates or of clustering of cases due to a particular organism, the Medical Superintendent/ Chairperson will assign the task of investigation to the HICO or to a subcommittee. A hospital infection surveillance team is necessary to establish and maintain ongoing active surveillance of all HAI.

iii. The suggested clinical units for active surveillance include Operation theatre complexes, surgical ICU, Neuro Surgical ICU, Post Operative ICU, Super

iv. Specialty Post operative ICU, Neonatal ICU. Paediatric ICU, Semi ICU, Medical ICU, CCU, Semi CCU, CVTS ICU & Dialysis ICU, Casualty, ENT Department, Ophthalmology, Dental Clinic, Labour Room, Blood Bank, CSSD, and Cath lab.

We have surveillance route for collecting and analysing data regarding hospital acquired infections. (ANNEXURE)

2 Reporting of Community Acquired Infections to Governmental Health Authorities:

The health care system is broadly divided into preventive and curative services. Traditionally, disease preventing activities belong to the public health services and curative care to hospitals, dispensaries and clinics. When people with illnesses come to curative services, it is the duty of the Health Care Worker to remember that certain illnesses may have public health importance for which reason that public health system should be alerted.

Saideep has the policy to report reportable diseases to the local health authorities. For certain infections, even one case may be of extraordinary importance in the context of present-day epidemiology. Every such case has to be considered significant by the public health authorities and immediate steps taken to find further cases and to prevent further infection. Plague and Cholera are examples. Certain other diseases are already under surveillance and the earliest evidence of an outbreak can be picked up from the reporting frequency.

Childhood vaccine preventable diseases are reportable since a case is evidence for inadequate immunization in the area of residence of children with such diseases. For the above reasons, reportable diseases should be informed without delay and with complete residential address to the health authorities.;

Acquired Immune Deficiency Syndrome and Human Immunodeficiency Virus infection have recently been included in the list of reportable diseases by Government Directive. However, reporting is only for statistical purposes of determining the time-trend of prevalence. Moreover, strict confidentiality of the identity of the person is to be maintained, hence the report will not contain the identity of the individual.

Reporting Methodology

Although the Medical Superintendent is ultimately responsible for reporting, the reporting process begins from the time of diagnosis, either at the bedside or in the laboratory. Thus, the flow of information will be from the clinicians and microbiologists, to the ICTC (Integrated counselling and testing centre)

a. List of reportable diseases:

Clinical Microbiology
Cholera, Typhoid fever, Diphtheria, Pneumonia, Tuberculosis, Leprosy, Malaria, Rickettsial Fever, Leptospirosis, Bacillary dysentery

xi. Clinical Virology
xii. Chikungunya, Dengue Haemorrhagic Fever, Hepatitis, Meningitis, Pertussis, Measles, PUO, Chicken Pox, Dog bites (rabies), HIV, Influenza like illness, SARI, COVID-19

3 Investigation of an Outbreak

When numbers of isolates or infection rates increase above the baseline, or when an isolate of a rare or potential bio-terrorism agent is recovered, an outbreak may have occurred. The HICC can delegate other staff if needed and deemed fit according to the situation. The following are the steps followed.

Sr. No	Steps	Description
1	Verify diagnosis of suspected cases.	Establish a case definition
2	Confirm an outbreak exists	Be certain all suspected cases meet the definition
3	Find additional cases	Investigate to determine whether additional cases exist
4	Characterize cases	Collect as much information as possible about the cases, including people, place and time elements. Develop an epidemiologic curve to assist in the visualization of an outbreak numbers over time
5	Form hypothesis	Establish a "best guess" hypothesis about the outbreak i.e. what are the likely reservoir, source and means of transmission.
6	Test hypothesis	Test the hypothesis with the control group and data collected and compare the events.
7	Institute control measures	Implement intervention activities to control the outbreak. Even though the hypothesis may not be developed and tested, interventions of some type are introduced early in the investigation.
8	Evaluate effectiveness of control measures.	Determine whether the implemented activities have an impact on the outbreak. Did the number of cases diminish or disappear?
9	Communicated findings	Write up the investigation, file and communicate with all the involved parties.

ANNEXURE

Saideep® Healthcare & Research Pvt. Ltd.

Infection Surveillance Data Collection

SH/HIC/MRD/82

Patient Name:	Age:	Sex:M/F	MRN:	ICU/Ward:	
Dept :	Date of Admission:	Date of transfer to current location:			
Provisional Diagnosis:	Final Diagnosis:				
Outcome:	Transfer out on:	LAMA:	Discharged on:	Expired On:	
Type of Surgery:	Date of Surgery:				

Daily Monitoring		D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	D-9	D-10
HAI	Date										
	Catheter present										
	Temperature										
	Suprapubic tenderness										
	Costovertebral angle pain / tenderness										
CA-UTI	***Urgency**										
	***Frequency**										
	***Dysuria**										
	Apnea										
	Bradycardia										
	Vomiting										
	Lethargy										
CLABSI	CL (Central Line) present										
	Temperature										
	Chills										
	Hypotension (SBP <=90)										
	Apnea										
	Bradycardia										
VAE / VAP	*MV (Mechanical Ventilator) present*										
	PEEP (Daily Minimum)										
	FiO2 (Daily Minimum)										
	Mean airway pressure (MAP)										
	Temperature										
	WBC Count										
	Qualified antimicrobial days (New Antibiotics)										
SSI	Purulent discharge at site										
	Pain or enderness (localized)										
	Localized swelling										
	Erytherna										
	Increased local temperature (Heat)										
	Abscess at site**										
	Surgeon's diagnosis (for superficial SSI)										

*To be reported only when urinary catheter is not in place

**Detected by gross anatomical examination / histopathological examination / imaging.

During data collection (daily monitoring) - Bold rows to be filled for adult patient, Italic rows to be filled for patient < 1 year age for CAUTI / CLABSI and for all paediatric location for VAE/VAP/SSI: rest rows to be filled for all patients.

Microbiology Culture Report (Site specific Culture and blood culture)

Date of Sample collection :	Sample	Organism isolated	Colony Count	Antimicrobial Susceptibility Report
	Blood			
	Site-specific sample			

Data collection by Infection Control Nurse

Name and Signature with date

Data Verified by Microbiologist

Name and Signature with date

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Guidelines for collection and transport of Deep Cleaning settle plates and swabs

Purpose/Significance:

Operation theatres and ICUs involve invasive procedures almost on a daily basis. During these procedures, there is always a risk of transmission of pathogenic agents from hospital environment to the site of procedures. Environmental monitoring through regular sampling of air and contact surfaces of the patient may help in identifying potential areas colonized by pathogenic agents.

1. OT Complex:

A) Air Sampling:

Air sampling can be performed with settle plate method.

a) Time of Sampling:

Once in a week after end of the day of Operation theatre complex.

b) Method of collection:

Request a sealed sterile petri dish with specified culture media from the Microbiology section on the day of air sampling. Remove the seal, open the plate on OT table and keep facing media surface upwards. Note down the time of placement and close the OT. Keep plate for 1 hr. After 1 hr, close the plate and seal it with medical tape. Label it with name of OT and table no.

Do not open the plate outside OT and don't let anyone enter inside while the plate is kept open.

c) Type of Media:

Nutrient agar or Blood agar

d) Transport:

Transport the plate to the microbiology laboratory for 24 hours of incubation. OT can be started immediately after taking plates out of OT.

e) Interpretation of report:

Reporting of the air quality includes no of colonies and its level of significance. Air sampling can only help in understanding the effectiveness of fumigation procedure.

B) Swabs:

Surface contamination can be detected with sterile swabs.

a) Time of sampling:

Collect swab after in between procedure and after 3-4 days of deep cleaning of the operation theatre. Swab send once in a month

b) Method of collection:

Request desired no of sterile swabs one each for respective surface. Take sterile normal saline. Moisten the swab with normal saline and rub it over an area to the size of surface or approx. 10 cm. Replace the swab back into its sterile tube. Seal it with medical tape. Label the swab mentioning OT name and surface of collection.

Do not collect swabs from walls and floor. Collect swabs from the surfaces which either come in contact with the patient or instruments used in the procedure.

c) Transport:

Transport the swabs to the laboratory for inoculation of culture media and 24 hours of incubation.

d) Interpretation of reports:

Any growth observed on culture media will be reported as soon as possible. Do not use the OT till reporting of the swabs is available either in writing or in verbal from microbiology section. In case of contamination of surface, repeat cleaning and disinfection is required.

Swabbing of surfaces help in identifying potential areas of contamination and colonization which may get missed with regular cleaning and disinfection process.

Sampling surfaces:

1. Table – Centre
2. Instrument trolly
3. Light
4. Anaesthesia trolly
5. Floor
6. Wall

Information required for reporting:

1. OT Height
2. OT table height
3. Disinfectant used for surface cleaning
4. Disinfectant used for Deep Cleaning

Surveillance and Reporting		
DEPARTMENT	SWAB COLLECTION	RESPONSIBLE PERSON OF SWAB COLLECTION
NICU	SWAB	DEPARTMENT INCHARGE
LABOUR WARD	SWAB	DEPARTMENT INCHARGE
ICCU	SWAB	DEPARTMENT INCHARGE
CCU	SWAB	DEPARTMENT INCHARGE
MICU	SWAB	DEPARTMENT INCHARGE
DELUX ICU	SWAB	DEPARTMENT INCHARGE
ISOLATION	SWAB	DEPARTMENT INCHARGE
DIALYSIS	SWAB	DEPARTMENT INCHARGE
CATH LAB	SWAB	DEPARTMENT INCHARGE
* SWAB TAKEN FROM 1-FLOOR, 2-WALL,3-BED,4-IF NEED		
OT ZOON	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
OT1	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
OT2	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
OT4	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
CVTS OT	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
GYNAC OT	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
IVF OT	SWAB & SETTLE PLATE	DEPARTMENT INCHARGE
* SWAB TAKEN FROM 1-FLOOR, 2-WALL,3-OT TABLE,4-IF NEED		
* SWAB & SETTLE PLATE SEND ONE IN MONTH.		
* SWAB SEND IN BETWEEN TWO PATIENT & AFTER 3-4 DAYS OF DEEP CLEANING.		
*SEND A SETTLE PLATE AFTER END OF THE DAY CLEANING ONCE IN MONTH		
*ALL REPORTS VERIFIED BY ICN, NEXT RESPONSIBILITIES BY DEPARTMENT INCHARGE.		

Saideep Healthcare & Research Pvt. Ltd.
Viraj Estate, Yashwant Colony, Near DSP Chowk, Ahmednagar - 414003. Ph.: 0241 - 2775700, Mob.: 09370566070

Date Of Reporting : 20/05/2021
Location : OT-1
Ref. by : Saideep Hospital

CULTURE REPORT

Specimen Received on : 18/05/2021
Specimen : Surveillance Swab
Culture : Followed for 48 hrs incubation.

SR NO	SWAB TAKEN FROM AREA	GROWTH	REMARK
1	Control Swab	No Growth	Satisfactory
2	Lamp	No Growth	Satisfactory
3	Floor	No Growth	Satisfactory
4	Table	No Growth	Satisfactory
5	Pendent	No Growth	Satisfactory
6	Boyles	No Growth	Satisfactory
7	Trolly	No Growth	Satisfactory

Verified by ICN.
No Growth found.

Dr.Meghana Patankar
MBBS,MD,(MICROBIOLOGY)
Reg.No.88475

Reviewed By:- Dr. Aiman
20/05/2021

NOTE : These reports need clinical correlation and may need repetitions and may vary according to time and methods and may need confirmatory tests.

Saideep Healthcare & Research Pvt. Ltd.
Viraj Estate, Yashwant Colony, Near DSP Chowk, Ahmednagar - 414003. Ph.: 0241 - 2775700, Mob.: 09370566070

Date : 26/05/2021
Location : OT-1
Ref. by : Saideep Hospital

CULTURE REPORT

Specimen received	:	24/05/2021
Specimen	:	Settle plate.
Culture	:	Followed for 48 hrs incubation.
Observation	:	No colonies grown.
Comment	:	satisfactory.

Verified By Ict.

Dr.Mrs.Meghana S.Patankar
MBBS, MD, (Microbiology)
Reg.No.88475

Reviewed :- Dr. Akhan 26/05/2021

NOTE : These reports need clinical correlation and may need repetitions and may vary according to time and methods and may need confirmatory tests.

2. Water – Dialysis water for endotoxin assay checks every month.RO water from different floor for potable result checks every month.

3. AHU – AHU pre filter checked & cleaning done every 6 monthly. AHU validation checked every 6 monthly.

4. HEPA FILTER - validation checked every 6 monthly

Standard precaution shall be strictly adhered to all healthcare staff in all situations as indicated in the document. Infection control committee and team shall monitor the adherence of standard precaution by healthcare staff. Regular training shall be provided by Infection control team on standard precaution.

STANDARD PRECAUTIONS CONSIST OF THE FOLLOWING ELEMENTS:

- Hand Hygiene
- Personal protective equipment (PPE): gloves, gown/plastic aprons, masks, goggles, face shields, eye Protectors.
- Respiratory hygiene and cough etiquette
- Safety Sharps Management
- Occupational Health and blood-borne pathogens
- Environment control
- Patient care equipment
- Injections
- Collection & Transport of Specimens.

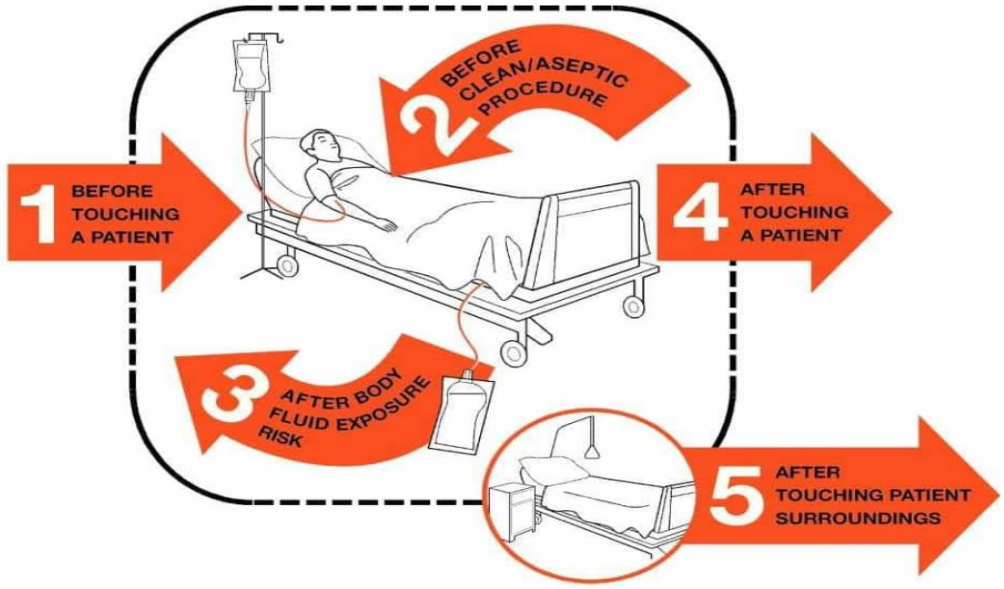
1 Hand Washing

Hand washing is the act of cleaning one ‘s hands with the use of water/ disinfectant solution or soap for the purpose of removing micro-organisms. Hand washing is the most important procedure for preventing nosocomial infections. When done with plain soap, it results in mechanical removal of micro-organisms, and if done with detergents containing antimicrobial agents, it results in chemical removal of micro-organisms as well. Hand washing must be done positively:

- Before performing invasive procedures
- Before caring for particularly susceptible patients (newborns, immune- compromised and other reverse isolation category patients. Refer to the chapter on isolation policies and procedures)

- Before and after touching wounds, even if gloves are used.
- After dealing with situations during which microbial contamination is likely, even if gloves are used.
- On joining and completion of duty shift.
- Between handling of patients and between procedures on the same patient after handling contaminated articles like urinals, bed pans etc.
- After personal use of toilet and before and after meals. General Hand washing Technique:
- Remove watch and other jewellery, stand well away from the sink, turn on the tap using the elbow, wet hands from finger tips to elbow, holding up to enable water to run down from the finger to the elbow.
- Apply soap and scrub each hand with the other, using rotatory movements from the finger tips to the elbows, with special attention to the nails and webs of fingers.
- At the start of the shift, a two-minute scrub is considered the shortest acceptable duration for hand washing. A thirty second scrub should be done in between patients who are not grossly contaminated. If grossly contaminated, a sixty second scrub is recommended.
- Rinse thoroughly under running water ensuring that water flows from the finger tips to the elbow.
- Close tap with elbow, taking care not to touch any sport that has been scrubbed.
- Dry with a clean towel beginning with the hands and proceeding to the wrists and then to the forearms.
- Hot air or disposable paper towel can also be used for dying (except when preparing for invasive procedures)

Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	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 health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.

World Health Organization | Patient Safety — A World Alliance for Safer Health Care | SAVE LIVES Clean Your Hands

May 2009

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

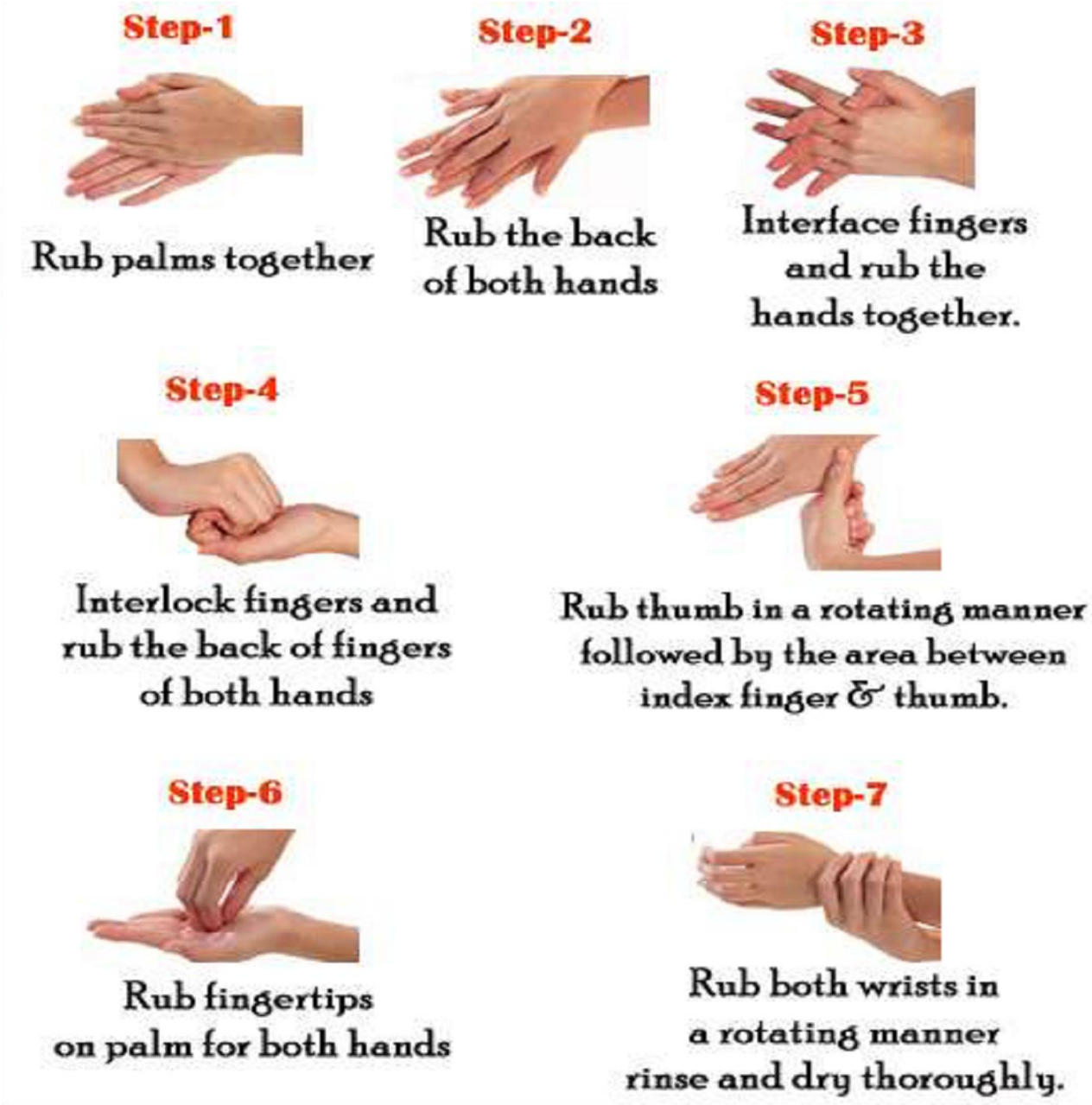


Figure : hand washing

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Hand washing in Special Areas/Units:

Intensive Care Unit & Nurseries:

Patients in these areas are at a higher risk of infection. Therefore, importance of hand washing cannot be over emphasized. Procedure as described above is followed.

Operating Theatres: (SURGICAL HAND WASHING TECHNIQUE :)

Strict aseptic techniques are to be followed by all personnel involved in surgical procedures.

- A minimum of five-minute scrub is recommended before each operation. After the preliminary wash of both hands with soap and water, with the hands held up, scrub the hands with liquid soap or Povidone iodine scrub, starting at the finger nails, hands and proceeding over the forearm to the elbow. Use of brush is for an occasional scrubber. For a regular scrubber brush is better avoided because of the micro abrasions caused.

- Particular attention is given to the finger nails. All personnel should be advised to keep nails short and while scrubbing the under surface of the nails should be cleaned.

- Keep arms with fingers held up and elbow down to ensure flow of water from the finger tips to the elbow.

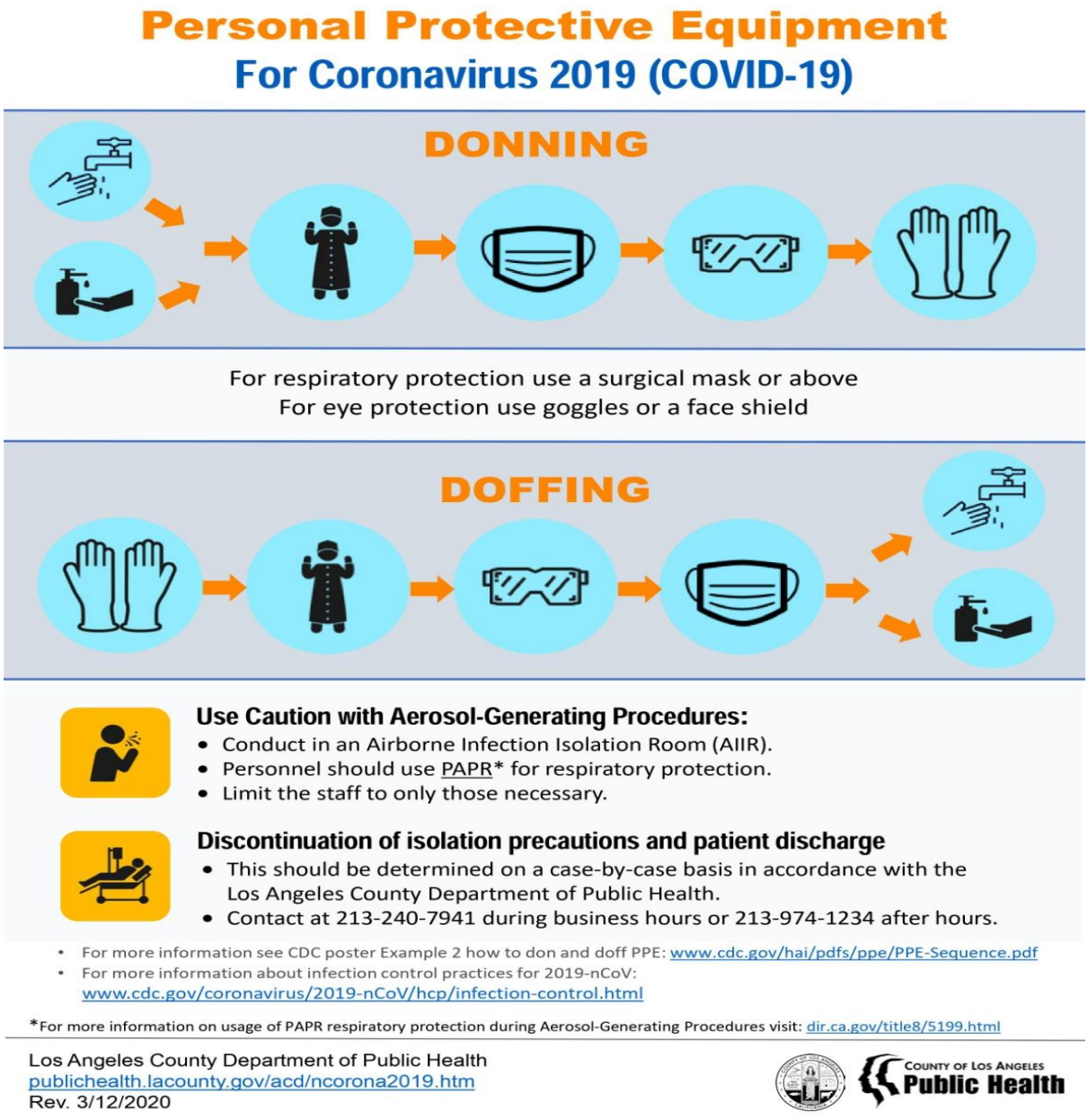
- Close tap with elbow.

- Proceed to dry hands with a sterile towel. Mop dry one hand and forearm with one section of towel, then open; fold and mop dry other hand with a different part. It is essential that once scrubbing has started, all efforts be made to avoid touching contaminated articles/surfaces.

Isolation Wards/Units

The general principles of hand washing before and after each shift, between patient contact and after attending to personal toilet are to be observed. Emphasis is placed on the need for extreme care. Hand washing in between and especially after handling soiled articles, cleaning up patients and administering to isolation patients requires mandatory sixty second scrub.

- **Personal protective equipment (PPE):** Gloves, Gown/plastic Aprons, Masks, Goggles, Face shields, Eye Protectors.



