



Our aim is

to

**EDUCATE HEALTH CARE PROVIDERS, PATIENTS AND
FAMILIES/VISITORS ABOUT
STANDARD MEASURES OF INFECTIONS CONTROL**

**Infection Control Committee Medical Teaching Hospital Lady Reading Hospital
Peshawar.**

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PREFACE

The prevalence of infectious disease in the community is one of important parameter to determine its level of social and economic development. This is evident by the fact that many of the infectious diseases are found in the under developed countries. The prevalence of hospital associated infection is taken as one of the benchmark for assessing the efficiency and performance of a healthcare institution.

Unfortunately there is distressingly poor level of hygiene in most areas of our public sector hospitals with people littering and spitting Naswar inside the hospitals, clinical waste and sharps lying around with dirty floors and surfaces. Linens are usually missing or soiled. This has tremendous repercussion for the patients and staff in the form of higher rate of hospital acquired infections. The first step to work on this important issue was the notification of the Infection Control Committee for the Lady Reading Hospital. The committee took the important task of writing the manual about infection control which is in concordance with our local environment and accomplished the task.

This Infection Control Manual contains information about the hospital acquired infection, measures to curtail these infection and ways and means to improve employees health. There is brief introduction to waste management and pest control in health care facility. Also there is a list of reportable diseases recently compiled by KP health department.

Lastly I am indebted to Dr. Fazal Hanan Microbiologist and Dr. Amjad Mehboob infection disease consultant who helped me in writing the booklet. My special thanks to Ms. Shaheen Ghani Nursing Director LRH and Felicity Machoka Hospital Project Manager ICRC who provided me with the relevant literature.

Prof. Dr. Khalid Mahmood
Prof. of Medicine
Lady Reading Hospital
Medical Teaching Hospital
Peshawar.

Medical Director Notes:

It is a matter of great privilege to write these few lines in the Infection Control Manual developed by the Infection Committee which is constituted under the Medical Teaching Institution (MTI) Act 2015. The committee under the chairmanship of Professor Khalid Mahmood has worked tirelessly to develop this manual as a first step to start awareness and training of the health care professionals of LRH MTI.

The aim of this manual and other activities is to reduce infection transmission to the patients and staff and reduce infection related mortality and morbidity. It is not only unethical to harm our patients through poor infection control mechanisms but also does not make any economic sense to increase our cost as a result of increased hospital stay and use of antibiotics to treat them. The manual has very useful and practical information which provides excellent skeleton to build on a healthy infection free hospital environment. This is one of the step which LRH is undertaking to improve patient care and look after its staff in all possible manners.

I wish the committee well and express my gratitude for all the hard work they have put into this manual and other work of the Committee. My special thanks to the ICRC team who has not only contributed technically to the work of the Infection Control Committee (ICC) but also committed financial resources to the implementation of the ICC plan as part of their ongoing agreement.

In the end let me assure the members of ICC that the LRH MTI Management and its BOG will extend all possible help and support to the implementation of the decisions taken.

Allah bless us all.

Profossor Dr Mukhtiar Zaman
Medical Director
LRH MTI

INTRODUCTION

Infection control is a discipline that applies epidemiologic and scientific principles and statistical analysis to the prevention or reduction in rates of hospital acquired (nosocomial) infections. Some experts in the field now prefer to use the phrase "infection prevention and hospital epidemiology" over the term infection control, as the words prevention and epidemiology more accurately define the discipline. Indeed, infection control is a key component of the broader discipline of hospital epidemiology. Effective infection control programs reduce rates of hospital acquired infection and are cost-effective.

There is poor state of cleanliness and hygiene in most areas of our public sector hospitals with clinical waste and sharps lying around, and dirty floors and surfaces. Linens are usually missing or soiled. Another problem is the culture of too many attendants partly linked to shortage of nurses and the failure of hospitals to provide food, hand washing or laundry facilities. This state of affairs has led to alarming increase in hospital acquired infections.

Healthcare Acquired/Associated Infection (HAI) formerly known as Nosocomial Infection is a looming disaster in the world of medicine. In a WHO sponsored survey conducted in 55 hospitals of 14 countries representing four WHO regions (South-East Asia, Europe, the Eastern Mediterranean and the Western Pacific) it was found that, on average, 8.7% of hospitalized patients suffer from health care-associated infections. Hospital acquired infections are also responsible for antimicrobial resistance (AMR).

Infection control (IC) is essential for the safety of patients, health care workers (HCWs) and visitors & is the responsibility of all healthcare workers in the facility. It is important to realize that most HAIs are preventable. Healthcare providers including the doctors, nurses and the other healthcare workers can tackle this problem and help in minimizing the hospital acquired infections. Our aim is that no one should get sick while trying to get well in our hospitals.