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GLOVES:

There are two categories of gloves available in the hospital:

i. Examination gloves: These gloves are clean but not sterile. They are used for all procedures that do not require sterile technique.

ii. Sterile gloves: These are used for all procedures where sterile technique is mandatory. Each pair of gloves is supplied in sealed covers.

Gloving technique for sterile gloves:

Pairs of sterile gloves are packed in such a way as to facilitate handling without touching the outside of the gloves with bare hands. A 2‘‘cuff is folded on each glove. There are two methods of gloving:

i. The open method

ii. The Closed method

Procedure for wearing gloves

- Pick up the first glove by gripping its cuff with one hand and slip the other hand in.
- With the gloved hand, pick up second glove by slipping hand under the cuff (outside of the glove) and slip the ungloved hand in and release the grip.
- At this stage adjust the fingers of the gloves properly.
- If gowned, the cuff of the second glove is pulled over the stockinette sleeve of the gown.
- The cuff of another glove is then pulled over the stockinette sleeve.

GOWNS

Gowns are available as different types:

Isolation Gowns: These gowns are clean but not sterile. They are used while handling patients who require isolation. These prevent transmission of infection from the patient to the health care worker.

Surgical Gowns: They are sterile gowns that are used for aseptic procedures. Plastic Aprons: They are used whenever spills are expected. They prevent fluids

from soaking the clothes of the health care worker.

Gowning Technique (for sterile gowns):

Sterile gowns are always folded inside out to avoid contamination. As it is impossible to render the hands sterile, they must not come in contact with the outside of the gown or gloves.

Procedure:

Hands must be washed thoroughly.

- Pick up the gown holding it well away from the trolley and your own body.
- Hold the neck band and control until the sleeves are seen.
- Slide both hands and arms into the sleeves at the same time.
- The floor nurse/assistant slides her hands under the gown at the shoulder and pulls out and fastens all the back tapes.
- Cover the back with the back flap with the help of the scrub nurse.

Remember

Do not keep the hands lower than the waist line.

- Do not keep the hands near one's neck or shoulder.
- Do not touch the axillary area once gowned.
- Do not touch the back of the gown.

Removal of Gown at the end of the Procedure:

- The circulating nurse will unfasten the gown.
- The gown is carefully removed by the scrub nurse
- The gown with the inside folded out is placed in the appropriate bin.

MASKS:

- The traditional mask of four to six layers of muslin offers very limited protection. When first worn it may be reasonably efficient, but soon becomes saturated with moist vapor from the wearer ‘s breath.
- More efficient masks are of high filtration disposable type. Several brands are available, any may be used. These masks can be moulded to facial contours and actually filter the respiration as compared to deflection with paper or cellophane insert masks.
- Such masks achieve 98% efficient filtration compared with only 40% with muslin mask.

Such masks achieve 98% efficient filtration compared with only 40% with muslin mask.

Procedure for using a mask

When wearing the mask, care should be taken to see that the nose, mouth and facial hair are well covered.

Masks should be changed at least every operating session and should never be worn around the neck.

Mask wiggling is also a potential source of infection.

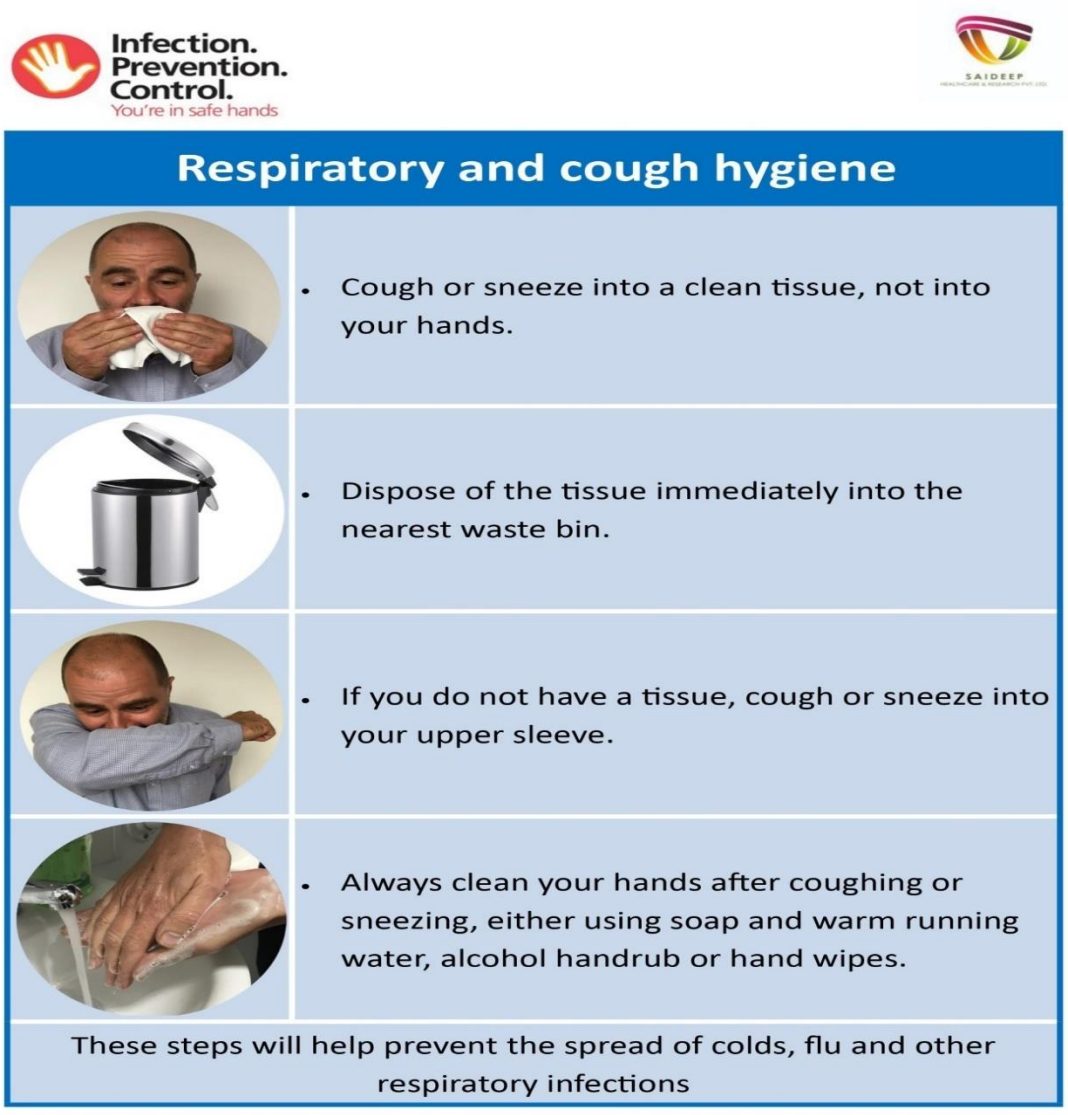
When removing a mask, care should be taken to avoid touching the part which has acted as the filter. The hands can easily become contaminated with bacteria.

• Type of Exposure	• Protective Barriers	• Examples
• Low Risk • Contact skin, no visible blood	• - Gloves helpful bit not essential	• Injections, minor wound dressing
• Medium Risk • Probable contact with blood and body fluid in splashing, uncontrolled bleeding	• - Gloves • - Waterproof gown or apron • - Eye wear • - Mask	• Vaginal examination, insertion and removal of intravenous cannula, handling of laboratory specimens, large open wounds dressing, vein-puncture spill of blood
• High Risk • Probable contact with blood and body fluid in splashing and uncontrolled bleeding	• - Gloves • - Waterproof gown or apron • - Eye wear • - Mask • Cap	• - Major surgical procedure particularly orthopaedic surgery, oral surgery, vaginal delivery

3 Respiratory Hygiene and Cough Etiquette

- Education of health workers, patients and visitors.
- Use of source control measures.

- Hand hygiene after contact with respiratory secretions.
- Spatial separation of persons with acute febrile respiratory symptoms



4 Safety in Sharps Management

Good Practice For the Safe Handling And Disposal Of Sharps
➢ ALWAYS use disposable needle and syringes ➢ ALWAYS dispose of your own sharps. ➢ NEVER pass used sharps directly from one person to another. ➢ During exposure – prone procedures, the risk of injury should be minimized by ensuring that the operator has the best possible visibility e.g. by positioning the patient, adjusting well light source and controlling bleeding. ➢ Protect fingers from injury by using forceps instead of fingers for guiding suturing. ➢ NEVER recap, bend or break disposable needles, if necessary, use the single hand –scoop method. ➢ Directly after use, place needles and syringes in a rigid container until ready for disposal. ➢ Locate sharps disposal containers close to the point of use, e.g. in patient's room, on the medicine trolley and in treatment room etc.

5 Occupational Health and Blood-Borne Pathogens: -

please refer preventing transmission of blood borne pathogens chapter.

6 Environment Control

Environmental cleaning: -Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces. This is described in chapter 10

7 Patient Care Equipment

- Handle equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.
- Clean, disinfect, and reprocess reusable equipment appropriately before use with another patient.

8 Safe Injections:

- Handling Sterile Syringes and Needles: Injection Safety: Medication

- Perform hand hygiene prior to handling all parenteral material.
- Follow manufacturer s guidelines for expiration date, storage, use, and disposal of pharmaceuticals.
- Inspect the syringe and needle package for breaks. Discard syringe and needle if the package has been punctured, torn, damaged by exposure to moisture, or if it has expired.
- Use a sterile, single-use disposable syringe and needle for each injection and discard intact in an appropriate sharp's container immediately after use.
- Use aseptic technique to avoid contamination of sterile injection equipment and medications.
- While loading and administrating the medicine, do not handle/touch the body of the plunger.
- Prepare each injection in a designated clean area were blood and body fluid contamination is unlikely.
- Use single-dose medication vials, pre-filled syringes, and ampoules when possible. DO NOT administer medications from single-dose vials to multiple patients or combine leftover contents for later use.
- No more than one vial of a multi-dose medication should be opened at a time in each patient care area.
- Remove the needle by holding the hub after burned the tip of the needle or destroyed by needle cutter and immediately dispose into puncture proof containers.

Policy for Multiple dose solutions:

- Cleanse the access diaphragm with 70% isopropyl alcohol prior to entry of the vial and allow to air dry before inserting a device into the bottle. Avoid touching the diaphragm after disinfection with the alcohol;
- Use a sterile syringe and needle each time a multiple-dose vial is entered. DO NOT re-use a syringe even if the needle is changed;
- Discard syringe and needle if contaminated while entering the vial. Use a new sterile syringe and needle.
- Indicate on label, date and time when commenced and expiry date as per protocol.
- A fresh needle must be used for loading the solution and another fresh needle should be used for injecting the solution every time.
- The person administering a multiple dose medication must read the label on the container to confirm that the medication is intended for multiple use.
- It is the responsibility of the person using a multiple dose solution to determine its safety for future use based on any perceived compromise to the solution ‘s sterility. If breaks in technique have occurred, the solution must be discarded.
- After loading the solution for one injection, remove the needle from the vial and discard it in the sharp’s container.
  (PRACTICAL GUIDANCE ON SKIN PREPARATION AND DISINFECTION (WHO GUIDELINE)

  To disinfect skin, use the following steps:

- 1. Apply a 60–70% alcohol-based solution (isopropyl alcohol or ethanol) on a single-use swab or cotton-wool ball. 2. Wipe the area from the centre of the injection site working outwards, without going over the same area. 3. Apply the solution for 30 seconds then allow it to dry completely. Note: -

- DO NOT pre-soak cotton wool in a container – these become highly contaminated with hand and environmental bacteria.
- DO NOT use alcohol skin disinfection for administration.

IV FLUIDS:

- As IV fluids can be a source of organisms, the following guidelines for the use of IV fluids are recommended.
- All old stocks of IV fluids are to be used before a new batch is used.
- The expiry date should be checked before connecting the bottle for use.
- Do not reuse bottles that have been used previously. Discard after single use, even if some fluid remains in the container. Do not puncture bottles with needles to create airways. The bottle must be carefully checked for damage and for leaks before use. If there are visible contaminants in the bottle, do not use the IV fluid. Send the bottle to the microbiology department for culture, inform the pharmacy so that the particular batch of IV fluids can be withdrawn and inform the Hospital Infection Control Officer.

9 Collection And Transport of Specimens

a. **Specimens for general investigations:**

- Adequate precautionary measures are to be followed while collecting any specimen for investigations. (Refer to Universal Precautions under the chapter on preventing transmission of blood borne pathogens)
- For skin disinfection before drawing blood, cleaning with 70% alcohol is adequate.
- All specimens should be transported in covered, leak proof containers.
- Use appropriate carriers for transportation. Lab request forms should not be soiled with liquid specimens.

b. Specimens for culture

- All specimens for culture for etiological diagnosis must be taken before institution of antimicrobial therapy.

- However, therapy should not be delayed unnecessarily.

- For each specimen the appropriate container must be used and spillage must be avoided during collection, containerization and transportation.

- All specimen containers should be labelled with the name and hospital number of the patient.

- Specimens from patients with suspected blood borne pathogens or other highly infectious organisms should be placed in plastic bags and should bear the biohazard label.

- Specimens should be transported to the laboratory immediately after collection. If delay is inevitable, some specimens can be kept at 4-8° c· Check with the laboratory regarding this. Blood for cultures should be incubated and never refrigerated, once it is inoculated into the medium.

1 Rationale for Isolation Precautions in Hospitals

Isolation practices are meant to prevent transmission of pathogenic micro-organisms within the hospital. Transmission of infection within a hospital requires three elements: a source of infecting micro-organisms, a susceptible host, and a means of transmission for the micro-organism.

Source: Human sources of the infecting micro-organisms in hospitals may be patients, health care workers (HCW), or, on occasion, visitors, and may include persons with acute disease, persons in the incubation period of a disease, persons who are colonized by or are chronic carriers of an infectious agent. Other sources of infecting micro-organisms can be the patient's own endogenous flora, and inanimate environmental objects (equipment and medications) that have become contaminated.

Host: Host factors such as age, underlying diseases, treatment with antimicrobials, corticosteroids or other immunosuppressive agents, irradiation, and breaks in the first line of defence mechanisms caused by such factors as surgical operations, anaesthesia and indwelling catheters may render patients more susceptible to infection.

2 Transmission of Infections:

Micro-organisms are transmitted by five main routes: Contact, droplet, airborne, common vehicle, and vector-borne. Common vehicle and vector-borne transmissions play only insignificant role in nosocomial infections.

I. **Contact Transmission:** The most important and frequent mode of transmission of nosocomial infections is divided into two subgroups: direct contact transmission and indirect contact transmission.

a) Direct-contact transmission involves a direct physical contact and transfer of microorganisms from an infected or colonized person to a susceptible host.

b) Indirect-contact transmission involves contact of a susceptible host with contaminated instruments, needles, dressing or contaminated hands that are not washed.

III. **Airborne Transmission:** Occurs by dissemination of either airborne droplet nuclei (small particle residue [>5um in size]) of evaporated droplets containing micro- organisms that remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Micro-organisms 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. Micro- organisms transmitted by airborne transmission include Mycobacterium tuberculosis and the varicella virus.

Examples of diseases/organisms requiring Airborne Infection Isolation include:

- SARS
- Tuberculosis (pulmonary or laryngeal, suspected or confirmed)
- Herpes Zoster (shingles)
- Measles (rubella)
- Chickenpox

IV. **Common Vehicle Transmission:** Applies to micro-organisms transmitted by contaminated items such as food, water, medications, devices, and equipment.

V. **Vector-borne Transmission:** Occurs when vectors such as mosquitoes, flies, rats etc transmit micro-organisms.

Isolation precautions are designed to prevent transmission of micro-organisms by these routes in hospitals. Because agent and host factors are more difficult to control, interruption of transfer of micro-organisms is directed primarily at transmission.

Clinical Syndromes or Conditions Warranting Empiric Transmission-Based Precautions in Addition to Standard Precautions.

Disease	Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always Includes StandardPrecautions)
Diarrhoea	Acute diarrhoea with a likely infectious cause in an incontinent ordiapered patient	Enteric pathogens	Contact Precautions (paediatrics and adult)
Meningitis	Meningitis	Neisseria meningitidis	Droplet Precautions for first 24 hours of antimicrobialtherapy; mask and face protection for intubation
Meningitis	Meningitis	Enteroviruses	Contact Precautions for infants and children
Meningitis	Meningitis	M. tuberculosis	Airborne Precautions if pulmonary infiltrate Airborne Precautions plus Contact Precautions ifpotentially infectious draining body fluid present
Rash or Exanthems, Generalized, Etiology Unknown	Petechial/ecchymoti cwith fever (general)	Neisseria meningitides	Droplet Precautions for first 24 hours of antimicrobialtherapy
Rash or Exanthems, Generalized,Etiology Unknown	Petechial/ecchymoti cwith fever (general) If positive history of travel to an area with anongoing outbreak of VHF in the 10 days before onset of fever	Ebola, Lassa, Marburg viruses	Droplet Precautions plus Contact Precautions, with face/eye protection, emphasizing safety sharps andbarrier precautions when blood exposure likely. UseN95 or higher respiratory protection when aerosol- generating procedure performed.
Rash or Exanthems, Generalized, Etiology Unknown	Vesicular	Varicella-zoster, *herpes simplex,* variola (smallpox),vaccinia viruses	Airborne plus Contact Precautions; Contact Precautions only if Herpes simplex, localized zoster in an immunocompetent host orvaccinia viruses most likely
Rash or Exanthems, Generalized, Etiology Unknown	Maculopapular with cough, coryza and fever	Rubeola (measles)virus	Airborne Precautions
RespiratoryInfections	Cough/fever/upper lobe pulmonary infiltrate in anHIV-negative patient or a patient at low risk for human immunodeficiency virus(HIV) infection	M. tuberculosis, Respiratory viruses, S. pneumoniae, S. aureus (MSSA or MRSA)	Airborne Precautions plus Contact precautions

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Disease	Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always Includes StandardPrecautions)
Respiratory Infections	Cough/fever/pulmonaryinfiltrate in any lung location in an HIV- infected patient or a patient at high risk for HIV infection	M. tuberculosis, Respiratory viruses, S. pneumoniae, S. aureus (MSSA or MRSA)	Airborne Precautions plus Contact Precautions Use eye/face protection if aerosol-generating procedure performed or contact with respiratorysecretions anticipated. If tuberculosis is unlikely and there are no AIIRs and/or respirators available, use Droplet Precautionsinstead of Airborne Precautions Tuberculosis more likely in HIV-infected individualthan in HIV negative individual
Respiratory Infections	Cough/fever/pulmonary infiltrate in any lung location in a patient witha history of recent travel(10-21 days) to countries with active outbreaks of SARS,avian influenza	*M. tuberculosis,* severe acute respiratory syndrome virus (SARS- CoV), avian influenza	Airborne plus Contact Precautions plus eye protection. If SARS and tuberculosis unlikely, use Droplet Precautions instead of Airborne Precautions.
Respiratory Infections	Respiratory infections, particularly bronchiolitisand pneumonia, in infants and young children	Respiratory syncytial virus, parainfluenza virus, adenovirus, influenza virus, *Human metapneumovirus*	Contact plus Droplet Precautions; Droplet Precautions may be discontinued when adenovirusand influenza have been ruled out
Skin or Wound Infection	Abscess or draining wound that cannot be covered	*Staphylococcus aureus* (MSSA or MRSA), group A streptococcus	Contact Precautions Add Droplet Precautions for the first 24 hours of appropriate antimicrobial therapy if invasive Group Astreptococcal disease is suspected

3.Fundamentals Of Isolation Precautions

A variety of infection control measures are used for decreasing the risk of transmission of infectious micro-organisms in hospitals. These measures make-up the fundamentals of isolation precautions.

1. Hand Washing: Hand washing frequently is the single most important measure to reduce the risk of nosocomial infections. Wash hands as promptly and thoroughly as possible between patient contacts and after contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them.

2. Gloves: In addition to hand washing, gloves play an important role in reducing the risk of transmission of micro-organisms. Gloves are worn to provide a protective barrier to prevent gross contamination of the hands when touching blood, body fluids, secretions, excretions, mucous membranes, and non-intact skin and to reduce the likelihood that micro-organisms present on the hands of HCW will be transmitted to patients during patient-care procedures. Wearing gloves does not replace the need of hand washing. Failure to change gloves between patient contacts is an infection control hazard.

HOW TO GUIDE – PUTTING ON PPE FOR CONTACT/DROPLET PRECAUTIONS

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Personal Protection Equipment:

A. Masks and Goggles: Various types of masks and goggles are worn alone or in combination, to provide barrier protection. A mask that covers both the nose and the mouth, and goggles are worn during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions, to provide protection of the mucous membranes of the eyes, nose and mouth.

B. Gowns: (A clean non-sterile gown is adequate) are worn to prevent contamination of clothing and to protect the skin of personnel from blood and body fluid exposures. Gowns are also worn by personnel during the care of patients infected with epidemiologically important microorganisms; when gowns are worn for this purpose, they are removed before leaving the patient's environment and hands are washed.

4. Patient Placement: Appropriate patient placement is a significant component of isolation precautions. A patient with highly transmissible (e.g. chickenpox) or epidemiologically important (e.g. MRSA) microorganisms is placed in a single room with hand washing and toilet facilities. When a single room is not available, an infected patient is placed with an appropriate roommate. Patients infected by the same microorganism usually can share a room, provided they are not infected with other potentially transmissible microorganisms and the likelihood of re-infection with the same organism is minimal. Such sharing of rooms, also referred to as cohorting patients, is useful especially during outbreaks or when there is a shortage of single rooms.

6. **Patient-Care Equipment and Articles:** Some used articles are enclosed in containers or bags to prevent inadvertent exposures to patient, HCW, and visitors and to prevent contamination of the environment. Used sharps are placed in puncture-resistant containers; other articles are placed in a bag. One bag is adequate if the bag is sturdy and the article can be placed in the bag without contaminating the outside of the bag; otherwise, two bags are used. Contaminated, reusable critical (enters normally sterile tissue or through which blood flows) or semi-critical (touches mucous membranes) medical devices and patient-care articles are sterilized or disinfected after use (refer chapter on Disinfection and Sterilization). Non-critical equipment (i.e., equipment that touches intact skin) contaminated with blood, body fluids, secretions, or excretions is cleaned and disinfected after use, according to hospital policy. Contaminated disposable (single-use) patient-care equipment is segregated at source

and transported in a manner that reduces the risk of transmission of microorganisms and decreases environmental contamination in the hospital; the equipment is disposed of according to hospital policy and applicable regulations (refer chapter on Hospital Waste Management)

6. Linen and Laundry: Although soiled linen may be contaminated with pathogenic microorganisms, the risk of disease transmission is negligible if it is handled, transported, and laundered in a manner that avoids transfer of microorganisms to patients, HCW, and environment. Rather than rigid rules and regulations, hygienic and common-sense storage and processing of clean and soiled linen are recommended.

7. Dishes, Classes, Cups and Eating Utensils: No special precautions are needed for dishes, glasses, cups, or eating utensils. The combination of hot water and detergents is sufficient to decontaminate dishes, glasses, cups and eating utensils.

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

3. ISOLATION CATEGORIES

We have special area earmarked for isolative patient where needed.
There are two tiers of isolation precautions. In the first and most important tier are those precautions designed for the care of all patients in hospitals, regardless of their diagnosis or presumed infection status. In the second tier are precautions designed only for the care of specified patients. These additional **"Transmission-Based Precautions"** are for patients known or suspected to be infected by epidemiologically important pathogens spread by airborne or droplet transmission or by contact with dry skin or contaminated surfaces.

A. **Standard Precautions** are applicable to all patients receiving care in hospitals, regardless of their diagnosis or presumed infection status, and apply to (1) blood; (2) all body fluids, secretions and excretions except sweat, regardless of whether or not they contain visible blood; (3) non-intact skin; and (4) mucous membranes. These are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Components of Standard Precautions

- Hand washing.
- Appropriate use of gloves, masks, eye wear and gowns.
- Proper handling of patient-care equipment and linen.
- Avoiding sharp injuries.

B. **Transmission-Based Precautions** are designed for patients documented or suspected to be infected with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are needed to interrupt transmission in hospitals. There are two categories of Transmission-Based precautions: Respiratory Isolation Precautions and Contact Isolation Precautions. They may be combined for diseases that have multiple routes of transmission. When used either singularly or in combination, they are to be used in addition to Standard Precautions.

1. Respiratory Isolation Category: These precautions are designed to reduce the risk of airborne and droplet transmission of infectious agents and apply to patients known or suspected to be infected with epidemiologically important pathogens that can be transmitted by these routes.

A) Droplet Precautions: - are intended to prevent transmission of pathogens spread through close respiratory or mucous membrane contact with respiratory secretions. Because these pathogens do not remain infectious over long distances in a healthcare facility, special air handling and ventilation are not required to prevent droplet transmission.

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Components of respiratory isolation

- A single patient room is preferred for patients who require Droplet Precautions. When a single-patient room is not available, consultation with infection control personnel is recommended to assess the various risks associated with other patient placement options (e.g., cohorting, keeping the patient with an existing roommate).
- Spatial separation of > 3 feet and drawing the curtain between patient beds is especially important for patients in multi-bed rooms with infections transmitted by the droplet route.

  Masks to be worn by those who enter the patient's room. Susceptible persons should not enter the room of patients known or suspected to have measles, mumps or varicella (chickenpox)
- Gowns are not routinely necessary. Use gowns if soiling is likely. Gloves are necessary while handling patients. Perform hand hygiene before and after touching the patient and after contact with respiratory secretions and contaminated objects/materials; *note:* use soap and water when hands are visibly soiled (e.g., blood, body fluids).
- Articles contaminated with infective material must be discarded or bagged and labelled before being sent for decontamination and reprocessing.

Patients on Droplet Precautions who must be transported outside the room should wear a mask if tolerated and follow Respiratory Hygiene/Cough Etiquette.

B) Airborne Transmission:

- The preferred placement for patients who require airborne Precautions is in an airborne infection isolation room (AIIR).
- An AIIR is a single-patient room that is equipped with special air handling and ventilation capacity that meet the American Institute of Architects/Facility Guidelines Institute (AIA/FGI) standards for AIIRs (i.e., monitored negative pressure relative to the surrounding area,>12 air exchanges per hour for new construction and renovation and 6 air exchanges per hour for existing facilities, air exhausted directly to the outside or recirculated through HEPA filtration before return).

- Healthcare personnel caring for patients on Airborne Precautions wear a mask or respirator, depending on the disease-specific recommendations, which are donned prior to room entry.
- Perform hand hygiene before and after touching the patient and after contact with respiratory secretions and/or body fluids and contaminated objects/materials; *note:* use soap and water when hands are visibly soiled (e.g., blood, body fluids)

C) Contact Isolation Category: Contact Isolation Precautions are recommended for specified patient known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted by direct contact with the patient (hand or skin-to-skin contact that occurs when performing patient-care) or indirect contact (touching) with contaminated environmental surfaces or patient care items. e.g.: Shigellosis, clostridium defficille.

Components:

- Gowns are indicated if soiling is likely.
- Gloves are indicated for touching infected material/area.
- Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient.
- When possible, dedicate the use of noncritical patient-care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients. If use of common equipment or items is unavoidable, then adequately clean and disinfect them before use for another patient.
- Articles contaminated with infective material must be discarded or bagged and labelled before being sent for decontamination and reprocessing.

A single patient room is preferred for patients who require Contact Precautions. When a single-patient room is not available, consultation with infection control personnel is recommended to assess the various risks associated with other patient placement options (e.g., cohorting, keeping the patient with an existing roommate).

In multi-patient rooms, >3 feet spatial separation between beds is advised to reduce the opportunities for inadvertent sharing of items between the infected / colonized patient and other patients.

Healthcare personnel caring for patients on Contact Precautions wear a gown and gloves for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's environment.

Donning PPE upon room entry and discarding before exiting the patient room is done to contain pathogens, especially those that have been implicated in transmission through environmental contamination (e.g., VRE, C. difficile, noroviruses and other intestinal tract pathogens; RSV).

Before Entering Room	On Leaving the Room
• Perform hand hygiene • Put on gown or apron • Put on gloves	• Dispose of gloves • Perform hand hygiene • Dispose of gown or apron • Perform hand hygiene

Isolation Policy for special groups of organisms

I. **Methicillin Resistant Staphylococcus Aureus (MRSA):** Contact isolation precautions should be taken**.** The Microbiology department shall send an alert to the head of the concerned unit and the Hospital Infection Control Officer when MRSA is isolated.

Use respiratory (contact with mask precautions)

- Accommodate these patients away from those with open wounds or immune-compromised.
- Hand washing is the single most important factor in controlling MRSA.
- Linen-sheets, pillow cases and blankets should be changed on a daily basis and more often if soiling occurs. Linen should not be shaken in order to prevent dissemination of micro-organisms in to the environment. Linen should be soaked in 1% Sodium hypochlorite for one 30 minutes before being sent to the laundry. The same will apply to masks and surgical gowns.

II. **Pulmonary tuberculosis:** Respiratory precautions should be taken for smear positive tuberculous patients.

A separate room is recommended only for adult patients with sputum/AFB positive pulmonary tuberculosis. After discharge, room should be disinfected by fogging.

III. **HIV/ HBsAg / HCV infected patients:** Follow standard precautions. **Infection control measures for MRSA and VRE or Multi drug resistant cases.**

a. Isolate any patients in single room.

b. Investigate any outbreak:

i. other patients.

ii. Staff.

c. Educate staff on hand washing, caring skin lesions, and anti-biotic use. d. Screen hospital transfer patients, where the hospital of transfer carries a risk of MRSA infection

Administrative Considerations

Patient Screening

i. Patients transferred from other hospitals or Nursing home. (Duration of stay >48HRS) with any of the following.

ii. Patients with open/discharging wounds.

iii. Patient with ventilator.

iv. Patients with central line / Foleys catheter or infected peripheral line.

v. Patients with multiple i/v antibiotics.

vi. Patient with TPN/RT feed

Staff

a. Screening carried out on staff with infective dermatitis or other exfoliates skin conditions.

b. Nasal swabs – need only be carried out in the event of an outbreak.

Procedure for screening patients in the "at risk" group

a. Culture swab to be taken from Nose, axilla, and sent to lab.

b. Culture swab taken from any potentially infected lesion such as a wound, a chronic ulcer or area of diseased skin.

Isolation of patients infected with MRSA/ VRE or Multi drug resistant cases.

a. All waste to be treated as —contaminatedǁ and placed in red contaminated bag.

b. Gloves and aprons must be worn for changing the beds of incontinent patients, attending dirty wounds, changing and cleaning suction bottles.

c. Masks to be worn when doing all the procedures. d. Plastic aprons worn when attending patient.

e. Solid, contaminated infectious linen to be placed directly into the red plastic bag and sealed, then put into laundry bag.

Diseases Requiring Drainage Secretion Precautions:

- Abscess
- Decubitus ulcer
- Skin or wound infection
- Conjunctivitis

Precautions

- Masks are not indicated, unless splash is likely
- Gowns are indicated if soiling is likely
- Gloves are indicated for touching infected material

  Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient
- Articles contaminated with infective material must be discarded or bagged and labelled before being sent for decontamination and reprocessing.

Reverse Isolation Category: Positive pressure isolation rooms are required.

The purpose of reverse isolation category is to prevent infections in the immunocompromised patients. The principle is to prevent contact between pathogenic micro-organisms from HCWs or fomites and susceptible patients who have severely impaired resistance.

- Diseases that require reverse isolation are-
- Severe neutropenia
- Leukaemia and other malignancies
- Organ and tissue transplant patients

- Patients on immunosuppressive therapy
- Burns and extensive wounds susceptible to infection

5 Visitors Policy

Although instructions and preparing visitors for patients in isolation is time consuming and often frustrating. Their presence is valuable to the emotional wellbeing of the patient.

- The ward sisters and the doctors concerned shall have the responsibility of informing the patient's relatives of the measures to be taken and the importance of restriction of visitors. This should be done at admission of the patient.
- The patient and the relatives must be given health education about the cause, spread and prevention of the infection, in detail. The need for isolation and restriction of visitors should be discussed with them.
- Hand washing after all contact with the patient will have to be stressed.
- No more than two adult visitors should be allowed at a time during the hospital visiting hours and the length of stay should be governed by the needs of the patient.
- Children below 12 years are not allowed into the isolation areas.
- Before entering the room, visitors must enquire at the nurse's station for instructions and for gown and mask if indicated. Visitor's footwear, bags etc, should be left outside the room. Only articles that can be discarded, disinfected or sterilised should be taken into the room.

- Visitors are not allowed to sit on the patient's bed.
- Visitors should wash their hands well with soap and water before entering and when leaving the room.
- Active immunisation of attendants and other follow up steps, where applicable must be conducted by the physician in-charge.

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

BIO MEDICAL WASTE MANAGEMENT

YELLOW	RED	BLUE	WHITE
Human & Animal Anatomical Waste, Infected Cotton, Solled Waste, Expired or Discarded Medicine, Chemical Waste, Discarded Line & Beddings (Contaminated with Blood), Microbiology & Other Clinical Laboratory Waste,	Recyclable Contaminated Waste, Tubing, Catheters, IV Tubes & Set, Urine Bags, Syringes (Without Needles)	Broken or Discarded and Contaminated Glass, Metallic Body Implants	Transluscent (Puncture Proof Container) Needles, Syringes with fixed Needles, Scalpets, Blades or other Contaminated Sharp Object that may cause Needle Needles form Puncture tip cutter or bumer
पिवळा	लाल	निळा	पांढऱ्या
मानवी अवयव, संक्रमीत कापुस, पशुंचे अवयव, घन कचरा (संक्रमीत कचरा), कालबाह्य किंवा टाकऊ औषधी, रासायनिक कचरा, चादरी आणि गाद्या रक्ताने संक्रमीत (दुषीत) झालेल्या सुक्ष्मजिवशास्त्र आणि इतर (वैद्यकीय) प्रयोगशाळेतील कचरा,	पुर्नप्रक्रीया करण्याजोगे संक्रमीत प्लास्टीक, नलीका, सलाईन बाटल्या, मुत्र नलीका, मुत्र पिशवी, सलाईन नळ्या, बिना सुईचे इंजेक्शन	संक्रमीत / दुषीत किंवा तुटलेल्या (टाकाऊ) काच, धातुंच्या प्रत्यारोपीत वस्तु	(अपारदर्शक) सुया, टोकदार सुईसह असलेले इंजेक्शन, स्कालपेल, ब्लेड किंवा इतर धारदार संक्रमीत वस्तु सुई जाळल्यानंतर शिल्लक राहणाऱ्या सुईचा भाग

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

1. INFECTIOUS AND NON-INFECTIOUS WASTE

Infectious Wates: Include the waste which has been in contact with the body fluids and all of the following substances or categories of substances.

i. Sharp wastes used in the treatment, or diagnosis of human beings or animals that have come in contact with infectious agent in medical research laboratories including hypodermic needles and syringes, scalpel blades, catheters etc.
ii. Human and animal blood specimens and blood products are likely to be exposed to infectious agents.
iii. Pathological wastes, tissues, organs and body parts, body fluids and excreta that are contaminated with or likely to be contaminated with infection agents, removed or obtained during surgery or for diagnostic evaluation.
iv. Laboratory wastes that were or are likely to have been in contact with infectious agents that may present a substantial threat to public health if improperly managed.
v. Cultures and stocks to infectious agents and associated biological specimen cultures, wastes form production of biological and discarded live and attenuated vaccines.
vi. Contaminated carcasses, body parts and bedding of animals that were intentionally exposed to infection agents from zoonotic or human disease during research or testing of pharmaceuticals.
vii. Waste materials from the rooms of isolated patients because of diagnosed communicable disease.
viii. Dressing materials, POP cast (form compound fracture patients) etc.
ix. Any other waste material the generator designates as infectious wastes.

Non-infectious wastes:

- Include 75 to 90% of the waste produced by health care providers. Health care waste come mostly from the administrative and housekeeping functions of the hospitals and may also include waste generated.
- During maintenance of the health care premises, these wastes are non-risk similar to that of domestic wastes.
- If infectious waste is not properly separated at source all the waste volumes need to be considered as hazard.

2. HOSPITAL WASTE MANAGEMENT CONSISTS OF THE FOLLOWING STEPS:

a. Segregation and collection

b. Transportation

c. Temporary Storage

d. Treatment

e. Final Disposal

a. Segregation and collection

Segregation is defined as – Separation of different types of wastes as per treatment and disposal option.

Segregation should take place at the source of generation of waste. It is important that segregation takes place at source, as it is the person who generates the waste knows best its nature.

All waste from hospital is not considered as hazardous. Only 10 to 20% of wastes generated on a hospital is infectious / hazardous. If infected waste gets mixed with general waste, entire waste becomes infected. Segregation of waste and containment of waste helps to avoid this. Segregation limits infectious waste. That means less infected waste to manage.

By segregation waste:

- We are reducing quantum of infected waste.
- We are making way for management of general waste separately.
- We are reducing load and cost of infected waste.
- We are improving cleanliness of the surroundings within and outside the hospital.
- We are keeping ourselves away from contact with infected waste.
- Biomedical waste (management and handling) riles, 2016 have stipulated a simple colour coded system for segregated collection of medical waste

Labelling- All the bag must be labelled according to the rules (Schedule 111 of Biomedical waste management and handling rule 2016)

Bags- It should be ensured that waste bag are effectively secured and filled up to only three fourth capacities and removed from site of generation regularly and timely.

Pre-treatment procedures: Certain categories of waste which may need pre-treatment (decontamination / disinfection) at the site of generation such as plastic, sharp material, lab specimens, etc. should be removed from the site of generation only after treatment. Pathology lab liquids are disposed of to ETP.

b. Transportation

Inside the wards at point of Generation: - The biomedical waste is carried form the point of generation to the nursing stations in the waste bins provided in the nursing trolly.

Infectious waste to yellow bags by Nurse / Doctor / Operation room assistant / Labour room nurse/ Laboratory technician

Sharps to puncture proof containers with disinfection solution by Nurse / Doctor (generator of waste)

Plastic to Black bag / disinfection solution by Nurse / Doctor (generator of waste) General waste to Black bags by housekeeping staff / patients / visitors.

From point of Generation to waste storage centre: -

- Housekeeping staff collect hospital waste twice a day from the point of generation.
- Covered wheel barrow / trolly to be used for transporting waste and the bags.
- The waste from the operation theatre and ICU are collected more often, depending on the number of operations and cases attended in a particular day.
- Housekeeping staff to wear protective clothing while collecting waste and should not manually lift the waste bin to final disposal site.
- The containers used for collecting food waste and general waste were cleaned and disinfected before replacement to the respective departments.
- On each bag particular ward / department Name, Date, Name & Signature if In-charge and housekeeping staff will be written for auditing.
- Use a dedicate lift/ramp for transportation of waste.

c. Temporary Storage

Separate areas within the hospital premises are allocates for temporary storage of each category of waste.

- The storage area should have an impermeable, hard-standing floor with good drainage; it should be easy to clean and disinfect.
- There should be a water supply for cleaning purpose.
- The storage area should afford easy access for staff in-charge of handling the waste.
- It should be possible to lock the store to prevent access by unauthorized person.
- Easy access for waste collection vehicle is essential.
- There should be protection from the sun.
- The storage area should be inaccessible for animals, insects and birds.
- There should be good lighting and at least passive ventilation.

GENERAL

Awareness should be provided to all staff members in the hospital regarding collection, segregation, transportation, storage and disposal of different types of hospital waste.

The system and procedures for management of biomedical waste shall be in accordance with the appropriate legal guidelines as laid down by the environment (protection) Act, 2016 and biomedical waste (management & handling) Rile, 2016 and other guidelines as laid down by the government of India and Government of Maharashtra and its statutory agencies.

4. BLOOD SPILLAGE POLICY

When blood or other fluids which can transmit HIV are spilled, always wear protective gears to clean the spill. HIV is easily decontaminated by common disinfectants. Use spill kit to remove the spill.

- If the spill is small remove the visible material and then decontaminate the area with 1% Sodium Hypochlorite solution.
- If the spill is large, follow the procedure given below to clean the blood spill.

a. Restrict entry by keeping stop board

b. Use spill kit

c. Wear protects gears

d. Pour 1% Sodium Hypochlorite solution over the spill.

e. Spread Blotting paper / Newspaper over the spill and keep it understandable for 30 minutes.

f. Remove of along with newspaper to the bag assigned to it – (Yellow colour).

g. Clean the floor using a scrubbing cloth with 1% Sodium Hypochlorite solution. This should be done for 2 or 3 minutes.

Spill kit should be including stop board, Mask, Gloves, Apron, Goggles, Sodium Hypochlorite, Scrubbing cloth, yellow cover, Newspaper etc.

5. MERCURY SPILLAGE POLICY:

Hazards of Mercury:

Mercury (Hg) is a naturally occurring highly toxic and volatile heavy metal, it remains in the atmosphere up to one year and finally settles in water bodies taken up by fishes Some micro-organisms and natural process can change the mercury in the environment from to another, the most common one being Methyl Mercury which is one of the six most serious pollution threats to the planet.

Methyl Mercury has a capability to interfere with cell division. It also binds to DNA and interferes with the coping of chromosomes and synthesis of proteins. It can cross blood, brain and placental fluids. Pregnant women and children are thus most vulnerable to the effect of Mercury.

Mercury is a potent neurotoxin, at very low level of exposure. It can cause permanent damage to the human central nervous system. $^{1}/_{7}^{th}$ fraction of a tea spoon mercury is enough to contaminate a 25-acre lake. At higher concentrations, mercury can damage vital organs such as lungs, liver and kidneys. The exposure to mercury can cause pneumonitis, bronchitis, muscle tremors, irritability, personality changes, memory loss mood swings, weak muscle, gingivitis and symptoms of neurotoxicity also.

Occupational health Hazard:

The most common potential mode of occupational exposure to mercury is via inhalation of metallic liquid mercury vapours. If not cleaned up properly, spills of even shall amount of elemental mercury, such as from breakage of thermometers can contaminate indoor air above recommended limits and lead to serious health consequences. Since mercury vapour is odourless, and colourless, people can breathe mercury vapour and not know it. For liquid metallic mercury, inhalation is the route of exposure that poses the greatest health risk.

Sources of mercury in hospital:

Thermometers, Blood pressure instruments, Feeding tubes, Batteries, Dental amalgam, Laboratory chemical like Zenkar's solution and histological fixatives.

Medical waste incinerators are a significant source of mercury in the environment. Studies have shown that there are 158 tonnes of mercury emitted annually in to atmosphere, 10% comes from incineration of medical waste.

ALTERNATIVES TO MERCURY CONTAINING MEDICAL DEVICES

Mercury Containing Product	Alternatives
Thermometer	Electronic (Digital): - Oral / rectal tympanic (also called infrared thermometer) Glass filled with alloy of gallium, indium and tin (Liquid at room temperature)
Sphygmomanometer	Aneroid, Electronic
Gastrointestinal Tubes	Tungsten, considered to be as effective as mercury
Dental Amalgam	Ceramic fillings

Tips for handling mercury safely

a. Use mercury in uncarpeted and well-ventilated areas. Provide troughs on smooth surfaced tables and benches to collect mercury spills.

b. Remove all jewellery and watches, especially gold, Employees who handle mercury are to wear mercury vapour respirators and protective clothing, gloves, disposable gown and shoe coverings.

c. Prohibit smoking and eating in or near mercury exposed areas.

d. Train employees to understand the dangers and precautions while handling mercury. Staff training is a key element in the proper prevention and management of mercury spills.

e. Clean and calibrate all mercury containing equipment to the significations of the manufacture.

f. Properly document and label all containers containing mercury.

g. Avoid having chemicals such as chlorine dioxide, nitric acid, nitrates, ethylene oxide, chlorine and methylamine in the same area as mercury, since they react violently with mercury.

h. Be sure to keep mercury away from biological waste or anything else that will be incinerated since incineration puts mercury vapour into the air.

METHOD OF CONTAINMENT OF MERCURY SPILL (IN CASE OF A MERCURY SPILL)

- **Do not touch mercury:** Remove any jewellery / watch. Put on all protective gear. Use a flash light to locate the mercury.

- **Collect the mercury carefully:** use carboard sheets to push beads of mercury together. Use the syringe to suck the beads of mercury. Carefully place the mercury with stick tape and place contaminated tape in bag / cover as mercury waste and mention the ward / department and date of spill. Place this bag in the second bag / cover, label it as mercury waste and mention the ward / department and date of spill.

- **Never use a vacuum cleaner or broom**

- Dispose the mercury properly: The collected mercury is a hazardous waste. So, it should be stored safely in a locker and finally hand over to a mercury equipment manufacture.

Mercury spill kit: Should always be available in each ward / department. It includes gloves, face mask, eye shield, a syringe, and two stiff pieces of cardboard, two bags / covers, sticky tape, a flash light, glass bottle and packing tape.

Spill and containment plan: Collect the mercury spill as per the rule.

- Report the incident to the maintenance engineer who is in-charge of waste management.

- Fill the mercury Spillage – Incident reporting form

- Maintenance engineer should keep a register for the incident reporting.

- Send the collected mercury waste to the waste management department and store it safely in the locker at biomedical waste treatment plant.

- Handover to mercury equipment manufacturer.

Introduction

The occupational risk with blood borne pathogens among health care workers (HCW) has been recognized for a long time. However, it was the emergence of the human immunodeficiency virus (HIV) that highlighted the need to elucidate the epidemiology of occupational blood contact, the risk of infection from blood contact and to formulate strategies to prevent the transmission of blood borne pathogens to HCWs from blood borne pathogens and recommended safety precautions to prevent occupational infection among HCWs are reviewed in this section.

Transmission of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV), in the workplace occurs in the following ways:

1. Accidental exposure to blood (AEB): Any contact with blood or body fluids as a result of injury with a needle or any other sharp instruments, or via mucous membrane (eye, mouth), or contact via damage skin (eczema, wounds).

2. Percutaneous exposure (PE): Exposure to blood or body fluids through non-intact skin.

3. Needle-stick or sharp injury: Puncture with a needle or sharp instrument that is contaminated with blood or body fluids.

4. Blood splash: Skin or mucus membrane exposed to blood or body fluids.

Precautions or Preventing Transmission of Blood Born Viruses

DISEASES	MODE OF TRANSMISSION	RECCOMENDED PRECAUTIONS
HBV	Blood-born (direct contact with blood or body substances)	Standard Precautions
HCV	Blood-born (direct contact with blood)	Standard precautions
HIV	Blood-born (direct contact with blood or body substances)	Standard precautions Additional precautions may be required in the presence of complicating condition (e.g. Tuberculosis)

The risks of transmission of infection from an infected patient to be the health worker following a needle stick injury area estimated to be:

- Hepatitis B: 10-30%
- Hepatitis C: 0.8 – 3%
- HIV: 0.3% (mucus membrane exposure risk is 0.1%)

Risk of Transmission of Infection from HCW to Patient:

There are many instances of transmission of HBV infection from HCWs to their patients. Most instances of transmission occurred when universal precautions were not followed, though in some instances transmission with universal precautions. Thus, the use of Universal Precautions not only prevents infection from patient to HCW but also prevents transmission of infection in the reverse direction.

Recommendations

A. Vaccination

The most important approach for the occupational HBV infection is the use of hepatitis B vaccine among HCWs. The currently available vaccines are safe and highly effective in preventing infection. Over 90% if adult recipients respond to the vaccine with protective levels of antibody. Ongoing cohort studies suggest that the protection lasts for at least 13 years. Therefore, testing to determine antibody persistence and booster vaccinations are not routinely recommended. However, it is important to demonstrate adequate antibody titter for Hepatitis B to determine responder & status for HCW. Hence after completion of vaccination or newly appointed staff with previous vaccination is requested to demonstrate adequate titter.

However, vaccines are currently not available for other blood borne pathogens, including HCV and HIV. Therefore, prevention primarily consists of taking adequate barrier precautions to prevent transmission with HIV, post-exposure chemoprophylaxis may reduce, but not completely prevent transmission of infection.

B. Universal Precautions

Rational:

In 1983, guidelines were published for prevention of transmission of infection from patient suspected to be infected with blood borne pathogens. These precautions were termed – Blood and Body Fluid Precautions. It was soon realized that the majority of patients infected with HCV or HIV were asymptomatic and that the infection status of most patients would be

Unknown at the time of presentation. This realization led to the recommendation that the category of blood and body fluid precautions be applied to all patients. It is procedure based and not person based. There is an erroneous impression that Universal Precautions are cumbersome and expensive and not practical in countries with limited resources. However, if one closely scrutinizes the recommendations for Universal Precautions, they are relatively simple. The precautions to be taken vary with the degree of anticipated exposure. In most instances, this only means the use of gloves for all patients where contact with blood or body fluids is anticipated. Masks and eyewear are only required when a splash is anticipated. More rigorous barrier precautions are only required in certain surgeries where massive exposure to blood or body fluids is anticipated. Even when they are uniformly applied for all patients, these precautions are less expensive and more effective than universal testing of all patients for infection with selected blood borne pathogens and use of precaution in only those who test positive. Most cases of transmission of infection, at least of HIV, takes place outside the setting of the operating room and pathogens such as HCV are much more transmissible than HIV, and are equally dangerous.

What fluids are potentially infectious?

The Centres for Disease Control considers the following body fluids as potentially infectious: blood, semen, vaginal fluid, cerebrospinal fluid, synovial fluid, peritoneal fluid, pleural fluid, pericardial fluid, amniotic fluid, saliva in dental procedures, breast milk in breast milk banking procedures, any body fluid that is visibly contaminated with blood, all body fluids in situation where it is difficult to differentiate between body fluids and all unfixed tissue or organs from humans. Universal precautions may not apply to the following unless they contain visible blood: faeces, urine, saliva, nasal secretions, sweat, tears, vomitus and human breast milk.

Cardinal rules of Universal Precautions:

- Consider all patients potentially infectious.
- Assume all blood and body fluids and tissue covered by Universal Precautions are contaminated with a blood borne pathogen.
- Assume all unsterile needles and other sharps are similarly contaminated.

What does one need to do?

1. Hand washing: Hands should be washed if contaminated with blood or body fluids and after removing gloves. HCWs with exudative or weeping dermatitis should refrain from direct patient care or handling patient care equipment.

2. Personal Protective Equipment: All HCWs should routinely use appropriate barrier precautions when exposure to blood or potentially infected body fluids is anticipated. These include:

- Use of GLOVES for contact with blood, potentially infectious body fluids, mucous membranes or non-intact skin in all patients. Gloves should also be used for handling items or surfaces soiled with blood or body fluids and for performing vein-puncture or other vascular access procedures. Gloves should be removed before leaving the patient's bedside.
- Masks and protective eyewear should be used for procedures likely to generate droplets of blood or body fluids that could lead to contamination of eyes, nose or mouth.
- Appropriate protective clothing such as gowns, aprons, surgical caps and impervious shoes should be worn if there is a risk of exposure. The type and characteristics of protective attire to be worn will depend on the task and degree of exposure anticipated.

3. Proper Disposal of needles and sharps:

Needles and sharps are the commonest mode of transmission of blood borne pathogens to HCWs. 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.

- Needles should not be recapped, bent or broken by hand. The tip of the needle should be burnt and immediately disposed into puncture resistant containers, which should be located at the site of the procedure.
- ALWAYS use disposable needle and syringes
- ALWAYS dispose of your own sharps.
- NEVER pass used sharps directly from one person to another.
- During exposure – prone procedures, the risk of injury should be minimized by ensuring that the operator has the best possible visibility e.g. by positioning the patient, adjusting good light source and controlling bleeding.
- Protect fingers from injury by using forceps instead of fingers for guiding suturing.
- NEVER recap, bend or break disposable needles, if necessary, use the single hand —scoop method as shown in figure
- Directly after use, place needles and syringes in a rigid container until ready for disposal.
- Do not overfill a sharps container.

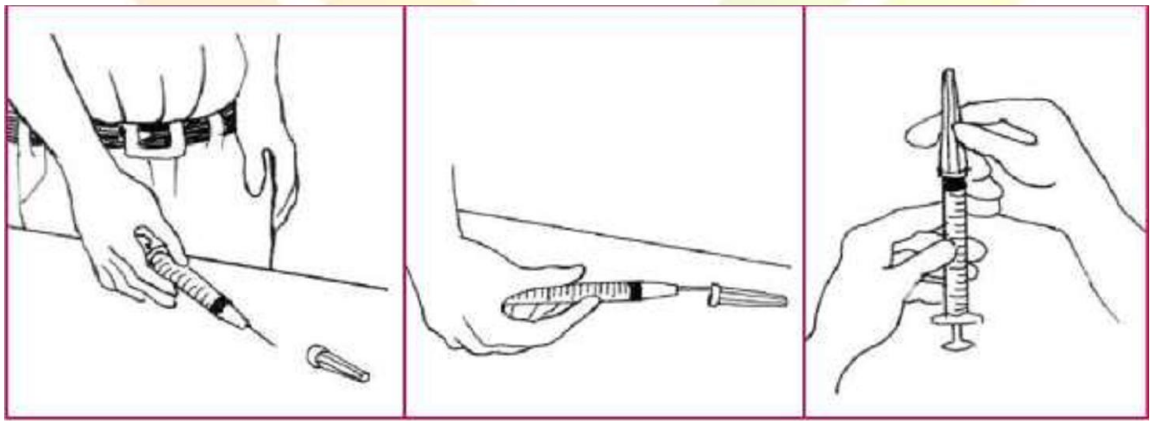


Figure: single hand scoop method (to be done only if necessary)

4. **Disinfection of equipment**: Reuse instruments, tunings, etc. only after decontamination and sterilization or decontamination, as appropriate. Do not touch equipment with soiled gloves or gloves used for patient care. Surfaces of large equipment should be disinfected with a 1:100 dilution of sodium hypochlorite or an approved disinfectant. Heavily soiled equipment may require additional cleaning with detergent and water. Gloves must be worn while cleaning the equipment.

5. Waste Disposal: Non plastic items soiled with blood, bloody drainage or potentially infected material must be placed in the yellow biohazard plastic bags. Items that may tear the bag must not be placed in the plastic bag. For further details, please refer to the section on —Waste Disposal. Excreta, blood or body fluids must be emptied down the drain with adequate amount of water.

6. Linen: Linen soiled with blood or potentially infectious body fluid must be soaked in 1 % Sodium Hypochlorite for 30 minutes, placed in a leak proof bag and then sent to the laundry. 7. Spill Clean Up: Refer section on spill cleanup in Chapter 9.

C. Post Exposure Prophylaxis: - For details of management after accidental exposure to blood or potentially infectious body fluids, please refer to the section on Post exposure prophylaxes in the chapter 'Employee Health Programme'.

Recommendations For Patients Known to Harbour Blood Borne Pathogens

Instructions for wards

1. Admission:

Patients with HIV disease but presenting with unrelated illnesses may be admitted in any ward as per existing rules. Patients with AIDS requiring isolation on account of secondary infectious diseases will be isolated as recommended (see the chapter on isolation policies and procedures). Confidentiality shall be maintained with appropriate precautions to prevent nosocomial transmission.

2. Preparation of the patients:

It is the responsibility of the attending physician to ensure that patients testing positive are informed about the result and receive counselling (either by the attending physician or in the infectious disease clinic). Results of the HIV test must be kept strictly confidential. When information on HIV status needs to be shared with a member of the family, the patient's consent should be obtained. This does not apply to young children or those with dementia/deficient sensorium.

The nursing staff will explain to patients, attendants and visitors (when necessary), the purpose and methods of hand washing, body substance and excreta precautions, and other relevant precautions.

3. Specimens:

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

4. Waste Disposal:

A bin lined by a yellow plastic bag is placed in the patient's room for infectious waste. When the bag is 3/4th full it is sent for incineration.

Non-infectious waste does not require special precautions and is disposed in a manner similar to non-infectious waste generated from any other patient.

Sharps are discarded into the sharp's container (Refer to the section on waste disposal for more details)

5. Death of a patient:

Nursing staff must inform the authorities before sending the body to the mortuary. Those cleaning the body should use gloves and other protective gear. Before leaving the ward, the body is bagged as for any case.

For more details HIV related issues refer —Guidelines and Policies in HIV care.

6. Surgical Procedures and Anaesthesia

Universal Precautions are to be followed for all patients and all procedures. Testing for HBV, HCV and HIV are not to be considered completely protective, the reasons being: Tests cannot detect 100% of infections due to HBV, HCV and HIV

- There are other pathogens besides HBV, HCV and HIV that can be transmitted through blood and body fluid contact.

Hence, all patients must be considered as potentially infectious and preventive measures taken.

Though routine preoperative testing is not mandatory, testing may be done in selected procedures with high risk of percutaneous injury, especially where procedures may need to be modified, or personnel performing/assisting the surgery may need to be changed, based on the result. In such cases, the patient should be checked for HBV, HCV and HIV. Each surgical specialty should make a list of procedures where routine testing is not warranted and also a list of procedures where testing may be beneficial.

The patient should be informed testing for HIV is done. Patients testing positive should be informed to the result by the surgeon before surgery. The patient is sent for counselling to the infectious disease clinic.

No patient will be denied appropriate care because they test positive for any blood borne pathogen.

- Hepatitis B vaccination is mandatory for all staff coming into contact with blood or body fluids.
- Gloves should be worm for all invasive procedures done on patients (including vein puncture and starting IV lines). Gloves should be changed between procedures. Gloves should not be used to handle any equipment. Health care workers should not leave the operating room with gloved hands. Gloves are to be used to sort soiled linen.
- Examination gloves are sufficient for-
  - Starting IV lines
  - Intubation
  - Sorting out used linen or other unsterile items

Sterile gloves are to be used for sterile procedures.

Plastic aprons, which are to be worn below the sterile gown, are recommended for the surgical team. They are mandatory in areas where large column splashes are expected. These are to be removed before leaving the operating room.

Mask are to be worn, covering the nose and lower part of the face completely. Cotton masks are to be changed if visibly soiled or has been soaked due to continuous use.

Goggles or other eye protection are recommended where there is a risk of splash.

Protection for the feet (sole or dorsum) is recommended.

All invasive procedures however minor they are, should be carried out with utmost care to prevent injury with sharps.

Hand to hand passing of sharps during surgery should be avoided. Utmost care should be taken to ensure safe disposal of sharps.

The OR supervisor ensures that appropriate containers for sharps disposal are available in all the operating rooms.

Smaller sharps disposal containers are to be present on all anaesthesia trolleys.

Health care workers with any open wounds are weeping skin lesions should refrain from activities which may result in exposure to blood or infectious body fluids. Health care workers with blood or body fluids on their clothing should change before they use the staff lounge or before scrubbing for the next case.

Recommendations for administration of anaesthesia:

- Masks and laryngoscope blades used for GA should be cleaned and disinfected using Glutaraldehyde for 15 minutes before use on another patient.
- Cover handles of laryngoscope blades with a plastic cover while in use, and clean with detergent solution before use on another patient.
- Endotracheal tubes and other equipment which comes into contact with the mucosa of the patient or which is visibly contaminated with blood or infectious body fluids, should either be discarded after single use, or disinfected before reuse. If there is a need to reuse any such equipment, it should be done after disinfection with Glutaraldehyde or after autoclaving.
- Routine use of bacterial/viral filters is not recommended, but these may be used for selected patients, for example, those with respiratory infection. These filters have not been proved to prevent bacterial/viral infection, although in -vitro studies have demonstrated their efficacy in preventing bacteria from passing through. There are no

such studies done on viruses.

- As a general infection control measure, the corrugated tubing from the patient up to the soda lime canister must be washed in soap and running water and dried before reuse. In addition, these tubes must be decontaminated by immersing in Glutaraldehyde for 15 minutes and then washed and dried once a day or when there is visible contamination with blood.
- Internal circuits in the anaesthetic machine may be cleaned when the soda lime containers are changed.

Care of the environment: The operating team should take absolute care regarding disposal of blood-stained items.

- All swabs, sponges, etc should be discarded/ placed only in the assigned containers.
- Gloves should be discarded directly into the bin lined by a yellow plastic cover.
- Used instruments should be carefully segregated.
- Used linen should be collected directly in an assigned area immediately after the surgery, fastened carefully and removed from the operating room.
- If blood or fluid spill is expected, appropriate measures are to be taken before surgery. For example, small plastic containers for small spills (Neurosurgery) and buckets to collect draining fluids (Urology) are necessary. Each specialty should have a written protocol for this. Protection for furniture and equipment:
- A plastic cover should be used for tables, arm boards, etc and should be mopped clean with soap and water between cases.
- Equipment should not be handled with gloves that have been used for invasive procedures. Waste segregation should be in accordance with the guidelines given in the chapter on Hospital Waste Management '. Cleaning theatres after a case:

- Minor spills of blood or infectious body fluid are to be disinfected by pouring sodium hypochlorite (Diluted Sodium hypochlorite 0.5% solution) over the spill and leaving it for ten minutes. A 1:10 or 1: 100 dilution of household bleach may be used instead of Diluted Sodium hypochlorite 0.5% solution. The area of the spill should be cleaned with water and soap. The OR supervisor keeps a stock of bleach available for use in emergencies. (Refer section on spill cleanup in Chapter 9)
- For major spills, disinfect as above, and clean the whole room with soap and water.
- At the end of the day, thorough cleaning of the floor with soap and water is necessary.

Microbiological Monitoring

Swabs are taken for cultures every month from all high touch surfaces, like OT table, lamp, trolley, monitors.

Septic cases in the operating room:

A separate operating room is used for septic cases. The following cases are considered septic:

- Situations where frank pus is present
- Cases for debridement This theatre has the facility for being sealed air-tight for fumigation. If the septic OR is closed for some reason, septic cases will be taken up at the end of the regular list in the main OR. Additional steps to be taken in this area:
- Minimal equipment to be used
- Remove all items from the OR which cannot be properly sterilized or disinfected and those which are not likely to be used.
- Cover the bed and armrest with plastic sheets, which will be discarded after the surgery.
- Keep sufficient containers for collecting used items.
- Handle used items with forceps or after wearing examination gloves

- Post one person to wait outside the OR to obtain additional equipment, supplies and help.
- At the end of the surgery, the scrub nurse stays in the OR without removing gloves and makes sure that the used items are carefully disposed.

Fumigation / Fogging

It is not recommended for blood borne pathogens and MRSA It is recommended under the following situations:

- Structural modifications
- Outbreak of spore forming bacterial infections like Anthrax, Plague, Tetanus, Open TB etc.
- It is done with 5% Glutaraldehyde (Hospital OT, Incidur, and Lysoformin) based solution with the foggier machine. The contact period is one hour.

General considerations

Several surveys of infections in developed count HOD ries have shown that occupationally acquired infections are greatest among some categories of health care workers (HCW) such as medical and technical staff, attendees and cleaners, while such risk is low among administrative staff. This is essentially because of their potential for coming into contact with pathogens or infected specimens.

The most effective method of preventing occupationally-acquired infections is adopting safe working practices. Immunisation can never be accepted as a substitute for good working practices. Based on a risk assessment of staff, specific protection may be recommended. The assessment takes into account the pathogens they may be exposed to, the local epidemiology of the disease, the nature of specimens/ infective material handled the frequency of exposure/contact with potentially infected material or patient. Staff considered to be at risk will be offered specific protection (largely pre-exposure, and the post exposure, where indicated), including immunisation (wherever possible). IMMUNISATION SHOULD TAKE INTO ACCOUNT THE SAFETY AND EFFICACY OF AVAILABLE VACCINES. For staff who are at low risk, post-exposure prophylaxis may at times be necessary. The workplace also provides an opportunity to protect individuals who have not received immunisation such as tetanus toxoid etc that are universally recommended.

3.1 Staff Health Services

Employees who are in contact with patients have a risk of acquiring infection in their workplace. This can be minimized by following certain guidelines. Saideep has a occupational health clinic with a designated general physician who provides consultations to the staff.

Activities of the Occupational Health Clinic: All services provided to individuals by the OHC will be confidential and the staff of this department will give a signed undertaking to the Head of the department stating this.

Placement evaluation: When personnel are appointed initially, a medical check-up is performed and baseline data on certain infections are collected. A placement evaluation is made to ensure that persons with special health problems are not placed in jobs that would pose undue risk of infection to them. At this time, the health service also confirms that vaccinations required are complete. If the vaccination is not complete, the SSHC shall advice completion of the vaccine schedule.

Employee health & Safety education: Safety education starts at the time of employment. All staffs are informed of the need to report exposure to blood or potentially infectious body fluids to the HICN without any delay, HICN will report it to OHC. Other health and safety education will also be carried out as appropriate.

Health Counselling: The OHC will conduct health counselling and offer prophylaxis when required (e.g.: following accidental exposure to blood or potentially infectious body fluids)

Work restrictions for staff: It is the responsibility of the staff to report suspected illness to the OHC. A major function of the OHC is to arrange for prompt diagnosis and management of illness of personnel, including alerting the heads of departments that could be affected because of this, keeping in mind that confidentiality of the individual concerned should be protected as much as possible. The OHC shall recommend the exclusion of personnel from specific areas in which direct contact with patients may pose a risk for the HCW or to the patient and also give clearance after the work restriction is terminated.

SPECIFIC PROPHYLAXIS

1. Pre-employment and upon employment According to the national policy, everyone is expected to have had immunization against Diphtheria, Pertussis, Tetanus, Poliomyelitis, and Measles in early childhood, with boosters for Diphtheria, Pertussis and Tetanus subsequently.

The immunization history of all prospective staff shall be documented by the OHC. If tetanus immunization is not updated, the OHC will provide the necessary doses free of cost.

Prospective staff who have not had a full course of Hepatitis B immunization will be offered the same upon employment at their own cost. The Hepatitis B Immune status of staff who claims to have had the vaccine previously will be tested by serology at their cost. Non-immune subjects will be offered immunization as stated above. All staff is informed that accidental exposure to blood or potentially infectious body fluids should be immediately communicated to the HICN.

Immunisation for all conditions other than the above will be based on a risk assessment of the individual and his/her workplace, by the OHC. Staff working in different sections of laboratories will have a risk assessment in conjunction with the HOD and appropriate vaccines administered, when available.

2. Protocol for managing exposure to blood or potentially infectious body fluid

Parenteral (needle stick) exposures to HIV infection are estimated by the Centre for Disease Control, Atlanta, Georgia to have a 0.3% risk of transmission of HIV. This is because of the low concentration of virus in the blood of infected patients. The risk in the case of HBV infected specimen in similar situations is 5-30%.

A. Management of blood and body fluid explosion

Immediately following an exposure to blood

- For needle-stick injury: Wash for 10 minutes with soap and water Report to HICN
- For non-intact skin exposure Wash with soap & water or antiseptic
- For mucosal exposure (e.g. Splash into eyes) Irrigate copiously by running a pint of normal saline over ten minutes, the eye being held open by another person. No specific evidence shows that using antiseptic or squeezing the wound will reduce the risk of transmission of a blood borne pathogen. Using a caustic agent such as bleach is not recommended.

B. **Report the exposure**

All sharps injury (break of skin with any sharp instrument such as hypodermic needle previously used on a patient) and mucosal exposure (blood or body fluids coming into contact with eyes, mouth etc) should be reported to HICN immediately following exposure within 24 hours. Prompt reporting is essential because in some cases post exposure treatment may be recommended and it should be started as soon a possible.

All blood and body fluids with visible blood are considered infectious.

Other body fluids may be potentially infectious (see section on Universal Precautions in the chapter Prevention of transmission of blood borne pathogens) and must be evaluated on case-to-case basis.

C. Management

Assessing the risk of transmission of HBV or HIV infection

For ALL exposures the following investigations need to be done:

Index Patient should be checked for the following: if not already done: After obtaining consent, blood of the index patient is checked for:

i. Human Immunodeficiency Virus Antibody
ii. Hepatitis B Surface Antigen
iii. Hepatitis C Virus Antibody

Health Care Worker: After obtaining consent, blood of the health care worker is checked for: i. HBsAg, ii. HIV, iii. Anti-HBs Antibodies

The blood samples for the investigations listed above are sent for rapid testing.

If the index case is HIV negative or the index case is unknown

Do not start chemoprophylaxis; consult the head of Staff and Student Health Council or one of the experts. The HCW is offered HIV antibody testing 0, 6, 12 and 24 weeks.

If the index case is HIV positive and the HCW is HIV negative the protocol given below (modified from MMWR, May 1998) is followed.

For Indian setting all HIV positive index patients are to be considered as highly infectious.

Chemoprophylaxis is best when started within 1-2 hours following exposure. The cut off period for chemoprophylaxis is 72 hours following exposure.

The following investigations are to be done while starting chemoprophylaxis. Do not delay starting chemoprophylaxis for the sake of these investigations.

i. Haemoglobin estimation
ii. Platelet count
iii. Reticulocyte count
iv. WBC-total & differential counts
v. Serum Creatinine
vi. Liver function test
vii. Random blood sugar

Categorization of exposures with recommended prophylaxis:

- Use three drugs (Zidovudine + Lamivudine +Indinavir) for

- all percutaneous injuries with contaminated sharps

- mucus membrane/non-intact skin exposure with large volumes of body fluid for long duration.

Use two drugs (Zidovudine + Lamivudine) for mucous membrane/ non-intact skin exposure with small volume body fluid for short duration.

If in doubt, start on three drugs immediately and consult the consultant in charge of ICTC

Drug Regimen:

- Three drugs -Azidothymidine (Zidovudine) 200mg thrice daily, Lamivudine 150mg twice daily and indinavir 800mg every eight hours. If Indinavir is not available, Nelfinavir 750mg three times daily is to be used.
- Two drugs - Zidovudine and lamivudine.
- Total duration four weeks for both.

  If the index patient is already on anti-retroviral treatment with one drug, add new drugs for the staff. ICTC has to be consulted for availability of drugs.

Follow up of HCW

The HCW should be tested for HIV antibodies after six weeks, three months and six months following the exposure, irrespective of the HIV status of the index patient.

Hepatitis B

- If the source patient is negative, no further action need be taken.
- If source is HBV positive:
- Test exposed for HBsAg and anti HBs level.
- Decide on appropriate prophylaxis

STATUS	PROPHYLAXIS
Exposed is not vaccinated.	Give HB Ig 0.06 ml/kg;(1ml =100 units) Vaccinate with HBV vaccine 0.1.6 monthly
Exposed has received one/ two doses of vaccination	Check the anti HBs level; Continue the vaccination schedule; Give HBIG if the anti-level is <10 IU/ml.
Exposed has received 3⁄4 doses. But no anti HBs level in past OR level < 10 IU/ml.	Check anti HBs level. If level > 10 IU/ml – no intervention If level < 10 IU/ml give booster dose of vaccine.
Exposed has completed vaccination and anti HBs level in past > 10 IU/ml	No intervention.

HCV

If source is HCV positive:

- Test the exposed for Anti-HCV and baseline LFT
- Refer to Gastroenterologist
- Repeat anti HCV and SGPT of exposed at 4-6 month

Counselling: Counselling of the HCW is performed when necessary.

i. Tetanus toxoid: Tetanus toxoid will be given to all staff during pre-employment check-up and every ten years at the time of their annual check-up.

ii. Tuberculosis: Staff and Students diagnosed to have tuberculosis should have sputum (tissue sample in extra pulmonary cases) sent for mycobacterium culture and susceptibility studies before starting treatment. As per Anti-tuberculosis Control Programme Guidelines, Patients with sputum positive pulmonary tuberculosis usually become non-infectious within two weeks of treatment with standard ATT regimens containing rifampicin and isoniazid, and remain so if regular adequate chemotherapy is continued (even though AFB might still be seen in sputum smears). Therefore, segregation for reasons of infectiousness is generally required only for two weeks. However, these individuals will be evaluated by the OHC on a case-by-case basis regarding decisions about returning to work in patient care areas, especially staff members who remain symptomatic despite two weeks of adequate treatment, those who are considered to be at high risk of having multidrug resistant tuberculosis (MDR-TB) (previous drug treatment for tuberculosis, contact with a case of known MDR-TB) and those staff providing care to immune-compromised patients.

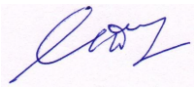
iii. MRSA: Measures used to control the spread of these infections include ongoing laboratory-based surveillance, placing colonized and infected patients in isolation, the use of appropriate barrier precautions and hand washing. There is no role for routine screening of staff for MRSA nasal carriage. Screening of staff will be used selectively in the control of MRSA outbreaks. Intranasal 2% Mupirocin (recommended dosage - 0.5g inserted into each nostril twice a day for five days) will be used to eradicate nasal carriage in epidemiologically implicated staff. Staff who are infected or colonized with MRSA will be allowed to return to work in patient care areas only after cultures are persistently negative for MRSA.

iv. Other Diseases: In case of exposure to uncommon and transmissible diseases such as meningococcal diseases etc, the incident shall be reported to the SSHC and prophylaxis (eg Rifampicin for Meningococcus) may be prescribed by the OHC in consultation with the infectious disease physician.

RECOMMENDED WORK RESTRICTIONS

FOR COMMUNICABLE DISEASES IN HEALTH CARE WORKERS

POST-EXPOSURE	WORK RESTRICTIONS	DURATION
NOTE: ALL EXPOSURES AT HOME AS WELL AS AT WORK SHOULD BE EVALUATED		
Measles (Rubeola) *(susceptible employees)*	Exclude from work.	From day 5 through day 21 post-exposure and 4 days after onset of rash.
Meningococcus		
• asymptomatic employees	No restriction. Prophylaxis is recommended.	While asymptomatic.
• symptomatic employees (fever, intense headache, lethargy, stiff neck, and/or a rash that does notblanch under pressure)	Exclude from work. Close contacts and family members should be monitored.	
Mumps *(susceptible employees)*	Exclude from work.	From day 12 through day 26 post-exposure, or until 9 days after onset of parotitis.
Pertussis		
• asymptomatic employees	No restriction. Prophylaxis is recommended.	
• symptomatic employees	Exclude from work.	Until 5 days after initiation of antimicrobial therapy.
Rubella *(susceptible employees)*	Exclude from work.	From day 7 through day 21 post-exposure.
Varicella (Chicken Pox or Shingles)		
• **Non-immune employees** exposedto varicella zoster (chicken pox) or uncovered herpes zoster (shingles)	Exclude from work.	From day 8 through day 21 post-exposure.
• **Vaccinated** employees (those whohave received 2 doses of vaccine)	Monitor daily during days 8-21 post-exposure. Exclude from work immediately if symptoms develop (fever, headache, skin lesions).	Until varicella is ruled out or lesions are dry and crusted

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Herpes Simplex		
• Genital	No restriction	
• Hands (hepatic with low)	Exclude from patient contact and contact with patient environment.	Until lesion is healed / dry and crusted.
• Orofacial	Infection control and Employee Health must evaluate each employee (according to location and severity of lesions) to assess the need to restrict from care of high-risk patients.	Until lesions are healed / dry and crusted.
HIV	May not performed exposure prone invasive procedures until evaluated by Employee Health. Infection Control and Employee Health will review and recommend procedures the employee can perform.	Indefinitely
Influenza	Exclude from work	Until afebrile (<38° C / 100°F) for 24 hours without the use of antipyretic medications.
Measles (active or suspected)	Exclude from work	Until 4 days after onset of rash and temperature <100°F without the use of antipyretic medications.

Meningococcus	Exclude from work	Until 24 hours after start of effective therapy.
Methicillin Resistant Staphylococcus Aureus (MRSA)	Exclude from work.	Until documentation of: • Negative nasal culture and • Negative site culture Cultures should be obtained >24 hours after antibiotics are completed.
Mononucleosis (Epstein-Barr Virus)	May work. Avoid mouth to mouth resuscitation.	
Mumps	Exclude from work.	Until 9 days after onset of parotitis.
Norovirus	Exclude from work.	Until 48 hours symptoms resolve.
Pediculosis (Lice)	Exclude from work.	Until24 hours after treatment and observed to be free from adult and immature lice.
Pertussis	Exclude from work.	From beginning of catarrhal stage through third week after onset of paroxysms or until 5 days after start of effective antimicrobial therapy.
Rubella	Exclude from work.	Until 7 days after onset of rash and temperature <100^{o}F without the use of antipyretic medications

SARS COVID	Exclude from work	Until 10 days after onset of fever and temperature <100°F without the use of antipyretic medications
Scabies	Exclude from work	Until 24 hours after application of effective treatment.
Staphylococcus aureus (not MRSA)		
• Active drainage skin lesion	May work if lesions can be adequately dressed and covered. If unable to completely dress and cover lesions, restrict from patient care, contact with patient's environment, and food handling.	Until lesion have resolved.
Staphylococcus aureus (not MRSA)		
• Carrier sate	No restriction unless the employee is epidemiologically linked to transmission of the organism.	Until colonization is cleared (as documented by culture).
Streptococcus, *group A*	Restrict from patient care, contact with patient's environment, and food handling	Until 24 hours after adequate treatment started and no drainage lesions.

Tuberculosis		
• Positive TB skin test (TST) or IGRA (T-spot or QuantiFERON) test.	All employees with a new positive TB test need to be evaluated by Employee Health to verify that they do to have active disease	Once active disease is ruled out, employee may return to work with no restricted
• Active	Exclude from work	Until3 negative AFB smears or cultures are obtained.
Vancomycin – resistant enterococcus (VRE)	Exclude from work	Until cleared on a case-by-case basis by Infection Control and Employee Health.
Varicella (Chicken pox)	Exclude from work.	Until lesion are dry and crusted.
Zoster (Shingles)	Exclude from work if lesion cannot be covered with clothing. Infection Control and Employee Health will evaluate the potential for communicability.	Until lesions are dry and crusted.

COVID-19 HOSPITAL PREPAREDNESS GUIDELINE

This is a guide for Saideep Healthcare & Research Pvt. Ltd on what needs to be in place already during covid 19 situation. All these minimum recommended guidelines are compiled, to deal with potential COVID-19 suspected and confirmed cases.

The hospital is prepared for the possible arrival of patients with Coronavirus Disease 2019 (COVID-19). We ensure that staff are trained, equipped and capable of practices needed to:

1. Prevent the spread of respiratory diseases including COVID-19 within the facility.
2. Promptly identify and isolate patients with possible COVID-19 and inform the correct facility staff and public health authorities, including safe transfer of such patients to the COVID-19 Management centres.
3. Care for a limited number of patients with confirmed or suspected COVID-19 as part of routine operations.
4. Potentially care for a larger number of patients in the context of an escalating outbreak.
5. Monitor and manage any healthcare personnel that might be exposed to COVID-19.
6. Communicate effectively within the facility and plan for appropriate external communication related to COVID-19.

1. Infection prevention and control policies and training for healthcare personnel (HCP)

The Facility leadership review the COVID-19 control and prevention guidelines and provide education and, on the job, -specific training to HCP regarding COVID-19 on the following topics:

- Signs and symptoms of infection
- How to safely collect a specimen from the COVID-19 suspected patients.
- Correct infection control practices and personal protective equipment (PPE) use
- HCP sick leave policies and recommended actions for unprotected exposures (e.g., not using recommended PPE, an unrecognized infectious patient contact)
- How to report the COVID-19 suspected and confirmed cases.

2. Process for rapidly identifying and isolating patients with confirmed or suspected COVID-19

There is a pre-screening area in all the facilities that is close to the entrance equipped with all the necessary equipment and manned by trained staff. The role of this station is to screen all the patients walking into the health facility and ensure that all those who present with any of the signs and symptoms of the COVID-19 are directed to a separate isolation area where they will further be screened.

At the Isolation area, all suspected cases are:

- Immediately put on a mask and keep it on during their assessment, cover their mouth/nose when coughing or sneezing, use and dispose of tissues, and perform hand hygiene after contact with respiratory secretions.

All the service points and entry points within the facilities have;

Posters with information on COVID-19 displayed at service points and entry points advising patients and the public with fever or symptoms of respiratory infection to immediately notify triage personnel so appropriate precautions can be taken.

- Running water and soap or Alcohol based hand sanitizer for hand hygiene is available at each entrance and at all service points across the facility.
- Provision for tissues and no-touch bins for disposal of tissues in waiting rooms and at all service points.
- Facility provides a separate well-ventilated space that allows waiting not to crowd, with easy access to respiratory hygiene and cough etiquette supplies. The facility uses the open spaces within the facility as waiting bays in case patient numbers are high.

Alternatively, for patients that cannot be immediately placed in a room for further evaluation, a system is provided that allows them to wait in a personal vehicle or outside the facility (if medically appropriate) and be notified by phone or other remote methods when it is their turn to be evaluated.

The facility should also ensure that.

- Triage personnel are trained on appropriate processes (e.g. question to ask and action to take) to rapidly identify and isolate suspect cases.
- Facility has a process that occurs after a suspect case is identified to include immediate notification of facility leadership / infection control.
- Facility has a process to notify the local or state health department of a suspect case soon after arrival
- Facility has a process for receiving suspect cases arriving by ambulance.

3. Patient placement

- The healthcare facility identifies available numbers and locations of Isolation areas / rooms.
- All the Isolation areas / rooms are away from other medical activities and areas, well-ventilated and lit, and have proper control of access.
- The rooms have a good connection to the sewerage system to facilitate disposal of the body secretions.
- The Isolation room has clear administration registers that track all those coming in and out.
- A waste management plan also in place that clearly states how the waste shall be segregated, collected, transported and disposed.
- Guidelines on how the room shall be decontaminated also provided and in line with national / international directives.
- All the activities at the Isolation area / room are clearly documented

Verification of each of the Isolation area / rooms is done and meets the following criteria.

- Well-ventilated and lit.
- Air from these rooms exhausted directly to the outside.
- Rooms doors kept closed expect when entering or leaving the room, and entry and exit minimized.
- The facility has plans to minimize the number of HCP who enter the room Only essential personal enter the Isolation room / area. Facilities consider caring for these patients with dedicated HCP to minimize risk of transmission and exposure to other patients and HCP.
- The facility has a process (e.g. log, electronic tracing) for documenting HCP entering the exiting the patient room.
- The facility has a policy for dedicating noncritical patient care equipment to the patient.
- Referral protocol other Isolation rooms / areas also be in place in case this is required.

4. Handling COVID-19 Confirmed Cases

- Once a case of COVID-19 is confirmed at a Facility, Personal Protective Equipment (PPE) and other infection prevention and control supplies (e.g. hand hygiene supplies that used for both healthcare personal (HCP) protection and source control for infected patients (e.g. facemask on the patient) available and in sufficient supply at patient arrival, triage and assessment locations.
- To be ready for possible complication from COVIS-19, the facility has a respiratory protection program where all the selected staff have been trained appropriately to handle severe cases. The appropriate HCP have been medically cleared, fit tested, and trained for respirator use.
- All the staff trained on the selection and proper use of (including putting on and removing) PPE, with a required demonstration of competency. The outcome of this document.
- All the facilities also have a process for auditing adherence to recommended PPE use by HCP. Outcomes for all such audits should be documented and records kept. This is done at least once a week if resources allow.

5. Movement of patients with confirmed or suspected COVID-19 within the facility

For all patients who have been confirmed to have the COVID-19 virus:

- Their movement outside of the Isolation room / area is limited to medically essential purpose.

- In case, a patient is transported outside the isolation area / room there is a protocol in place to ensure that the HCP in the receiving area is notified in advanced.
- Patients transported outside of the isolation room / area wear a facemask and be covered with a clean sheet during transport.

6. Hand hygiene (HH)

- The facility provides hand hygiene supplies, including alcohol-based hand sanitizer / soap water and proper towels at all services points, including areas where HCP remove PPE.
- The facility has a process for auditing adherence to recommended hand hygiene practices by HCP. The findings were documented and filed.

7. Environmental cleaning

For proper control of infections, the environment is cleaned properly and regularly. It is recommended that:

- The facility develops a plan to ensure proper cleaning and disinfection of environmental surfaces and equipment across the facility. Special attention paid to the contact points where many people always touch like doorknobs, the equipment, toilets, working surfaces etc.
- The environmental services personal / cleaners are appropriately trained and fit tested
- All HCP with cleaning responsibilities understand the contact time for selected products used for cleaning.
- The facilities should have a process to ensure shared or non-dedicated equipment is cleaned and disinfected after use according to manufacturer's recommendations.

8. Monitoring and managing HCP

The HCP are at the centre of operations who identify, diagnose and treat the confirmed cases of COVID-19 are protected and taken care of for the sacrifices that they make.

The following measures are taken for the HCP

- The facility follows the national and country public health authority's policies and procedures for monitoring and managing HCP with potential for exposure to COVID-19 including ensuring that HCP have access, also through telephone, to medical consultation. A clear guide on how they can access the necessary help is available.

- The facility has a process to track exposure and conduct active monitoring of HCP if required by public health.
- The facility set up a process to conduct active monitoring of HCP if required by public health.
- The facility set up a process to conduct symptom and temperature checks prior to the start of any shift of symptomatic, exposed HCP that are not work restricted.
- To take care of mental health issues for the HCP the facilities set up counselling centres to allow the HCP to get counselling.

9. Visitor access and movement within the facility:

- To reduce the spread of infections by those visiting the healthcare facilities, it is the facility.
- Plan for visitor access and movement within the facility.
- Screen all the visitors for symptoms of acute respiratory illness before entering the hospital.
- Have a plan to restrict visitation to rooms of patients with confirmed or suspected COVID-19

If visitors can enter the room of a confirmed or suspected COVID-19 patient, the facility:

- Enact a policy define what PPE should be used by visitors.
- Provide instruction to visitors before they enter a patient room, on hand hygiene, limiting surfaces touched, and use of PPE according to current facility policy.
- Maintain a record (e.g. a log with contact information) of all visitors who enter and exit the room.
- Ensure that visitors limit their movement within the facility (e.g. avoid the cafeteria)

Procedures for Cleaning, Disinfection and Sterilization Based on Infection Risk

DEPARTMENT -ICU

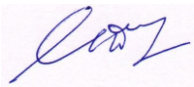
ARTICLE	PROCEDURE
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed pans and urine bottles (Disposable preferred; wash hands thoroughly after handling)	Preferably wash in machine with heat disinfection cycle Alternatively, clean and disinfect with 0.5% sodium hypochlorite or phenolic germicide (used according to the manufacturers' instructions) Dry completely before reuse
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry
Brushes (nail, avoid use) (Disposable nail brushes preferred)	If reusable, heat-sterilize

Boots	Clean with detergent water. If visibly soiled, disinfect with LLD.
Canes, walkers, crutches, wheelchairs and rehabilitation equipment	Clean with detergent and water If soiled, clean patient contact surfaces by wiping with sodium hypochlorite (>100 ppm available chlorine)/ 70–90% alcohol or phenolic germicide at a concentration recommended for low-level disinfection
Cloth appliances (neck and arm traction, etc.)	Wash after each use with detergent in hot water, rinse well and dry before reuse.
Drainage bottles (Disposable preferred; after use in isolation, wipe with sodium hypochlorite (1–2%) and dry)	If reusable, rinse and return to CSSD for heat disinfection Clean with detergent and water and disinfect with 0.5% hypochlorite and dry
Duvets (Disinfect with sodium hypochlorite (>100 ppm available chlorine) if contaminated)	Heat disinfects or wash with detergent and dry
Earpieces for otoscopes (To be returned to CSSD after use in isolation)	Clean with detergent and water and dry
High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.

IV monitoring pumps and feed pumps (After use, in isolation, wipe with sodium hypochlorite 2%.)	Clean with detergent and water and dry Disinfect with LLD (70% alcohol or sodium hypochlorite)
IV stands	Clean with detergent and water; dry before use
Leads and monitors	Disassemble, clean with detergent and water and dry
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Pressure-relieving devices	Clean with detergent and water and dry
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Reflex hammer	Wipe handle and head after each use with IPA or LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap
Sputum pots/containers	Use disposable only, with close filling lid Discard into clinical waste for incineration If reusable, empty with extreme caution and steam sterilize

Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Trolleys (dressing)	Clean daily with detergent and water. After each use, wipe with 70% alcohol/ sodium hypochlorite (>100 ppm available chlorine)
Urine-measuring jugs	Heat disinfects after each use in bed pan washer
Vomit bowls	Empty contents into sluice, rinse, wash and disinfect with hot water and detergent
Wheel chairs	Clean between patients with detergent and water
X-ray equipment (Wipe with 70–90% alcohol/any other LLD)	Clean with cloth dampened dust with detergent and water * Used according to the manufacturers' instructions

Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Suction tubing	Tap water Detergent Cleaning • After each use should be cleaned under running water and with a detergent. • Should be sent to CSSD for further cleaning and sterilization. • For each patient separate sterile suction tubing should be used
Dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)
Refrigerators	Detergent and water Absorbent paper or clean cloth Cleaning (weekly) • Empty the fridge and store things appropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.
BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.
BiPAP, Mask, Head strap	-Tubing: Cleaning with Detergent and water and ETO sterilization -Mask: reusable for same patient / disposable -Filter: by biomedical department as per manufacturer's instructions -Filter: rinse and clean with soapy water once a week, dry before use.

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		**Dr. S.S. Deepak**	
Chief medical Administrator		**Chairman & Managing Director**	

Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber
DEPARTMENT -NICU	
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Baby equipment (feeding bottles and teats) (Disposable preferred)	If reusable, return to CSSD for heat sterilization or Wash in hot water and detergent and rinse followed by immersion in 1% hypochlorite solution (freshly made)
Baby-weighing scale/ changing table	Fresh liner should be used for each baby clean tray with detergent and water after use If visibly soiled, clean first with friction and then wipe down with LLD
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Boots	Clean with detergent water. If visibly soiled, disinfect with LLD.

High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.
IV monitoring pumps and feed pumps (After use, in isolation, wipe with sodium hypochlorite 2%.)	Clean with detergent and water and dry Disinfect with LLD (70% alcohol or sodium hypochlorite)
IV stands	Clean with detergent and water; dry before use
Incubator Infant incubators (Avoid using phenolic disinfectants)	Clean with detergent and water and thoroughly dry; disinfect (if needed) with chlorine-releasing agent (125 ppm) or 70% alcohol
Leads and monitors	Disassemble, clean with detergent and water and dry
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap

Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Suction tubing	Tap water Detergent Cleaning • After each use should be cleaned under running water and with a detergent. • Should be sent to CSSD for further cleaning and sterilization. • For each patient separate sterile suction tubing should be used
Dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)

Refrigerators	Detergent and water Absorbent paper or clean cloth Cleaning (weekly) • Empty the fridge and store things appropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.
BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.
BiPAP, Mask, Head strap	-Tubing: Cleaning with Detergent and water and ETO sterilization -Mask: reusable for same patient / disposable -Filter: by biomedical department as per manufacturer's instructions -Filter: rinse and clean with soapy water once a week, dry before use.
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber

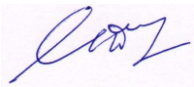
DEPARTMENT -WARD	
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed pans and urine bottles (Disposable preferred; wash hands thoroughly after handling)	Preferably wash in machine with heat disinfection cycle Alternatively, clean and disinfect with 0.5% sodium hypochlorite or phenolic germicide (used according to the manufacturers' instructions) Dry completely before reuse
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry
Canes, walkers, crutches, wheelchairs and rehabilitation equipment	Clean with detergent and water If soiled, clean patient contact surfaces by wiping with sodium hypochlorite (>100 ppm available chlorine)/ 70–90% alcohol or phenolic germicide at a concentration recommended for low-level disinfection
Cloth appliances (neck and arm traction, etc.)	Wash after each use with detergent in hot water, rinse well and dry before reuse.

High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.
IV stands	Clean with detergent and water; dry before use
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry Clean inside of the container with detergent before refilling Do not top-up soap
Sputum pots/containers	Use disposable only, with close filling lid Discard into clinical waste for incineration If reusable, empty with extreme caution and steam sterilize
Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD

Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Urine-measuring jugs	Heat disinfects after each use in bed pan washer
Vomit bowls	Empty contents into sluice, rinse, wash and disinfect with hot water and detergent
Wheel chairs	Clean between patients with detergent and water
Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Suction tubing	Tap water Detergent Cleaning • After each use should be cleaned under running water and with a detergent. • Should be sent to CSSD for further cleaning and sterilization. • For each patient separate sterile suction tubing should be used
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.

BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber
DEPARTMENT -PROCEDURE ROOM	
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide).*
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry

Brushes (nail, avoid use) (Disposable nail brushes preferred)	If reusable, heat-sterilize
Boots/Slipper	Clean with detergent water. If visibly soiled, disinfect with LLD.
Canes, walkers, crutches, wheelchairs and rehabilitation equipment	Clean with detergent and water If soiled, clean patient contact surfaces by wiping with sodium hypochlorite (>100 ppm available chlorine)/ 70–90% alcohol or phenolic germicide at a concentration recommended for low-level disinfection
Cloth appliances (neck and arm traction, etc.)	Wash after each use with detergent in hot water, rinse well and dry before reuse.
Drainage bottles (Disposable preferred; after use in isolation, wipe with sodium hypochlorite (1–2%) and dry)	If reusable, rinse and return to CSSD for heat disinfection Clean with detergent and water and disinfect with 0.5% hypochlorite and dry
Duvets (Disinfect with sodium hypochlorite (>100 ppm available chlorine) if contaminated)	Heat disinfects or wash with detergent and dry
Earpieces for otoscopes (To be returned to CSSD after use in isolation)	Clean with detergent and water and dry
High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		**Dr. S.S. Deepak**	
Chief medical Administrator		**Chairman & Managing Director**	

IV monitoring pumps and feed pumps (After use, in isolation, wipe with sodium hypochlorite 2%.)	Clean with detergent and water and dry Disinfect with LLD (70% alcohol or sodium hypochlorite)
IV stands	Clean with detergent and water; dry before use
Leads and monitors	Disassemble, clean with detergent and water and dry
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Otoscope handle	Wipe all surfaces with 70% alcohol/ any other LLD
Otoscope speculum (Disposable preferred)	If reusable, wash and disinfect after each use Soak for 20 minutes in IPA (70%)
Pressure-relieving devices	Clean with detergent and water and dry
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Reflex hammer	Wipe handle and head after each use with IPA or LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap

High-Level Disinfection of Endoscope (e.g., arthroscopes, cystoscope, laparoscopes)	To detect damaged endoscopes, immediately after use, meticulously clean the endoscope with an enzymatic cleaner that is compatible with the endoscope. Cleaning is necessary before both automated and manual disinfection. Flush and brush all accessible channels to remove all organic (e.g., blood, tissue) and other residue. Clean the external surfaces and accessories of the devices by using a soft cloth or sponge or brushes. Continue brushing until no debris appears on the brush.
Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Trolleys (dressing)	Clean daily with detergent and water. After each use, wipe with 70% alcohol/ sodium hypochlorite (>100 ppm available chlorine)
Anaesthesia equipment (airways, endotracheal tubes, etc.)	Preferably sterilize by heat

Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)
Refrigerators	Detergent and water Absorbent paper or clean cloth Cleaning (weekly) • Empty the fridge and store things appropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.
BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.
BiPAP, Mask, Head strap	-Tubing: Cleaning with Detergent and water and ETO sterilization -Mask: reusable for same patient / disposable -Filter: by biomedical department as per manufacturer's instructions -Filter: rinse and clean with soapy water once a week, dry before use.
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber

DEPARTMENT -POST GYNAC WARD	
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed pans and urine bottles (Disposable preferred; wash hands thoroughly after handling)	Preferably wash in machine with heat disinfection cycle Alternatively, clean and disinfect with 0.5% sodium hypochlorite or phenolic germicide (used according to the manufacturers' instructions) Dry completely before reuse
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry
Canes, walkers, crutches, wheelchairs and rehabilitation equipment	Clean with detergent and water If soiled, clean patient contact surfaces by wiping with sodium hypochlorite (>100 ppm available chlorine)/ 70–90% alcohol or phenolic germicide at a concentration recommended for low-level disinfection

Cloth appliances (neck and arm traction, etc.)	Wash after each use with detergent in hot water, rinse well and dry before reuse.
Doppler (fetal / vascular)	Wipe head of Doppler after each use with 70% IPA
High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.
IV stands	Clean with detergent and water; dry before use
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap
Sputum pots/containers	Use disposable only, with close filling lid Discard into clinical waste for incineration If reusable, empty with extreme caution and steam sterilize

Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Trolleys (dressing)	Clean daily with detergent and water. After each use, wipe with 70% alcohol/ sodium hypochlorite (>100 ppm available chlorine)
Urine-measuring jugs	Heat disinfects after each use in bed pan washer
Vomit bowls	Empty contents into sluice, rinse, wash and disinfect with hot water and detergent
Wheel chairs	Clean between patients with detergent and water
Breast pumps	Wash with detergent and water, immerse in sodium hypochlorite (>100 ppm available chlorine). Dry before use.
Breast pump accessories	Disinfect by boiling for 5 minutes Long-handled tongs that have been disinfected Dry on a paper towel

Laryngeal mirror	High-level disinfection/ sterilization with heat or immerse in glutaraldehyde
Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Suction tubing	Tap water Detergent Cleaning • After each use should be cleaned under running water and with a detergent. • Should be sent to CSSD for further cleaning and sterilization. • For each patient separate sterile suction tubing should be used
Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)
Refrigerators	Detergent and water Absorbent paper or clean cloth Cleaning (weekly) • Empty the fridge and store things appropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.
BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber

DEPARTMENT-OT	
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed and couch frames, OT Table	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry
Brushes (nail, avoid use) (Disposable nail brushes preferred)	If reusable, heat-sterilize
Boots	Clean with detergent water. If visibly soiled, disinfect with LLD.
Cloth appliances (neck and arm traction, etc.)	Wash after each use with detergent in hot water, rinse well and dry before reuse.

Drainage bottles (Disposable preferred; after use in isolation, wipe with sodium hypochlorite (1–2%) and dry)	If reusable, rinse and return to CSSD for heat disinfection Clean with detergent and water and disinfect with 0.5% hypochlorite and dry
Duvets (Disinfect with sodium hypochlorite (>100 ppm available chlorine) if contaminated)	Heat disinfects or wash with detergent and dry
Doppler (fetal/ vascular)	Wipe head of Doppler after each use with 70% IPA
Earpieces for otoscopes (To be returned to CSSD after use in isolation)	Clean with detergent and water and dry
High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.
IV monitoring pumps and feed pumps (After use, in isolation, wipe with sodium hypochlorite 2%.)	Clean with detergent and water and dry Disinfect with LLD (70% alcohol or sodium hypochlorite)
IV stands	Clean with detergent and water; dry before use
Leads and monitors	Disassemble, clean with detergent and water and dry

Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave
Otoscope handle	Wipe all surfaces with 70% alcohol/ any other LLD
Otoscope speculum (Disposable preferred)	If reusable, wash and disinfect after each use Soak for 20 minutes in IPA (70%)
Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Reflex hammer	Wipe handle and head after each use with IPA or LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap
Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol

Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Trolleys	Clean daily with detergent and water. After each use, wipe with 70% alcohol/ sodium hypochlorite (>100 ppm available chlorine)
X-ray equipment (Wipe with 70–90% alcohol/any other LLD)	Clean with cloth dampened dust with detergent and water * Used according to the manufacturers' instructions
High-Level Disinfection of Arthroscopes, Cystoscope & Laparoscope	To detect damaged, immediately after use, meticulously clean the scope with an enzymatic cleaner that is compatible with the scope. Cleaning is necessary before both automated and manual disinfection. Flush and brush all accessible channels to remove all organic (e.g., blood, tissue) and other residue. Clean the external surfaces and accessories of the devices by using a soft cloth or sponge or brushes. Continue brushing until no debris appears on the brush.
Anaesthesia equipment (airways, endotracheal tubes, etc.)	Preferably sterilize by heat
Applanators (tonometer prisms)	Wipe tips clean. Immerse in sodium hypochlorite (500 ppm available chlorine) up to 10 mm Disinfect with 3% H2 O2 / 70% isopropyl alcohol Prepare fresh solution of hypochlorite at the start of clinic After disinfection, rinse thoroughly in tap water and dry

Cryosurgical probes	Autoclave if possible If heat labile, use low-temperature sterilization or ethylene oxide Less acceptable alternative: immerse in 2% glutaraldehyde
Diaphragm fitting Rings and pessaries Ear suction tips	Wash with soap and water, followed by immersion in 70% alcohol for 15 minutes Heat/ sterilize/ boil Immerse in 2% glutaraldehyde
Syringe nozzle and ear speculum, ear suction tip	Sterilize with heat, boil/immerse in 2% glutaraldehyde (if plastic), iodophors or alcohol Sterilize by heat/immerse in glutaraldehyde (2%)
Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Light switches and over-bed lights	• Light switches to be cleaned of dust, spots and finger marks. Clean with a damp cloth (never wet) and detergent. • Over-bed lighting to be damp dusted. Light housing to be wiped down with warm water and detergent.
Suction tubing	Tap water Detergent Cleaning • After each use should be cleaned under running water and with a detergent. • Should be sent to CSSD for further cleaning and sterilization. • For each patient separate sterile suction tubing should be used
Injection Trolley	Detergent and water Duster Disinfectant (70% alcohol)
Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.

BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
BiPAP, Mask, Head strap	-Tubing: Cleaning with Detergent and water and ETO sterilization -Mask: reusable for same patient / disposable -Filter: by biomedical department as per manufacturer's instructions -Filter: rinse and clean with soapy water once a week, dry before use.
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber
DEPARTMENT- DIALYSIS	
Dialyzer Reprocessing	Return the blood using the machine's blood pump and 0.9% normal saline. Remove dialyzer and tubing from the machine and take to the reprocessing area in a covered tray to avoid blood spills. Clean by instilling 1% hypochlorite into the blood compartment till it is completely filled and allowed to stay for not more than 2 min. Immediately rinse out of the cleaning agent from the blood compartment is recommended. If hydrogen peroxide is used, it should be instilled in the dialysate compartment and backwashing or reverse Rinse out the cleaning agents with water (Cleaning and disinfecting agents: Sodium hypochlorite 1%–2%, Hydrogen peroxide, Formaldehyde 4%, Peracetic acid)

Laryngoscope, Magill's forceps	• After use, wash it under running tap water after removal of the bulb and blade. • Wipe the bulb with disinfectant or detergent and water. • Blade should be washed under running water and immersed in high-level disinfectant as per recommendation. • Wash and dry it • Wipe with alcohol-based rub.
Ambu bag and mask (Disposable preferred; change mask after each patient)	Clean with detergent and water and dry Preferably get autoclave ones, now available and autoclave after each use in CSSD
Ampoules	Wipe neck with 70% alcohol
Aprons (Disposable recommended)	If reusable, clean with detergent and water, dry and disinfect with 70% alcohol
Bed pans and urine bottles (Disposable preferred; wash hands thoroughly after handling)	Preferably wash in machine with heat disinfection cycle Alternatively, clean and disinfect with 0.5% sodium hypochlorite or phenolic germicide (used according to the manufacturers' instructions) Dry completely before reuse
Bed and couch frames	Clean with detergent and water between patients; wipe with LLD like 70% alcohol/phenolic germicide if disinfection is necessary. * For isolation rooms, after cleaning, wipe with disinfectant (sodium hypochlorite or phenolic germicide). *
Blood pressure apparatus and cuff (Disposable preferred; after use in isolation facility, lauder cuffs in washing machine)	Clean cuffs, tubing, bulb (if manual) with 70% alcohol/ other LLD after each use. If visibly soiled, wash in soap/detergent and water, rinse and hang to dry

Canes, walkers, crutches, wheelchairs and rehabilitation equipment	Clean with detergent and water If soiled, clean patient contact surfaces by wiping with sodium hypochlorite (>100 ppm available chlorine)/ 70–90% alcohol or phenolic germicide at a concentration recommended for low-level disinfection
Duvets (Disinfect with sodium hypochlorite (>100 ppm available chlorine) if contaminated)	Heat disinfects or wash with detergent and dry
High-touch surfaces (door knobs, phones, keyboards, light, switches, bedside tables, drawer pulls and other “hand-touch” items) (Choice dependent on material)	Clean at least twice daily and when soiled. Clean with 70% alcohol/ sodium hypochlorite/ some iodophors/ quaternary ammonium compounds If visibly soiled, clean with soap/ detergent first.
IV monitoring pumps and feed pumps (After use, in isolation, wipe with sodium hypochlorite 2%.)	Clean with detergent and water and dry Disinfect with LLD (70% alcohol or sodium hypochlorite)
IV stands	Clean with detergent and water; dry before use
Leads and monitors	Disassemble, clean with detergent and water and dry
Mattresses and pillows	Clean with detergent and water between patients and as required
Metal basin/ Kidney tray (Disposable preferred)	Wash after each use with enzymatic detergent and rinse well; then autoclave

Pulse oximeter probe (Disposable preferred)	Wipe inside and outside with 70% IPA or any other LLD
Soap dispensers and dishes Spillage (Avoid use of soap dishes; use liquid soap dispensers)	Clean nozzle and outside daily and dry clean inside of the container with detergent before refilling Do not top-up soap
Stethoscopes	Clean with detergent and water and dry Wipe with 70% alcohol Wipe bell and tubing after each use with 70% IPA or LLD
Suction bottles	If disposable, seal when 75% full and place in yellow plastic bag If reusable, clean with sodium hypochlorite and dry Must be heat disinfected/ sterilized. Change daily and in between each patient. Store dry when not in use.
Telephone/ Mobile	Disinfect with 70% alcohol
Thermometer (Use individual thermometers; do not mix oral and rectal thermometers)	Cover with disposable sleeve before use and store dry in individual holder (inverted) Clean and wipe with 70% alcohol after every use
Trolleys (dressing)	Clean daily with detergent and water. After each use, wipe with 70% alcohol/ sodium hypochlorite (>100 ppm available chlorine)
Urine-measuring jugs	Heat disinfects after each use in bed pan washer
Vomit bowls	Empty contents into sluice, rinse, wash and disinfect with hot water and detergent
Wheel chairs	Clean between patients with detergent and water

Glucometer	Use cotton swab with 70% alcohol (Do not allow cleaning solution to run into the meter through areas such as around the buttons or meter's test strip or data ports.
BP cuffs and covers	Detergent Hot water Washing • Cuffs should be wiped with alcohol based disinfectant and regular laundering is recommended for the cover.
02 Mask	-Mask: reusable for same patient / disposable
Sink	Scrub with the nylon scrubber.
Tap	Nylon scrubber and soap powder. Wet and scrub with soap powder and the nylon scrubber

GENERAL

- Lint-free dusters/ mops should be used; and washed with soap and water after every use, and dried.
- Brooms are not to be used in the hospital.
- The three-bucket technique should be used on every floor to facilitate hygienic cleaning of environment

Ref:

- Ministry of Health and Family Welfare Government of India NATIONAL GUIDELINES FOR INFECTION PREVENTION AND CONTROL IN HEALTHCARE FACILITIES.
- National Centre for Disease Control, Directorate General of Health Services Ministry of Health and Family Welfare, Government of India January 2020

1. Disinfecting the Humidifier bottle

Never use tap water in a humidifier bottle; it may a cause for infection. There may be pathogens and microorganisms that will straightaway go into lungs through the nasal passage.

- Always use distilled / Sterile water and change the water every day completely (not just top- up)
- **Daily** empty the humidifier bottle, wash inside and out with soap and water, rinse with a disinfectant **(Sodium hypochlorite 0.1%)** and follow with a hot water rinse; then refill the humidification bottle with distilled water.
- Avoid touching the inside of the bottle or lid after it has been cleaned and disinfected to prevent contamination.
- Fill-up above 'Min' line and slightly below the 'Max' level indicated on the bottle. Excess water may result in water droplets being carried in the oxygen straight to nasal passage, harming the patient.
- At least **once a week** for same patient and between two patient the humidifier bottle should be disinfected by **Sodium hypochlorite 0.1%,** rinsed with clean water and dried completely in air before using again.

Reference- https://www.who.int

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

❖ **Sodium Hypochlorite Dilution**

As per CDC guideline

5% Sodium Hypochlorite provided from the manufacture given us 50,000 ppm.

As per reference following concentration is needed to destroy various microorganisms.

100 ppm	b. atrophaeus spores 25 viruses including HIV, HBsAG S. aureus Salmonella Pseudomonas
1000 ppm	M. tuberculosis
5000 ppm	C. difficile

As Sodium Hypochlorite is unstable and tend to lose 40-50 % of free available chlorine over one month even stored in an opaque plastic container, it is always recommended to prepare the higher dilution.

To prepare the required dilution following chart to be followed.

The formula for making a dilute chorine solution for any concentration hypochlorite solution is:

Total parts (TP) water = [Concentration] – 1

% Dilute

Preparation of Chlorine solution using Hypochlorite solution

Concentration of commercially available Hypochlorite Solution	To prepare 1000 ml		
	Sodium in ml	**Add water in ml**	**Chlorine Require Concentration**
5 %	400	600	2%
	200	800	1%
	100	900	0.5%
	20	980	0.1%
10 %	200	800	2%
	100	900	1%
	50	950	0.5%
	10	990	0.1%

Indication for the use of Sodium Hypochlorite

Indications – Sodium Hypochlorite	Required Sodium Hypochlorite in %
Blood Spill	1%
Laboratory Discarding Jars	2%
General Environmental Disinfection	0.1%
Disinfection of Clean Instrument	0.5%
Linen	1%

Reference-

1. WHO Guidelines for disinfection and sterilization in healthcare facilities, 2008. Page 42.
2. Essentials of Hospital Infection Control, by Dr. Apurba S Sastry and Dr. Deepashree R (Disinfection Policy page no. 265, Table no 9.5)

Hospital Outbreak Management Policy

1.Aim

- The hospital outbreak management guidelines define the arrangements to be instigated in the event of an outbreak of hospital infection. These guidelines provide a framework for the reporting, investigation and control of outbreaks of infection within the Trust.

- The rapid detection of an outbreak will ensure prompt action is taken to isolate infectious patients and commence containment measures to prevent further spread of infection.

- The Infection Prevention & Control Tean (IPCT) need to be informed as soon as an outbreak is suspected. **Annex 1** indicates the process to be followed.

- Outbreaks of hospital infection vary greatly in extent and severity and this plan recommends general procedures which are to be followed in all types of outbreaks of infection.

- This guidance applies to all staff employed by the Trust. This guidance intentionally does not specify the type of infection or the number of cases that constitutes an outbreak; this will be decided by a risk assessment on a case-by-case basis by the IPCT.

2. Definition of Terms

- **Hospital Outbreak –** two or more cases on the sane ward within a 48 hours period, usually diagnosed on clinical grounds from their characteristic epidemiological features.
- **Source Isolation** – Placement of a patient suffering from a communicable / infectious disease in a single room to prevent the spread of infection to others.
- **Chlorine Dioxide Based Cleaner / Disinfectant –** A high level cleaning and disinfectant product, which is rapidly effective against microorganisms including spores and Norovirus.

3. Duties and Responsibilities

Ward In-charge

- Informing the IP&CT of suspected outbreaks
- Monitoring that all staff working on / or visiting as outbreak restricted area are following the IP&CT precautions detailed un this policy.

- Signing off a terminal clean once completed prior to a restricted area being re-opened.
- Attending outbreak meetings.

Infection Prevention and Control Team

- Assessing wards with suspected outbreaks and advising when bays or wards should instigate outbreak restriction and when these can be lifted.
- Reviewing outbreak restricted areas, a daily basis and advising on IP&C management to reduce the risk of spread.
- Attending and reporting to the bed capacity meetings daily during an outbreak.
- Signing off a terminal clean once completed prior to a restricted area being er-opened.
- Communicating to relevant Trust staff when a bay or ward within the Trust has reconstruction in place and when these have been lifted.
- Informing the communication team of any restrictions in place and when they have been lifted.

Outbreak Recognition

An outbreak of infection may be suspected by:

- Two or more cases on the same ward within a 48-hour period, usually diagnosed on clinical grounds from their characteristic epidemiological features.
- Laboratory surveillance of microbiology reports that may show an increase in the number of isolates of a single species. In this instance the Laboratory alerts the IPCT.
- Medical or nursing staff may notice an increased incidence of a specific infection or may suspect infection as a result of the symptoms exhibited. In this instance the ward alerts the IPCT.

Management Arrangements

Suspected outbreaks of infection should be immediately reported to:

- Infection Control Nurses (ICN)
- Consultant Microbiologist

Investigation of a Suspected Outbreak

All staff should be vigilant and report any suspicions of an outbreak to the IPCT promptly. Suspected outbreaks are initially investigated by the IPCT (see Annex 3).

On the basis of the information and assessment of the situation it will be determined if this constitutes an outbreak, if so, the guidelines will be put into action.

In the case of an outbreak the IPCT will manage the outbreak liaising with the appropriate clinicians and nursing staff. The FPCT will initiate infection control procedures to include:

- Restricted Access to the ward until situation risk assessed and discussed at outbreak meeting
- Data collection to determine whether an outbreak is occurring.
- Request diagnostic and screening microbiological tests as appropriate
- Isolation or cohort nursing of cases
- Restriction of admissions and transfers where applicable.

The Nurse Infection Control Nurse (ICN) is the person primarily responsible for action within the hospital. The On-Call Microbiologist will advise on the actions required to control the outbreak.

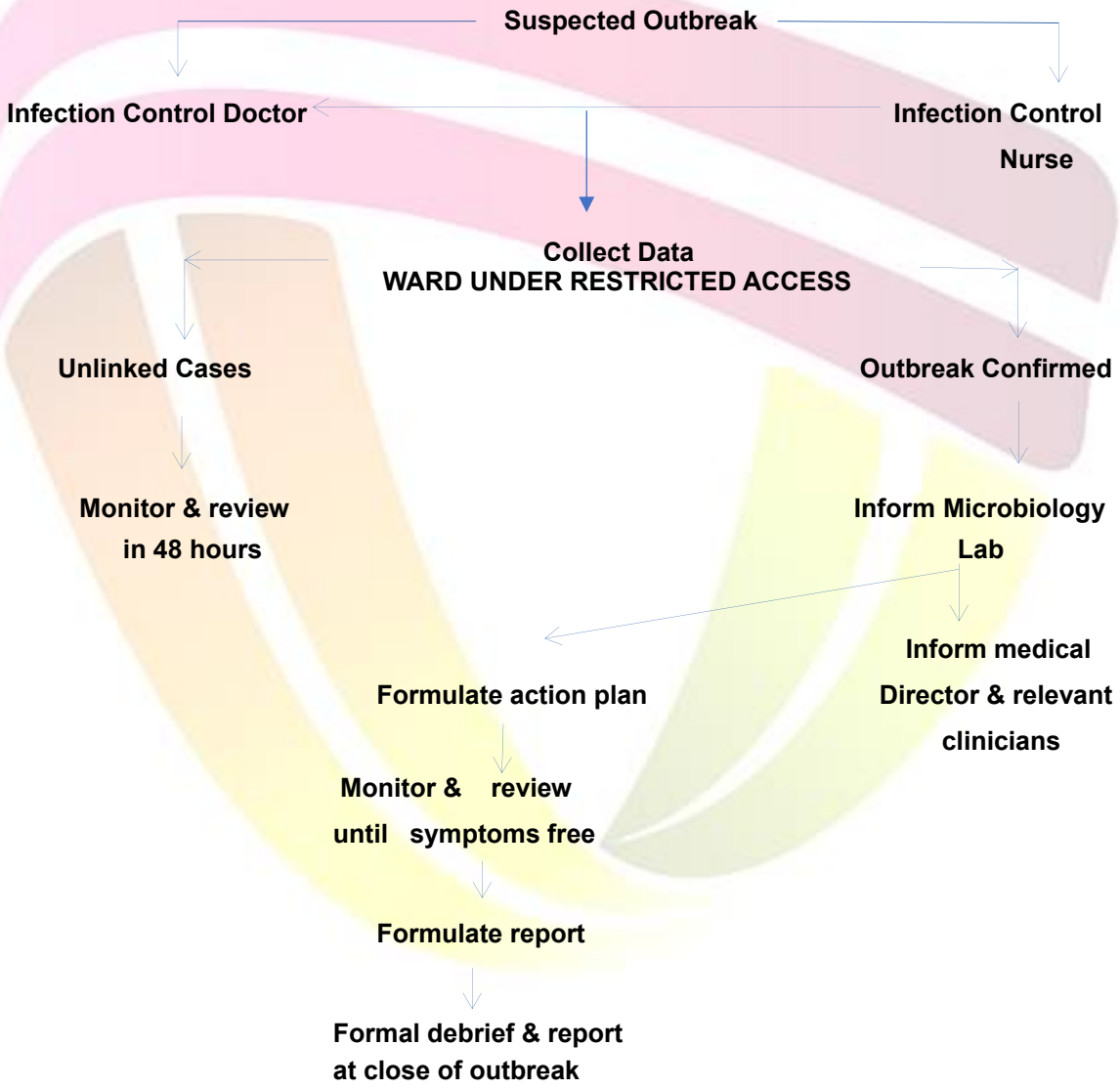
An Outbreak Control Group (OCG) will be convened

The OCG will generally consist of:

- The IPCT (ICO + ICN)
- Administrative Officer
- Nurse In charge
- Senior Nurse from affected area.

Annex 1

Outbreak Management Algorithm



Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

ANNEX 3

INITIAL ACTION PLAN FOR INFECTION CONTROL TEAM (ICD/ICN)

- **INVESTIGATE OUTBREAK** – visit site or telephone site out of hours. Review all evidence/data and assess this is an outbreak. ICD/ICN to decide on action to be taken.

- **GIVE INFECTION CONTROL ADVICE TO LIMIT SPREAD** – isolate potentially infectious patients. Cohort barrier of bays (where case numbers exceed isolation facilities) and arrange for contacts to be screened.

- **POTENTIAL OUTBREAK SITUATION** – ICD to inform administrative officer. Advise on restriction of admissions and transfers to ward or community hospital.

- **OUTBREAK CONTROL GROUP TO BE CONVENED –** OCG or MOCG.

- **LIAISE WITH MUNICIPAL CORPARATION** – in the case of a major outbreak with community involvement the municipal corporation will co-ordinate the outbreak.

- **MONITOR COMMUNITY ACTIVITY –** Instigate ‘enhanced cleaning’ in all public areas.

- **LIAISE WITH SUPPORT SERVICES** – additional ward cleaning specifications, linen and laundry, supplies.

- **LIAISE WITH COMMUNICATION MANAGER**

  - **ASSESS OUTBREAK AT REGULAR INTERVALS** – advise and update Trust Management of developments and progress with implementation of Infection Control precautions. Advise on additional precautions to be taken if outbreak controls measures failing.

  - **STAFF EDUCATION** – increase staff awareness of the organism involved and mode of transmission. Rationale for actions being taken.

  - **PATIENT INFORMATION** – updating patients on the situation is the role of the clinicians and nursing staff.

  - **PREPARE REPORTS** – disseminate information and findings to those who need to know.

Infection Control During Construction Renovation Maintenance Policy Saideep Healthcare & Research Pvt. Ltd

Policy Purpose

Construction, renovation, repair, excavation, and demolition activities in hospitals and health care facilities require planning and coordination to minimize the risk of infection in patients with poorly functioning immune systems.

To provide direction and guidance to ensure that all construction, renovation, installation and maintenance activities on healthcare sites are undertaken in a safe and appropriate manner to reduce the risk of infection to at-risk patients. The document outlines the risk factors contributing to nosocomial invasive aspergillosis, and other environmental pathogens, and identifies at-risk patient groups. Recommendations are made as to the measures that can be undertaken to reduce these health risks.

All staff involved in construction and renovation activities including contractors must comply with the Infection Control Guidelines.

Policy Details

Background

Outbreaks of infection, associated with construction activities, caused by fungi as well as bacteria, have been reported around the globe. The population most at risk from infection are usually immunocompromised either because of underlying disease or associated treatments e.g., chemotherapy. Although construction activities at any location may pose a risk to this population group, location of these activities within healthcare facilities poses unique risks due to the numbers of at-risk people in the one location.

Aspergillus

Aspergillus species (spp) are spore-forming filamentous fungi that are normally found within the environment and building structures. Nosocomial Aspergillosis represents a serious threat for severely immunocompromised patients and numerous outbreaks of invasive Aspergillosis associated with construction and maintenance have been described. The construction, renovation, demolition and excavation activities aerosolize the fungal spores (particle size 1.9–3.2 µm) which have a prolonged settling time. The spores can then float

long distances on air currents and can bypass the cough reflex and settle deep within the respiratory tract. The mortality rate is high for nosocomial aspergillosis (65–90%).

Legionella

Legionella pneumophila and other *Legionella* species are bacteria that can cause systemic infection or atypical pneumonia. These bacteria are widely distributed in warm, wet habitats, such as cooling towers, reticulated water supplies, and environmental sources with the exception of L. *longbeachae*, which has been associated with potting mixes. In addition to airborne transmission, other modes of transmission are possible including aspiration of contaminated water. Nosocomial legionellosis has been associated with construction activities that have breached the clean water supply, either through disturbance of biofilm within pipe-work or as a result of aerosolized soil from excavation sites contaminating cooling towers. The mortality rate is high for nosocomial Legionnaires' disease (14–44%).

Listeria

Listeria monocytenes contamination of food preparation zones associated with construction activities has resulted in widespread infection in at risk groups. Listeria bacteria are common in the environment. Construction activities that generate dust in food preparation zones can contaminate work surfaces leading to cross-contamination of food with listeria bacteria. People at risk of invasive listeriosis include pregnant women and their foetuses, newborn babies, the elderly and immunocompromised individuals (such as cancer, transplant and HIV/AIDS patients). Although listeriosis is rare it is associated with a high mortality rate.

A number of control measures can be implemented in order to reduce the risk of these construction-associated nosocomial infections. These controls are necessary whether the works are internal or external to the facility.

Pre-Design Planning and Consultation Stage

Before beginning construction or renovation projects, some key issues need to be addressed. Department of Infrastructure (DOI) and Engineering staff in conjunction with Infection Prevention personnel must consider the following:

- Design and function of the new structure / area.
- Assessment of the infection risk from environmental organisms such as (but not limited to) Aspergillus, Legionella or Listeria;
- Strategies to minimise the risk of construction associated infection e.g., dust control

- Monitoring requirements indicated during the project

Infection Prevention and Management Consultation

Maintenance and Installation Works

The Infection Control Team, must be consulted for all maintenance or installation works that have a risk rating of Class III or Class IV (refer table 4), and when any construction activities need to be undertaken in areas or corridors adjacent to Risk Groups 3 or 4 (refer table 3).

Major Construction and Special Projects

- All planned construction or renovation works which may impact on high-risk patient zones, or very high-risk patient groups must be reported by the Engineering Services manager. They are to ensure that consultation with key stakeholders occurs, to ensure the appropriate risk management process, and strategies are developed as necessary for the assurance of patient safety at these sites. In some instances, this may require the establishment of a Building Hazard and Maintenance working group for the project.
- Risk mitigation standards must be recommended by the Infection Control Team in accordance with evidence based and best practice standards
- Engineering controls for risk mitigation must be articulated in contracts agreed between the health service and external contractors
- A risk assessment of the patient population group within the Construction site must be undertaken and appropriate controls to minimise individual risk implemented. This may include, but is not limited to: relocating at-risk patients to an unaffected area/site, prophylactic antifungal treatment, provision of personal protective equipment.
- All construction, renovation, installation, and maintenance (construction) activities must have a formal infection control risk assessment undertaken, and mitigation strategies planned and approved, prior to the commencement of any works.
- Implementation of prescribed mitigation strategies must be monitored and, when indicated, signed off as compliant by the Infection Control Team.

- All construction and renovation project teams must include an Infection Control Team presentative as a member.

Figure 1: Construction, Renovation Installation and Maintenance Process

Risk Assessment and Infection Prevention Measures

Risk Identification

The risk identification strategy must address as a minimum:

- the extent of construction work;
- the identification or the patient population at risk;
- the location of the patient population in relation to the site and construction;
- ventilation system types and potential impact;
- traffic and supply routes;
- determination of air monitoring requirements, methodology and frequency;
- air quality samples taken at baseline; and
- identification of possible contaminants and their locations; these may be present in ceiling dust, service shafts (especially in damp conditions); sprayed fire retardants, and bird droppings.

Patient Risk Assessment and Controls

Clinical Risk Assessment and Management

A risk assessment of the patient population within or adjacent to the construction site must be undertaken by the ICN prior to the commencement of any construction activities. This is particularly important when demolition or major construction works are planned external to or within the healthcare facility as these activities pose the greatest risk to the severely immunosuppressed patient population group (refer table 1). During major construction and renovation projects patients must be individually assessed, by their specialist clinician, as to their degree of immuno-suppression. The primary clinician is responsible for implementing those preventative measures determined necessary e.g., antifungal chemoprophylaxis.

All clinicians must be aware of potential risks to their patient group when construction projects are undertaken and take all measures to identify symptoms, diagnose, treat, and consult infectious diseases as necessary. Refer Appendix 1: Clinician guidelines for patient risk assessment and management.

Table 1: Individual Patient Risk for Invasive Aspergillosis Infection

Group 1 **No evidence of increased risk**	• Staff members, Service Providers and Contractors • All patients not listed in Groups 2 - 4 above
Group 2 **Increased risk**	• Patients on prolonged courses of high dose steroids particularly those hospitalised for prolonged periods. • Severely immuno-suppressed HIV / AIDS patients. • Patients undergoing mechanical ventilation. • Patients having chemotherapy who are not neutropenic. * • Dialysis patients. • *Neutropenia defined as absolute neutrophil count (ANC), <1x109/l
Group 3 **High risk**	• Neutropenia* for less than 14 days following chemotherapy. • Solid organ transplantation. • Neonates in intensive care units (ICU).
Group 4 **Very high risk**	• Allogenic bone marrow transplantation: within 12 months of transplant, if >12 months, consult with haematologist • Autologous peripheral blood stem cell transplantation, i.e. during the neutropenic period. • Prolonged neutropenia for greater than 14 days following chemotherapy or immunosuppressive therapy: e.g. acute myeloid leukaemia (AML), acute lymphoblastic leukaemia (ALL), Burkitt's lymphoma, lymphoblastic lymphoma, primary CNS lymphoma • Aplastic anaemia patients. • Children with: • Severe Combined Immunodeficiency Syndrome (SCIDS); • Chronic Granulomatous Disease of Childhood (CGDC).

Minimising Patient Exposure to Construction-associated Contaminants

7. If possible, relocate at-risk patients who are adjacent or near to the construction zone.

8. Ensure patients do not go near construction zone.

9. Supply P2 or N95 mask (surgical filter masks for paediatrics) to high-risk patients to wear, if transit near construction zones is unavoidable.

10. Where HEPA-filtered positive pressure rooms are available High-risk inpatients must have priority access. In those facilities that do not have this class of patient accommodation, advice must be sort from their primary care clinician as to appropriate accommodation requirements.

Environmental Controls

There are four key components to this assessment and management of associated risks:

Step 1) Identifying the type of construction activity, refer table 2;

Step 2) Determine the population or geographical risk group, refer table 3;

Step 3) Identify the “Class” of control measures prescribed using the Construction Activity and Risk Group Matrix, refer table 4;

Step 4) Implementation and quality control of prescribed control measures, refer table 5.

Not all measures are required for each class of works, and all projects are to be individually risk assessed. Documentation is required when there is deviation to an applicable control measure. Adaptations can be made with Infection Prevention approval and sign-off.

Table 2: Types of Construction, Renovation, Installation, and Maintenance (Construction) Activities.

Type A **Inspections and general upkeep activities**	• Includes but not limited to: • removal of ceiling tiles for visual inspection (limited to 1 tile per 5 m2); • painting (but not sanding); • installation of wall covering; • electrical trim work; • minor plumbing that disrupts water supply to localised patient care area (e.g., 1 room) for less than 15 minutes; • any activities that do not generate dust or require cutting into walls or access to ceiling other than for visual inspection.
Type B **Small scale, short duration activities, which create minimal dust**	• Includes, but is not limited to: • installation of telephone and computer cabling; • access to chase (ceiling) spaces; • plumbing that requires disruption to the water supply of more than one patient care area (e.g. >2 rooms) for less than 30 minutes • cutting into walls or ceiling where dust migration can be controlled.
Type C **Any work that generates a moderate to high level of dust**	• Includes, but is not limited to: • demolition or removal of built-in building components or assemblies, • sanding of wall for painting or wall covering, • removal of floor covering/wallpaper, ceiling tiles and casework, • new wall construction, • minor ductwork or electrical work above ceiling, • major cabling activities • plumbing that requires disruption to the water supply of more than one patient care area (e.g., >2 rooms) for more than 30 minutes but less than an hour
Type D **Major demolition and construction projects**	• Includes, but are not limited to: • heavy demolition, • removal of a complete ceiling system, • major ductwork or electrical work above ceiling, • plumbing that results in disruption to the water supply of more than one patient care are (e.g., >2 rooms) for more than an hour • new construction.

Table 3: Population and Geographical Risk Groups

Group 1 Low Risk	**Group 2** Medium Risk	**Group 3** Medium - High Risk	**Group 4** Highest Risk
• Non-patient/low risk areas not listed elsewhere • Office areas	• Admission and discharge units • Cafeteria – public and staff • Dietary – beverage bays • Laboratories not specified under Group 3 • Laundry • Materials management • Patient care and other areas not listed under Groups 3 or 4 • Physiotherapy, Occupational Therapy, Speech Pathology • Public corridors used by patients and to transport linen & supplies	• Bronchoscopy • Delivery Rooms • Dialysis • Echocardiography • Emergency Department • Endoscopy • High Dependency Unit • Long-stay subacute Units • Medical imaging: • General • MRI • CT • Ultrasound • Medical Units • Microbiology labs • Newborn nurseries • Paediatrics • Pharmacy • Recovery Rooms (PACU) • Renal Units • Surgical Units • Virology labs	• Anaesthetic and Pump Rooms • Angiography rooms • Cardiac Catheterisation Units • Chemotherapy • Food Services – facility wide food preparation • Haematology Unit – inpatient and outpatient • Intensive Care Units • Oncology Unit – inpatient and outpatient • Operating Theatres • Outpatient invasive procedure rooms, including imaging guided biopsies • Pharmacy admixture/clean rooms • Radiation Therapy Unit • Sterile Supply Units • Transplant

Table 4: Construction Activity and Risk Group Matrix

			Construction Activity			
			Type A	Type B	Type C	Type D
Risk Group	Low risk	Group 1	I	II	II	III /IV
	Medium risk	Group 2	I	II	III	IV
	Medium-High risk	Group 3	I	III	III / IV	IV
	Highest risk	Group 4	III	III / IV	III / IV	IV

Table 5: Infection Prevention and Control Measures

Class I Infection Prevention and Control Measures

Construction Activities

Dust Control

Execute work using methods to minimise dust during contrition activities

Immediately replace any ceiling tile displaced for visual inspection

Wipe down/mop work area with a clean damp cloth/mop or use vacuum with a HEPA filter

Cleaning

Damp mop and vacuum (with HEPA filter) area as needed and when work is completed

Wipe horizontal and vertical work surfaces with clean damp cloths using neutral detergent and water

Plumbing Activities

Schedule water interruptions during period of low activity (e.g. evenings/ overnight if possible)

Flush water lines prior to reuse

Observe for discoloured water

Ensure temperature meets the applicable standard

Ensure gaskets and item made of material that support the growth of Legionella are not being used

Ensure tap aerates are not installed or used

Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures

Hotel Services

Plumbing Activities

Report discoloured water and water leaks to maintenance department

Medical/Nursing staff

Construction Activities

Patient Risk Reduction

Minimise patient's exposure in construction area

Move at risk patient's (refer table 1) away from construction zone

Plumbing Activities

Report discoloured water and water leaks to maintenance department

Class II Infection Prevention and Control Measures

Construction Activities

Dust Control

Execute work using methods to minimise dust during construction activities

Provide active means to minimise dust generation and migration in to the atmosphere:

Use drop sheets to control dust

Seal windows and unused doors with duct tape

Seal air-vents and oxygen outlets in construction zone

Place dust-mat at entrance and exit of work area and replace or clean when no longer effective.

Ventilation

Isolate HVAC system in areas where work is being performed.

Monitor need to change and /or clean filters construction zone

Debris Removal and Clean-up

Contain construction waste before transport in tightly covered containers.

At Project Completion

Wipe horizontal and vertical work surfaces with clean damp cloths using neutral detergent and water

Damp mop and vacuum (with HEPA filter) when work is completed

Plumbing Activities

Containment and Prevention

Avoid collection tanks and long pipes where water may stagnate

Consider hyperchlorination or superheating stagnant potable water (especially if Legionella is already present in potable water supply)

Works Management

Schedule water interruptions during periods of low activity (e.g.: evenings/overnight if possible)

Flush water lines prior to reuse

Observe for discoloured water

Ensure temperature meets the applicable standard

Ensure gaskets and items made of materials that support the growth of Legionella are not being used

Ensure tap aerates are not installed or used

Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures

Medical/Nursing staff

Construction Activities

Patient Risk Reduction

Identify high-risk patients that may need to be temporarily moved away from the Construction zone.

Ensure patient care equipment and supplies are protected from dust exposure

Class III Infection Prevention and Control Measures

Construction Activities

Dust Control

Execute work using methods to minimise dust during construction activities

Provide active means to minimise dust generation and mitigation in to the atmosphere:

Use drop sheets to control dust

Seal windows and unused doors with duct tape

Seal air-events and oxygen outlets in construction zone

Place dust-mat at entrance and exit to work area and replace or clean no longer effective.

Erect an impermeable dust barrier from true ceiling (includes area above false ceilings) to the floor made of 6mm polyethylene (corflute) or plaster board, compressed carboard or plywood.

Ensure that windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction/renovation area

Vacuum air ducts and spaces above ceilings if necessary

Ensure that construction workers wear protective clothing that is removed each time they leave the construction site before going into patient care areas

When holes in barriers are identified – immediately temporarily seal holes or within 60 minutes of notification. Permanently repair within 4 hours.

Wet mop or vacuum twice per eight (8) hour period of construction activity or as required to minimise tracking.

Ventilation

Isolate HVAC system in areas where work is being performed.

Monitor need to change and / or clean filters Construction zone

Ensure air is exhausted directly outside and away from intake vents or filtered through HEPA filter before being recirculated

Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction or renovation project is complete

Derbies Removal and Clean-up

Remove debris at the end of the workday

Contain construction waste before transport in tightly covered containers.

Erect an external chute if the construction is not taking place on ground level

At Project Completion

Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected

Remove dust barrier carefully to minimize spreading dust and other debris particles associated with the construction project.

Wipe horizontal and vertical work surfaces with clean damp cloths using neutral detergent and water

Damp mop and vacuum (with HEPA filter) when work is completed

Plumbing Activities

Containment and Prevention

Avoid collection tanks and long pipes where water may stagnate

Consider hyper chlorinating stagnant potable water (especially if Legionella is already present in potable water supply)

Works Management

Schedule water interruptions during periods of low activity (e.g. evenings/overnight if possible)

Flush water lines at construction or renovation site and adjacent patient care areas before patients are readmitted

Observe for discoloured water

Ensure temperature meets the applicable standard

Ensure gaskets and items made of materials that support the growth of Legionella are not being used

Ensure tap aerates are not installed or used

Maintain as dry environment as possible and report any water leaks that occur to walls and substructures

Infection Prevention and Management Unit

Construction Activities

Traffic Control

In collaboration with the facility project manager designate a traffic pattern for construction workers that avoids patient care areas and a traffic pattern for clean or sterile supplies and equipment that avoids the construction area

Hotel Services

Construction Activities

Increase frequency of cleaning is areas adjacent to the construction zone while the project is under way

In collaboration with IMPU ensure that construction zone is thoroughly cleaned when work is complete

Medical / Nursing staff

Construction Activities

Patient Risk Reduction

Move high risk patients who are in or adjacent to the construction area

Ensure that patients do not near the construction area

In collaboration with environmental services and IPMU ensure that construction zone is thoroughly cleaned when work is completed

Very high-risk patients (Group 4) should be accommodated in HEPA-filtered, positive pressure rooms

Class IV Infection Prevention and Control Measures

Construction Activities

Dust Control Execute work using methods to minimise dust during construction activities

Provide active means to minimise dust generation and migration in to the atmosphere:

Use drop sheets to control dust

Seal windows and unused doors with duct tape

Seal air-vents and oxygen outlets in construction zone

Before starting the construction project erect an impermeable dust barrier that also has an anteroom from true ceiling (includes area above false ceilings) to the floor made of plaster board, compressed cardboard or plywood.

Ensure that windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction/renovation area

Vacuum air ducts and spaces above ceilings if necessary

Place a walk-off mat outside the anteroom in patient care areas and inside the anteroom to trap dust from the workers' shoes, equipment and debris that leaves the construction zone

During demolition, dust producing work, or work in the ceiling, disposable shoes and coveralls are to be worn and removed in the Anteroom when leaving the work area.

Direct all personnel entering the construction zone to wear shoe covers

Ensure that construction workers change the shoe covers each time they leave the work site

When holes in barriers are identified - immediately temporarily seal holes or within 60 minutes of notification. Permanently repair within 4 hours

Temporarily seal holes in barriers immediately or within 60 minutes of notification and repair within 4 hours.

Wet mop or vacuum twice per eight (8) hour period of construction activity or as required to minimise tracking.

Wet mop of HEPA vacuums the Anteroom daily or more frequently if needed.

Ventilation

Isolate HVAC system in areas where work is being performed.

Monitor need to change and / or clean filters Construction zone

Maintain negative pressure within construction zone

Ensure air is exhausted directly outside and away from intake vents or filtered through a HEPA

filter before being recirculated

Ensure negative pressure is maintained within the anteroom and construction zone

Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction or renovation project is complete

Debris Removal and Clean-up

Remove debris at the end of the workday

Contain construction waste before transport in tightly covered containers.

Erect an external chute if the construction is not taking place on ground level

At Project Completion

Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected

Remove dust barrier carefully to minimize spreading dust and other debris particles associated with the construction project.

Wipe horizontal and vertical work surfaces with clean damp cloths using neutral detergent and water

Damp mop and vacuum (with HEPA filter) when work is completed

Plumbing Activities

Containment and Prevention

Avoid collection tanks and long pipes where water may stagnate

If there are concerns about Legionella, consider hyperchlorination stagnant potable water or superheating and flushing all distal sites before restoring or pressurising the water system.

Works Management

Schedule water interruptions during periods of low activity (e.g.: evenings/overnight if possible)

Flush water lines at construction or renovation site and adjacent patient care areas before patients are readmitted

Observe for discoloured water

Ensure temperature meets the applicable standard

Ensure gaskets and items made of materials that support the growth of Legionella are not being used

Ensure tap aerates are not installed or used

Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures

If there are concerns about Legionella, consider hyperchlorination stagnant potable water or superheating and flushing all distal sites before restoring or pressurising the water system.

Infection Prevention and Management Unit

Construction Activities

Risk Reduction

Regularly visit the construction site to ensure that preventive measures are being followed. Wear coveralls and shoe covers when visiting the site.

Evaluation

Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project

Hotel Services

Construction Activities

Evaluation

Review infection prevention and control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project

Medical/Nursing staff

Construction Activities

Patient Risk Reduction

To reduce the possibility of transferring fungal spores, limit clinical staff access to the construction site, and ensure they wear protective clothing that is removed before going into patient care areas.

Evaluation

Review infection prevention and control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project

Plumbing Activities

Consider using another source of potable water for patients who are at greatest risk until potable water has been cleared for signs of Legionella after major plumbing installation/repairs.

Biological Hazard Controls and Monitoring

Air Quality Controls

Assessment of Existing Air Quality Controls and Implementation of "Enhanced Controls"

- Healthcare facilities undertaking major construction or renovation, including demolition and excavation must:
- Identify the location of all air-conditioning intake vents in relation to proposed works
- Identify the areas within the facility served by these vents
- Confirm type of primary air filter installed is compliant with ISO 8573.1: Air filters for use in general ventilation and air-conditioning - Application, performance and construction.
- Retrofit those air vents that do not comply with this standard, especially if servicing high risk areas. If the air handling units cannot tolerate the retro-fit of these filters, then the highest rating tolerable should be installed.
- Increase routine inspection, maintenance and replacement of filters as necessary during the Construction works.
- Identify location of cooling towers in relation to the proposed works.
- Cleaning, disinfection and maintenance process and schedule for the air handling system must be consistent and may need to be increased during periods of heavy excavation.

Identification of Potential Dust and Spore Intrusion Zones

Healthcare facilities undertaking major construction or renovation, including demolition and excavation must:

- Identify all opening doors and windows within the facility
- Identify all areas with shared air-handling systems
- Identify and rectify any gaps or ingress locations in external and internal walls, ceilings, roof, or eaves etc. where dust and spores may gain access to internal patient zones or ceiling spaces.
- Identify missing, broken, or ajar ceiling tiles and replace, repair or adjust.
- Identify air intake vents that do not have filter material and install filters.

Water Quality Controls

Assessment of Existing Water Quality Controls and Implementation of "Enhanced Controls"

Healthcare facilities undertaking major construction or renovation, including demolition and excavation must:

- Identify cooling tower locations in relation to the construction zone to determine potential for contamination.
- Confirm warm water monitoring and cooling tower controls are in place and effective.
- Continue routine Legionella surveillance to allow for comparison of results before, during, and after construction.

During periods of excavation on hospital grounds or when the plumbing system has been shut down and is later repressurized:

- Hyperchlorination of stagnant water to be carried out before re-pressurization;
- Presence of persistent discoloured water must be reported to maintenance personnel and the infection control department;
- Culture of the water supply for Legionella in areas housing immunocompromised patients.

Microbial Sampling

Fungal Spore Sampling

Baseline microbial sampling for fungal spores should be undertaken prior to the commencement of large-scale construction and renovation activities e.g., excavation and demolition works in close proximity to facilities, remodelling works, or replacement of air-conditioning services within units accommodating immunocompromised patients. This should include external and internal air samples.

Fungal speciation is not indicated unless it is identified during the risk assessment process, or advised by Infection Prevention / Microbiology. Ideally fungal monitoring should be detailed in contractual arrangements with the construction contractor as part of the works.

Details of the locations for, frequency of sampling and reporting is determined using the location of the proposed works, population group and geographical risk groups to inform this advice.

Refer: Appendix 2: Fungal Spore Monitoring

Legionella Testing

The routine monitoring results can serve as the baseline microbial for Legionella counts from cooling towers and warm water systems. Frequency for microbial testing may need to be increased during heavy excavation works.

When interpreting results, it is important to acknowledge known seasonal variance and compare the result with not only the previous period, but to the same time in the previous year.

Listeria Sampling

During periods of demolition and construction activities either within or adjacent to food preparation zones, environmental listeria monitoring should be enhanced. Frequency and location of sampling to be determined in consultation with Kitchen Management and Infection Prevention.

Communication and Education

Communication and education are two vital elements to the successful implementation of proactive infection control measures to reduce the risk of construction-associated nosocomial infections from environmental organisms.

It is imperative that all relevant parties including, not limited to: architects, project managers, contractors, sub-contractors, hotel services, building services, medical and nursing staff are provided with appropriate education and communications regarding the implementation of effective infection control measures and personal safety at all stages of construction work.

Health Care Workers

The risk of nosocomial acquisition of construction associated infections in the categorised at-risk groups during construction work – refer appendix 3: Infection Prevention during Construction Fact Sheets – Information for Hospital Staff;

- The infection control measures to decrease the risk , table 5; and
- Recommendations for staff members who are identified as being in an at-risk patient group, refer appendix 4: Sample Letters.

Project managers, Contractors (including sub-contractors), and Design teams

- Basic principles of Aspergillus spore contamination of the environment, refer appendix 3: Minimising *Aspergillus* Risk - Information for Construction Site Workers
- The preventive measures that must be implemented during construction and renovation activities, refer table 5;
- The importance of ensuring that this information is given to the construction and subcontractor workers, and its significance understood in order to aid with compliance; and
- The requirement to provide evidence that this information is being communicated to all workers on the construction site.

Hotel services staff and contract cleaning supervisors

- Basic principles of Aspergillus spore contamination of the environment, refer appendix 3: Infection Prevention during Construction Fact Sheets – Information for Hospital Staff;

- Cleaning measures to prevent environmental contamination, refer table 5. The importance of ensuring that this information is given to the operatives, and its significance understood in order to aid with compliance.

At-risk patients (Groups 2-4) and the relatives of these patients

- The risks of nosocomial construction associated infection, especially invasive Aspergillosis infection, refer appendix 4: Sample Letters.

General public

- Planned construction activities on health facility sites and potential associated risks.
- Refer to communications officer to coordinate Public Notices.

Documentation

Infection Prevention and Control Permit and Checklist

A checklist permit identifies risks and controls indicated for planned works, locations and patient groups. Using the checklist risk matrix the specific control measures to be implemented can be detailed, responsibility assigned, and when indicated, status monitor, refer appendix 6.

- The risk assessment is to be completed by the Engineering Services Manager in consultation with Infection Prevention and must be submitted with all project briefs.
- Prior to project the start-up meeting the Contractor / DoI must submit the details of control measures to be implemented and monitored. Control measures are to be evaluated and approved by the Engineering Services Manager and Infection Prevention prior to mobilisation.
- The completed Infection Prevention and Control Permit and Checklist are to be filed in the project TRIM.

Infection Control Plan

All contractors for major construction renovation or installation works (risk rated III-IV), must submit an detailed Infection Control Plan prior to the start-up meeting -refer appendix 5 for sample plan template. Reviewed and approved plans are to be filed in the project TRIM.

This plan will detail:

- Purpose of the plan – including consultation requirements
- Project overview – describing the scope and key works of the anticipated for the project.
- Management Procedures – including approval procedures, escalation procedure for identified infection control breaches, internal personnel management for non-compliance, and communication procedures.
- Infection control risk minimisation methodology for planned works.
- Variations to applicable Infection Prevention and Control Measures table 5, should be detailed in the plan with Infection Prevention approval and sign-off.

Site Inspections

To ensure compliance with agreed infection prevention controls, inspections must be undertaken by the Contractor work site supervisor. Inspection test plans are to be developed by the contactor and to be reviewed by key stakeholders prior to start-up - refer to appendix 7 for sample template.

Completed forms are to be submitted to the Engineering Services Manager to be held on the project TRIM file.

Frequency of inspections are determined by the type and location of works.

- Excavation and Demolition: Daily perimeter check and feedback.
- External Construction: Weekly site walk.
- Internal Construction/Renovation: Daily inspection and feedback.
- Installation and Maintenance Works: frequency determined according to specific activity and associated risk.

Spot checks are to be undertaken by the facility Infection Prevention unit in collaboration with the Engineering Services Manager.

Reporting, Governance and Breaches

Compliance with all elements of this guideline must be demonstrated through audits of process i.e. ensuring all checklist and permits in the attached documents have been completed, and an action plan has been implemented to address deficiencies.

Any breaches of compliance found when completing the Infection Control Compliance Survey appendix 7 are to be reported by the nominated person with overall responsibly for the construction project to the Engineering Services Manager and Infection Prevention.

Completion and Commissioning of Works

After the completion of works but before occupation, the area must be inspected by Infection Prevention to ensure it is fit for purpose. This should include demonstrating that the area has been thoroughly cleaned and disinfected (such as walls, floors, ceilings and air vents), as per appendix 8 Project Completion checklist.

There should be ongoing consultation throughout the project to ensure that the appropriate risks strategies are adhered to for the handover stage eg, removal of hoarding, and co-ordination of housekeeping services.

Air sampling may be required after construction or renovation activities before using an operating room, high risk areas where severely compromised patients will be accommodated, and pharmacy clean rooms, if these areas have been involved or affected by the construction process. If air sampling and particle counts were conducted, allow enough time to obtain satisfactory results prior to occupation.

HEPA filters and laminar flow systems should be recertified where installed.

If water supply has been disrupted during construction/renovation then the taps should be flushed and water sampling performed. Refer to Water Quality Controls.

Swabbing of environmental surfaces is not required.

Role and Responsibilities

Administrative Officer

- Ensure the management of building and renovation across their Health Service is in accordance with this guideline.

Ensure areas within their area of control have systems in place that facilitate safe environments during construction and renovation. The day-to-day responsibility for establishing and monitoring the implementation of this guideline may be delegated to the relevant managers.

General Manager, Heads of Service and Other Senior Managers

- Develop, implement and monitor local processes to support employees, and other persons providing health services on behalf of the Health Service, in maintaining safe environments during construction and renovation for patients, staff and visitors
- Foster a climate which facilitates a safe environment during construction and renovation for patients, staff and visitors.

Department of Infrastructure

- Ensure all contract documentation meets the requirements of this policy prior to submission to DoH and Hospital staff
- Ensure that works comply with the requirements of the policy
- Have a process in which to review the compliance with the policy, and formally report on non-conformances

Administrative Officer

- Ensure project timelines allow for adequate consultation and assessment of documentation and risk mitigation strategies. Allow for endorsement at handover prior to clinical occupation.
- Have a process in which to review the policy compliance with the key stakeholders
- Facilitate site inspections with hospital staff and Infection Control

Contractors

- Ensure all staff have attended site induction and have an understanding of the Infection Prevention requirements when working in a hospital facility.
- Complete required documentation and site inspections in accordance with this document
- Ensure all projects have a completed Infection Prevention and Control Permit and Checklist.

Engineering Services:

- Notify hospital Infection Prevention units of planned work to obtain approval prior to start of work (for all new construction or for construction or renovation activities for departments listed in Risk Groups 3 and 4)
- Notify appropriate Nursing/Clinic/Department manager of any proposed work and precautionary measures, which will be taken.
- Oversee projects by inspecting barriers, etc. on a routine basis, and on competition of works
- Notify Infection Prevention immediately of any breach in construction barriers.
- Ensure the required documentation is completed and recorded in accordance with this document

Facility Infection Prevention and Management Unit

- Educate managers, medical staff, housekeeping services personnel, and other staff as needed about risk to immuno-suppressed patients exposed to construction dust.
- Provide support to the implementation of this document to relevant staff and contractors
- Undertake project risk assessments, and review of proposed infection prevention measures
- Undertake site inspections as appropriate throughout project works and on competition of projects

Housekeeping Department

- Work with Engineering Department to identify areas that need to be damp mopped and clean these areas as scheduled
- Thoroughly clean new and renovated areas before admitting or readmitting patients.
- Coordinate inspection of final cleaning with Infection control prior to opening/re-opening the area.

All Hospital Employees Involved In Construction or Renovation Activities

- Take reasonable steps to ensure they maintain a safe and hygienic environment during construction and renovation
- Report any breaches in Infection Prevention measures as per local policy
- Help identify high-risk patients and relocate high-risk patients to unaffected areas before construction /renovation work is initiated.
- Optimally, avoid non-emergent admission/testing/treatment of immunocompromised patients during periods of construction/renovation.

Appendix 1: Clinician Guidelines for Patient Risk Assessment and Management

Patient Risk Assessment and Management during Construction and Demolition

Advice to Clinicians

A risk assessment of the patient population within or adjacent to Construction site must be undertaken by the clinical service manager/Director or delegate prior to the commencement of any Construction activities. This is particularly important when demolition or major construction works are planned external to, or within the healthcare facility. This type of activity is recognised as the most significant risk for the severely immunosuppressed patient population group (refer table 1).

During major construction and renovation projects patients must be individually assessed, by their specialist clinician, as to their degree of immuno-suppression. The primary clinician is responsible for implementing those preventative measures determined necessary e.g., antifungal chemoprophylaxis

All clinicians must be aware of potential risks to their patient group during construction projects and take all measures to identify symptoms, diagnose, treat, and consult infectious diseases as necessary.

Minimising Patient Exposure to Construction-associated Contaminants

- If possible, relocate at-risk patients who are adjacent or near the Construction zone.
- Ensure patients do not go near construction zone.
- Supply P2 or N95 mask (surgical filter masks for paediatrics) to high-risk patients to wear when in transit near construction zones is unavoidable e.g.: on approach to facility.
- Where HEPA-filtered positive pressure rooms are available High-risk inpatients must have priority access. Facilities that do not have this class of patient accommodation, advice must be sort from their primary care clinician as to appropriate accommodation requirements.

Table 1: Individual Patient Risk for Invasive Aspergillosis Infection

Group 1 No evidence of increase risk	• Staff members, Service Providers and Contractions • All patients not listed in Groups 2-4 above
Group 2 Increase risk	• Patients on prolonged courses of high dose steroids particularly those hospitalised for prolonged periods. • Severely immune-suppressed HIV / AIDS patients. • Patients undergoing mechanical ventilation. • Patients having chemotherapy who are not neutropenic. *
Group 3 High risk	• Neutropenia* for less than 14 days following chemotherapy. • Solid organ transplantation • Neonates in intensive care unit (ICU)
Group 4 Very high risk	• Allogenic bone marrow transplantation: within 12 months of transplant, if >12 months, consult with haematologist • Autologous peripheral blood stem cell transplantation, i.e. during the neutropenic period. • Prolonged neutropenia for greater than 14 days following chemotherapy or immunosuppressive therapy: e.g. acute myeloid leukaemia (AML), acute lymphoblastic leukaemia (ALL), Burkitt's lymphoma, lymphoblastic lymphoma, primary CNS lymphoma • Aplastic anaemia patients. • Children with -Severe Combined Immunodeficiency Syndrome (SCIDS); - Chronic Granulomatous Disease of Childhood (CGDC)

Appendix 2: Fungal Spore Monitoring

Interpretation of Fungal spore Monitoring

Factora thar influence fungal spore counts

Levels of fungal spore vary by several orders of magnitude during the course of a day due to:

- Activity levels in any open particular area
- Fluctuations in temperature
- Fluctuations in humidity
- Fluctuations in air flow
- Changes in light level

A single air sample will often underestimate the fungal contamination in the air and multiple air sampling has to be performed.

Threshold guidance

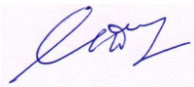
There is paucity of evidence-based guidelines for the interpretation of fungal counts in the general environmental. However, there are Australian and UK guidelines that offer consistent direction for the interpretation of fungal counts in the healthcare setting.

The following principles guide interpretation of result and indications further action.

- Internal spore counts should be less than external counts
- Fungal counts should not vary significant from baseline values.
- Outside spore counts may be influenced by seasonal variation
- Continuous microbial sampling may provide a more accurate illustration of spore release over time.
- When undertaking intermittent sampling, result only represent a moment in time.
- Low reading not conclusive evidence that there has not been any fungal spore contamination
- A single high reading is always significant and should be investigated.

Environment	Threshold Count*	
	Aspergillus	Total Fungal Spores
Protractive Environment HEPA filtered air	<0.1 CFU/m^3	<15 CFU/m^3
Protractive Environment – at risk patients	<1.0 CFU/m^3	<100 CFU/m^3
General Environment – no at risk patients	<4.0 CFU/m^3	<400 CFU/m^3

**National Guidelines for the Prevention of Nosocomial Aspergillosis During Construction / Renovation Activities, Ireland 2002*

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Recommended Actions

When results exceed the threshold limit an investigation of possible sources of contamination should be undertaken and corrective actions implemented as soon as possible.

An intensive evaluation and review of procedural practice in high-risk patient care environments is indicated in the following circumstances:

- Threshold counts are exceeded
- Total indoor counts are greater than outdoor counts
- Comparison of indoor and outdoor levels of fungal organisms show one of the following:
- Organisms are present in the indoor sample and not in the outdoor sample
- The predominant organisms found in the indoor sample is different from the predominant organism in the outdoor sample
- A monoculture of an organism is found in the indoor sample. It may be absent from samples taken in other areas of the building
- Persistently high counts

If persistently high counts are recorded, or nosocomial invasive aspergillosis suspected or confirmed, identify source of contamination by sampling:

- dust
- fabrics
- ventilation ducts/screens/fans
- ceiling voids
- kitchen areas
- excreta of roosting birds in close proximity of windows

Appendix 3: Infection Prevention During Construction Fact Sheets

Information for Hospital Staff & Construction Site Workers

Infection Prevention during Construction

Minimising *Aspergillus* Risk

Construction Workers in Healthcare Facilities

- Healthcare facilities provide care to a large number of patients with diverse health issues. A significant number of health problems make the patients at risk of illness from germs disturbed by construction. Germs than would not bother a healthy person.
- Hospital construction works have been linked with outbreaks of, most commonly, Aspergillus and Legionnaire's disease. These illnesses are unlikely to make a healthy person ill, but if a person is sick, or having treatment that damages their immune system it is often very serious and can make people extremely sick.
- Legionnaire's disease is related to the water, especially the hot water, systems and though a major issue for plumbers is controlled through careful planning and management of the water systems.
- Aspergillus is a fungus that is spread by spores disturbed by construction. There are procedures to minimise the risk of spread to patients.

What is Aspergillus?

Aspergillus is a fungus that lives all around us, in soil, decaying vegetation, and within the structure of buildings. It grows as a mould on surfaces and some species grow especially well on damp surfaces. Small amounts are not visible but are enough to cause disease.

- Constructions, demolition and excavation disturb the fungus, release millions of tiny spores and fungal elements into the air.
- Because of their size and shape they can stay in the air and travel for long-distance on-air currents. If you can see dust during construction then unseen aspergillus spores are going to be present.
- Risk of infection relates to the patients risk due to their health condition and the amount of the aspergillus spores exposed. Large amounts released into the air from sanding, demolition and dust producing actions are dangerous to susceptible patients

Who is at risk? (Please remember that Aspergillus rarely causes illness in healthy people)

- The patients at highest risk are those having chemotherapy or have neutropenia.
- Other patients within impairment of their immune system are also at risk.
- All patients that are unwell have a higher risk of infection than the health population.
- The hospital tries to separate more vulnerable patients from construction works. If this is not possible there are extra precautions taken to minimise the risk.
- If you suspect one of your patients is at risk please check with the team leader, Infection Control or out of house the Hospital Resource Coordinator (HRC), that the appropriate barrier precautions have been taken.

How Aspergillus causes illness

- Aspergillus spores are inhaled or land on susceptible tissue.
- In a healthy person the immune system prevents the infection at that point.
- In susceptible people it can spread where it lands or spread through the blood and start growing in other organs.
- Once established it is very hard to treat and even long term antifungal treatment can fail to cure the disease in a patient with a weak immune system.
- It cannot be spread from person to person.
- It is very unlikely to infect a healthy person. It is not going to infect anyone at your home.

What is done to protect patients?

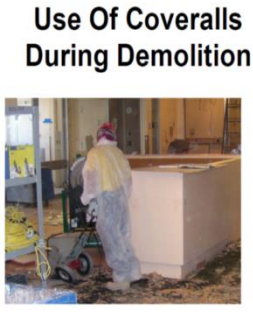
- At the start of any hospital works a risk assessment is taken looking at both the likelihood of disturbing aspergillus and the susceptibility of patients in the area. Athis is then used to determine which of four levels of barrier precautions should be taken.
- Whenever dust is created (by sanding or demolition) or disturbed (by working in the ceilings) there is presumed to be aspergillus spores released. It is than important to separate the dust and thus the spores from susceptible patients.
- This is done in a number of ways:
  - Floor to ceiling hoarding when working inside the healthcare facility;
  - Timely repair of any breaches in hoarding barriers;
  - Covering waste with plastic sheeting before removing it from the construction zone;
  - Dust mats at the exit and entrance to an internal construction zone;
  - Sealing off air ducts and other openings dust can spread.
  - Divert susceptible patients away from construction sites.

Not wearing dust cloths and shoes outside the internal construction zone;

Cleaning with a damp mop or vacuum with a HEPA filter. Do not vacuum without a special cleaner with a HEPA filter as it the spores fit through a normal filter and will be spread by cleaner.

What can you do?

- Ensure the ward team leaders are aware of patients that are significant immunosuppressed and at high risk.
- Observe the construction work and note any possible breaches in the barrier precautions.
- Ensure that line managers are notified of any problems caused by the construction work as soon as possible. E.g.- dust, loss of air conditioning.
- Out of hours the Hospital Resource coordinator is the next point of contact.
- Examples:



Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Appendix 4: Sample Letters

Healthcare facility staff, contractors and volunteers

To be circulate to all staff within the facility prior to major excavation and demolition work commence

TO:

FROM: {Facility} General manager

DATE:

RE: Staff Health and Safety during building works

As you are aware there a major building works to be undertaken at {identify site}.

The Hospital Management is committed to providing staff with a safe work environment at all times. While all steps will be taken to eliminate and minimise risk there may still be dust generated during the refurbishment that could invade other work spaces. It is possible that microbes in the dust may be harmful to anyone immune-compressed.

If you believe that you are at any level of risk, please seek advice from your specialist doctor and also notify your manager immediately.

Please note that you need only provide advice regarding your degree of risk, rather than full details of your medical condition. Confidentiality of any information will of course be maintained.

Managers will work with any affected staff and their relevant clinician to identify that level of risk and to develop appropriate management plans during this period.

I understand the disruption that building works such as this can have to the general work environment and ask for, you're understanding and patience during this period.

Yours Sincerely

Infection Control Management Plan

Name of Project

Hospital Name

Health Service

Date

Controlled Document

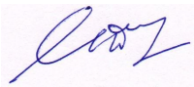
Copies shall not be made without the written permission of

XXXXXXXXX Project Manager

1.0 Plan review and Approval (amend table as required)

Position	Name	Sign	Date
Review			
Project Manager			
Senior Site Manager			
Senior Project Manager			
Approval			
Project Manger			
Project Director			
Department of Infrastructure			
Administrative Officer			
Engineering Services Manager			
Infection Prevention			

Issue	Rev	Revised by	Approved by	Date

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

2.0 Purpose of this Plan

The purpose of this Infection Control Management Plan is to ensure that all personal recognise the importance of infection control as a major priority in the design, construction and commissioning of hospital facilities.

This plan outline's approach to identifying any infection control risks and details the measure required to address the risk of infection resulting from the construction works.

Infection Control is of major concern on all hospital projects because of the potential of high numbers of immune compromised patient. The level of risk associated with each project is dependent on the project complexity, location of the works, the type of work being undertaken, and the proximity to patients with varying degrees of risk for infection.

It is recognised that early risk identification and implementation of controls will minimise the risk of infection but may not completely eradicate the risk of infection for vulnerable patient groups. However, this dose not nullify the responsibility of project conditions that the Hospital deems applicable to this project.

The Infection Control Management Plan must be implemented in conjunction with any Infection Control Guidelines or specific project conditions that the Hospital deems applicable to this project.

The project Team must regularly consult the Hospital to identify any infection control measure required in the execution of the construction works.

3.0 Project Overview

PROVIDE PROJECT OVERVIEW HERE

4.0 Management Procedures

All advice of recommendations contained within this document are subject to the approval by the (POSITION RESPONSIBLE FOR THE PROJECT)

All works will be risk assessed using the risk matrix framework described in the Australian Healthcare Facilities Guideline Pard-D Construction and Renovation. This risk assessment will inform planning activities and controls scheduled through the construction project. The identified risk class will be identified on all planned works.

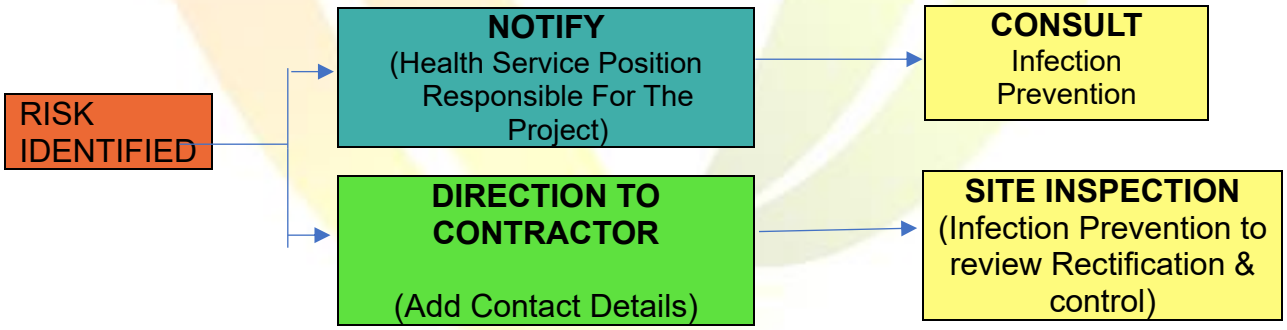
Control measure will be determined in consultation with the Hospital Infection Prevention Unit and the (POSITION RESPONSIBLE FOR THE PROJECT).

Any modifications or variations of planned infection control measure for any area can only proceed upon direction from the (POSITION RESPONSIBLE FOR THE PROJECT), (PROJECT MANAGEMENT TEAM), (ANY OTHER PARTIES) and is consultation with the Infection Prevention Unit. Contractors and construction workers will not take directions for change from other facility staff.

The contractors will ensure:

- Infection control measure and overview of Aspergillus infection risk are included at induction and toolbox talks
- Infection control measure outlined within this plan are implemented and maintained throughout the duration of works.
- Control measures are monitored (FREQUENCY) using a standardised checklist Compliance with any of the provisions of this control plan will be audited at any time by members to the project team and the Infection Control Unit.
  Breaches of infection control measure must be rectified immediately. Where these breaches cannot be immediately rectified or represent an unacceptable risk to the health service an escalation process will be implemented, refer to figure 1

Figure 1: Escalation Plan – EXAMPLE ONLY



Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

4.0 Risk Identification and Control Measures Using the Construction Risk Assessment and Action Plan

DESCRIBE THE MEASURE THAT WILL BE UTILISED TO ADDRESS THE RISKS IDENTIFIED USING THE ABOVE METHODOLOGY

6.0 Ventilation System

DESCRIBE THE MEASURE THAT WILL BE UTILISED TO ADDRESS THE RISK IDENTIFIED

7.0 Approach to Dust Control and Aspergillus and Other Fungal Spore Species

A full method statement including a risk assessment must be produced for each stage of the construction project. This must include the provision of appropriate protective measure for the levels of risk identified.

7.1 *Microbial Sampling*

PROVIDE INFORMATION ABOUT WHETHER MICROBIAL SAMPLING WILL BE REQUIRED, AND IF SO,

PROVIDE THE FREQUENCY, LOCATION AND PREORTING METHODS.

7.2 Dust minimisation

PROVIDE SUMMERY OF DUST REDUCTION AND CONTAINMENT METHODOLIGES

8.0 Approach to Legionella Control

PROVODE SUMMERY OF LEGIONELLA HAZARD REDUCTION METHODOLOGIES.

9.0 Waste Removal

PROVODE SUMMERY OF METHODOLOGIES.

10.0 Handover

10.1 Overview

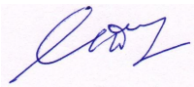
PROVIDE SUMMARY

11.2 Air Sampling prior to Commissioning (If required)

PROVIDE RESPONSE

11.0 Verification

DESCRIBE VERIFICATION AND SIGN-OFF PROCESS

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Appendix 6: Infection Prevention and Control Checklist Permit

Infection Risk Assessment and Control Measures for Construction Activities Checklist and Permit			
Hospital/Facility:		Location of activity:	
Date of assessment:		Project start date:	Estimated duration:
Type of activity:	□ Construction □ Renovation □ Installation □ Maintenance		
Name of person completing risk assessment:		Role/Title:	

Please indicate yes or no for each section

Yes	No	Construction Activity (refer Part A / table 2)	Yes	No	Population & Functional Risk Group (refer Part B/ table 3 and Appendix 3)
		Type A: Inspections and general upkeep activities			**Group 1:** Low Risk
		Type B: Small scale, short duration activities, which create minimal dust			**Group 2:** Medium Risk
		Type C: Any work that generates a moderate to high level of dust			**Group 3:** Medium to High Risk
		Type D: Major demolition and construction projects			**Group 4:** Highest Risk

*Using the matrix below identify the **class of preventive measures** required for this work. Refer to Part D/table 5 for specifications for infection prevention and control measures*

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

			Construction Activity			
			• Type A	• Type B	• Type C	• Type D
Risk Group	Low risk	Group 1	I	II	II	III /IV
	Medium risk	Group 2	I	II	III	IV
	Medium-High risk	Group 3	I	III	III / IV	IV
	Highest risk	Group 4	III	III / IV	III / IV	IV

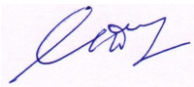
Infection Prevention must be consulted when Construction activities are planned in areas or corridors adjacent to Risk Groups III or IV.

Assessment and sign-off										
Class of preventive measures:		Class I		Class II		Class III		Class III/IV		Class IV
Engineering Services Manager										
Name:		Signed:			Phone Number:					
Infection Prevention (CNM/CNC)										
Name:		Signed:			Phone Number:					
Comments:										

Detail controls relevant to planned building works – refer Part D for minimum standards

Prior to project initiation the Contractor/DoI must submit the details of control measures (table 5) to be implemented and monitored. Control measures are to be evaluated and approved by the Engineering Services Manager and Infection Prevention prior to work start.

This table is used to illustrate how the recommended controls will be implemented for works in a specific location. An example of information included is detailed in italics.

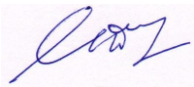
Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Contractor Management	Hospital Site Management	Status
Control measure will be implemented as detailed for Class 3 controls. *Hoarding will be erected on the evening of 5/6/2015.* *Inspection by site Infection Control scheduled 07.30 6/6/2015 for sign-off prior to works commencing.*	*Ward 7 Beds 5-9 to be closed by 17.00hrs on 5/6/2015.* *All equipment to be removed.*	Hospital Executive, ward CNM advised
Planned completion date 12/6/15 *Site to be inspected by Infection Control prior to hoarding being removed.*	*House Keeping staff to be advised of post hand-over clean to be scheduled 12/6/15. Prior to patient occupation*	*House Keeping booked*

Contractor					
Name:		Signed:		Phone Number:	
DoI Project Manager					
Name:		Signed:		Phone Number:	

Approved / Not Approved Date:

Engineering Services Manager					
Name:		Signed:		Phone Number:	
Infection Prevention (CNM/CNC)					
Name:		Signed:		Phone Number:	

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		**Dr. S.S. Deepak**	
Chief medical Administrator		**Chairman & Managing Director**	

Appendix 7: Environmental monitoring compliance checklist

Project Titel		Date	
Location of Work		Time	
Contractor		Surveyor	

1. Construction Barricade	Answer (circle one)		
Dust tight barricades sealed, no penetration	Yes	No	N/A
Dust mats in place and clean	Yes	No	N/A
Doors close and seal properly	Yes	No	N/A
All access doors are closed to public	Yes	No	N/A
Ventilation ducts to building site covered	Yes	No	N/A
2. Negative Air			
Negative pressure at barrier entrance	Yes	No	N/A
All window and doors closed behind barrier	Yes	No	N/A
Negative air units or exhaust fans running	Yes	No	N/A
3. Adjacent Areas with Staff/Patient Access			
Ceiling areas intact and dry	Yes	No	N/A
Floor areas are clean and no dust is tracked	Yes	No	N/A
Walls intact and dry	Yes	No	N/A
Horizontal surfaces dust free	Yes	No	N/A
Vents dust free	Yes	No	N/A
No signs of pest infestation	Yes	No	N/A

4.Traffic Flow			
Building contractors accessing site through approved non-patient care areas	Yes	No	N/A
Waste covered and contained prior to removal	Yes	No	N/A
Route and timing of debris removal as per agreement	Yes	No	N/A
There is free and unobstructed access for emergency response	Yes	No	N/A
Comments:			

Non-compliance issues

Issues	Report to	Date

Resurvey date / / **Surveyor** **Compliance achieved (circle)** **Yes** **No**

Further action taken:

Surveyor's Signature:

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	

Appendix 8: Completion of Project

Completion of project Checklist- Part A: To be completed by the contractor

Project Title		**Date**	
Location of Work		**Time**	
Contractor		**Surveyor**	

Risk Rating	Contractor – Completion of Project checklist	Check
Class I	Clean work area upon completion of the task. This includes all horizontal and vertical surfaces to ensure all dust and debris has been removed	
Class II	Contain construction waste before transport in tightly covered containers.	
	Clean work surfaces with water and detergent/ disinfectant.	
	Wet mop and / or vacuum with HEPA filtered vacuums before leaving the work area.	
	Remove isolation of HVAC system in areas where work is performed.	
Class III	Contain construction waste before transport in tightly covered containers.	
	Remove barrier materials carefully to minimise spreading of dust and derbies associated with construction.	
	Clean work surface with detergent/ disinfectant.	
	Vacuum work area with HEPA filtered vacuums.	
	Wet mop area with hot water and detergent/ disinfectant.	
	Remove isolate of HVAC system in areas where work is performed.	
	Do not remove barriers from work area until completed project is inspected by the Engineering Services Manager, Infection Prevention and Housekeeping Services.	
	Ensure consultation with housekeeping services have occurred for a clinical clean to occur post builders clean.	
Class IV	Contain construction waste before transport in tightly covered containers.	
	Remove barrier material carefully to minimise spreading of dust and debris associated with construction.	
	Cover transport receptacles or carts. Tape down covering unless it has a solid lid.	
	Clean work surfaces with detergent/ disinfectant.	
	Vacuum work area with HEPA filtered vacuums.	
	Wet mop area with detergent/ disinfectant.	

	Remove isolation of HVAC system in areas where work is performed.	
	Do not remove barriers from work area until completed project is inspected by the Engineering Services Manager, Infection Prevention and Housekeeping Services.	
	Ensure consultation with housekeeping services has occurred for a clinical clean to occur post builders clean.	
Comments:		

Completion of Project – Part B: To be completed prior to handover and before patient occupation. It is the responsibility of the planning committee to ensure the area is fit for purpose.

Project Title		**Date**	
Location of Work		**Time**	

Completion of Project Checklist- Infection Control Measure	**Answer – (circle one)**		
The area has been thoroughly cleaned. This includes all horizontal and vertical surfaces to ensure all dust and debris has been removed	Yes	No	N / A
The area has been vacuumed with a HEPA filter vacuum	Yes	No	N / A
The area has been wet mopped with detergent / disinfectant	Yes	No	N / A
When commissioning a new or refurbished operating theatre or pharmacy clean room; air sampling and particle counts have been performed and results are within acceptable limits.	Yes	No	N / A
If the water supply has been disrupted: maintenance / contractor has flushed water through all taps and water sampling has occurred (as per the Guidelines for the Control of Legionella (2013), as necessary, with results within acceptable levels (<10 cfu/ml	Yes	No	N / A
Sinks and plumbing fixture are suitable for the task and properly located (as per relevant Standard)	Yes	No	N / A
Air intake and exhaust outlets are located and working properly	Yes	No	N / A
Surfaces are appropriate for clinical care and cleaning requirements – i.e.- no damage to wall, cuts to linoleum finishes	Yes	No	N / A

No visible marks or stains that will prohibit cleaning	Yes	No	N / A
Ensure consultation with housekeeping services have occurred for a clinical clean to occur prior to occupation.			
Comments:			

Engineering Services Manager					
Name:		Signed:		Phone Number:	
Infection Prevention (CNM/CNC)					
Name:		Signed:		Phone Number:	
Housekeeping Services					
Name:		Signed:		Phone Number:	

1. PURPOSE:

To describe the process established by Saideep Hospital for the management of the In-house laundry and ensure proper washing and processing of dirty and infected linen. The laundry service is out sourced.

2. SCOPE:

This procedure is applicable to all the activities of the in-house laundry

3. DEFINATIONS

Nil

4. RESPONSIBILITY

The Housekeeping supervisor shall coordinate laundry management with the out sourced agency.

The Housekeeping supervisor shall have th overall responsibility for management of laundry services.

The Supervisor – Linen and Laundry management shall be responsible for management of the laundry and ensuring the standards of laundry practice and quality of processed linen.

The laundry in-charge shall be responsible for monitoring the laundry activity in the absence of the supervisor and ensuring that all guidelines for the processing of various types of linen are followed.

11. DESCRIPTION

4.1 Receipt of Linen

The soiled and infected linen from the wards and units are received by the laundry staff at the receiving area. They shall be counted and sorted in the presence of the housekeeping attendant who brings the linen.

The counting of the linen shall be supervised by either the Supervisor – Laundry and Linen or by the Laundry in-charge in his absence.

The detail of the linen is entered in the Laundry Register.

The details of uniforms of staff given for laundering shall be entered in the Uniform Register.

All such uniforms shall be marked with the staff name / employee number for identification. The Surgeons uniforms are identified using their name-tags.

4.2 The Laundering process

Classification of Linen

The laundering process is dependent upon the type of linen involved.

The linen is classified for the purpose of laundry process into:

- Coloured Linen – Non-infected
- White Linen – Non-infected
- Coloured Linen – Infected
- White Linen – Infected
- Uniforms

Steps in Laundering Process

A. Sorting of the linen

The linen is sorted at the point their receipt according to their classification for the convenience of their processing. This sorting ensures the separation of infected linen from normal linen and avoids the washing of coloured linen with white linen.

B. Washing

The washing process include bleach soak, washing with detergents and chemicals and rising of the linen.
The details of the washing process are provided as per the Laundry Process Matrix (Refer to attachment).
All washing process in outsourced laundry is using automatic washing machine. (Refer to relevant operating instruction)

C. Water Extraction
The excess water is removed from the linen after the washing cycle using an automated hydro-extractor. (Refer to relevant operating instruction for details)

D. Drying
The linen is completely dried using automatic dryer. (Refer to relevant operating instruction for details)

E. Rolling
The linen is passed through an automatic rolling process to remove their creasing.

F. Ironing / Processing
Manual ironing or stem press is used at Saideep for final processing of the linen.

Laundering Agents / Chemicals

The laundering process uses the following laundering agents and chemicals for cleaning and disinfecting of linen.

A. Chlorine Bleach
For disinfection od infected linen (for the purpose of disinfection a concentration of 50- 150 ppm of chlorine beach is suggested)

B. Detergents
For removal of dirt, grime and organic particles.

C. Chemicals
Mostly soda ash based to achieve stain removal, low level disinfection etc.

D. Stain Removers

Removal of stubborn stains especially in case of white linen.

E. Fabric softeners
For giving the fabric, a soft touch, a slight fragrance and masking odours.

The exact concentrations of each of these agents to be used for each category of linen and the methods for use in described in the Laundering Process Matrix.

4.3 General Practices

The laundry floors shall be cleaned and disinfected at least three times a day.

All laundry staff handling infected linen shall wear gloves and masks for protection while handling them.

The processed linen stored in the laundry shall be stored in the designated racks and shelves provided for the purpose.

12. Records

Record Code	Record	Format	Responsibility	Indexing	File No	Minimum Retention Period
R-HKD 10	Laundry Register	Manual	Laundry Supervisor	NA	NA	One Year
R-HKD 11	Uniform Register	Manual	Laundry Supervisor	NA	NA	One Year

13. References

Centre for Disease Control & Prevention.
Website: - https://www.cdc.gov

14. Annexure

Laundering Process Matrix

1. **PURPOSE: -** Ensure proper reprocessing of single use devices approved for same by hospital infection control policy and approval of Hospital Infection Control Committee

2. **SCOPE: -** Reprocessing of SUDs

3. **Expected Outcomes:**

   Reduction of risks associated with reprocessing of Single Use Devices

Sr. No	Process step / Activity	Responsibility	Outputs / Records / Connections
1	The end-user submits a written request for re-sterilization, reprocessing or re-use of a single use device to the chairperson of the Hospital Infection Committee A completed personal proposal from must accompany the request	Clinical Departments / HIC	Request for SUD reprocessing Approval
2	The HIC reviews the request or identifies areas that require further investigation. The HIC may form a technical team to evaluate the request and from guideline for reprocessing of said SUD based on manufacturer recommendations and / or published resources on the same	HIC	
3	The Committee uses an established review process, which includes consideration of: • The categorization of the device • The safety and efficacy of re-sterilization or reprocessing • The likelihood the device will work properly after re-sterilization or reprocessing • The cost effectiveness of re-sterilization pr reprocessing for re-use • The ability of the organization to • Measure any of these considerations through • Objective, quantifiable means	HIC	

	• The manufactures willingness to collaborate in the re-use programme by • Providing pertinent information e.g. product specification, sterilization • Parameters		
4	The Committee will approve or reject requests for re-use. This decision will be forwarded in writing to the applicant.	ICO	
5	In case of approval the List of SUDs approved for reprocessing is updated copy circulated to all departments concerned. The CSSD shall display the latest version of the list in decontamination and processing zones always for reference		
6	The Hospital Infection Control team shall coordinate with respective clinical departments and track the status of hospital acquired infection for all patents who has used the reprocessed items of the category approved recently. This surveillance will be done for all patients using reprocessed device for each newly approved category / device for a period of three months from date of first approval. The finding shall be reported as a part of HIC surveillance data, in case of reported potential infections the decision for approval will be reviewed by the committee	Hospital Infection Control Committee/ Hospital Infection Control Team	
7	Reprocessing and Labelling of SUDs will be done as per “General instruction for Reprocessing of SUDs”	CSSD Technicians / CSSD helpers	General Instruction for Reprocessing of SUDs
8	Separate detailed work instruction would be developed and training for CSSD staff conducted on same for each Critical / High Risk Category.	Chief / Senior CSSD Technicians	Work instruction – separate for each High risk /Critical SUD

	Chief / CSSD technician shall maintain a list of technicians / helpers with competency to reprocess each approved SUD of critical / High Risk category No SUD shall be handled for reprocessing by a CSSD Technicians / Helper without approved competency for reprocessing the same This instruction shall be available for reference / displaced in an appropriate manner at decontamination and processing zones of CSSD		
9	A separate register will be maintained by CSSD to track the reprocessing of SUDs	CSSD Technicians	SUD Reprocessing Register

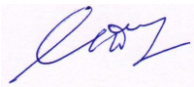
Records

Record ID	Name	Type	Responsible person	Retention Period
	SUD Reprocessing Record	From / File	CSSD Technicians	2 Years

Work Instruction

SDH/CSS/4.7/WI - 01 General Instruction for Reprocessing of SUDs

SDH/CSS4.7/WI – 02.01 onward – Specific WIs

Recommended By	Signature	Approved By	Signature
Dr. Hrishikesh Kalgaonkar		Dr. S.S. Deepak	
Chief medical Administrator		Chairman & Managing Director	