The Infection Control Manual (ICM) enumerates the policies, protocols, guidelines and infection control procedures to be implemented and monitored for safe practice at MTI (Medical Teaching Institution) LRH (Lady Reading Hospital) Peshawar. Policies written in this manual have been approved by the Infection Control Committee (ICC) of MTI LRH.

INFECTION CONTROL COMMITTEE/TEAM

The aim of the our Infection Control Committee (ICC) is to limit the acquisition and spread of pathogenic micro-organisms by using scientifically based knowledge, thorough planning, surveillance, education and research as a part of an organizational policy of providing the best possible and cost efficient care to our patients. We believe that infection can be minimized in hospital settings by implementing and reinforcing preventive measures. We also believe that it is the ethical and legal responsibility of every care giver to protect their patients, colleagues and themselves from acquiring nosocomial infection by practicing safe patient care practice. Every one of us must support and contribute to the goal, objectives and policies of the MTI LRH.

Aims and objectives of ICC OF MTI LRH

ICC is a policy making body charged with:-

1. Guiding the Infection Control Team (ICT) which comprises the key members of the Infection Control committee in carrying out its activities.
2. Creating and maintaining an environment which minimises the risk of infection to patients, caregiver and visitors by policy making, consultation , education, immunisation/ vaccination, surveillance and research.
3. Reviewing, revising and approving the Infection Control Manual regularly and on need basis.
4. Enhancing the image of Infection Control in MTI LRH, community and country at large.
5. Providing the guidelines regarding the rational use of Antimicrobials to the Pharmacy and Therapeutic committee and wherever possible; to review the utilization of antibiotics in different areas of the hospitals.
6. Devising waste management protocol for the institution.

The ICC aim is

- To Make LRH infections free of Hospital Acquired Infections.
- Reduce the spread of infectious diseases.
- Decrease morbidity and mortality due to nosocomial infections.
- Maintain employee health and morale.
- Decrease the incidence of antimicrobial resistance (AMR).
- Decrease hospital stay of patients & the resultant cost.
- Decrease dissemination of resistant bacteria in the community
- Conduct workshops for reducing health care associated infections and updating laboratory methodology.
- Developing/adapting and recommending treatment guidelines for local use.
- Decrease overuse of antibiotics and strengthen rational and judicious use of antibiotics.

INFECTION CONTROL COMMITTEE MEMBERS

Infection disease consultant

Hospital Director or his nominee

Medical Director or his nominee

Microbiologist

Nursing Director or her nominee

Infection control nurses

Surgical consultant

Consultant Emergency Medicine

Consultant OBS/Gynae

Chief pharmacist

In charge CSSD

Facility Manager

Quality assurance manager

Waste management officer

In charge incinerator

Representative from Hotel services, environmental protection agency and a public representative.

REPORTABLE DISEASES

Reportable diseases are diseases considered to be of great public health importance. Local, state, and national agencies require that these diseases be reported when they are diagnosed by doctors or laboratories.

Reporting allows for the collection of statistics that show how often the disease occurs. This helps researchers identify disease trends and track disease outbreaks. This information can help control future outbreaks.

Notifiable disease is any disease that is required by law to be reported to government authorities. The collection of information allows the authorities to monitor the disease, and provides early warning of possible outbreaks. All states have a "reportable diseases" list. It is the responsibility of the health care provider, not the patient, to report cases of these diseases. The infectious disease surveillance unit of the public health section of the Directorate General Health Services Khyber Pakhtunkhwa, province of Pakistan in collaboration with MTI, LRH have proposed list of diseases to be reported to the Infection control team MTI LRH/ Deputy Director Public health, health directorate. These diseases are selected on the basis of their local prevalence, severity/ case fatality rate, epidemic potential, potential threat, health gain opportunity, social and economic impact, international health regulations and public perception.

These reportable diseases includes:-

1. Diphtheria
2. Congo Crimean Hemorrhagic fever
3. Measles
4. Polio/AFP
5. SARI i.e. Severe Acute Respiratory Infection
6. Cholera
7. Tuberculosis
8. Dengue
9. Malaria
10. Cutaneous Leishmanias
11. Influenza like illness (ILI)
12. Acute Diarrhoea
13. Hepatitis A & E
14. Bacterial Pneumonia
15. Rabies
16. Neonatal Tetanus

17. Varicella
18. Pertussis
19. Hepatitis B & C
20. Anthrax
21. HIV/ AIDs
22. Encephalitis
23. Leprosy
24. Plague
25. Scabies
26. Tuberculous Meningitis
27. Enteric Fever
28. Bacterial Meningitis
29. Bloody Diarrhoea
30. Visceral Leishmaniasis
31. Nosocomial Infections
32. Rubella
33. Mumps

HOSPITAL ACQUIRED INFECTIONS

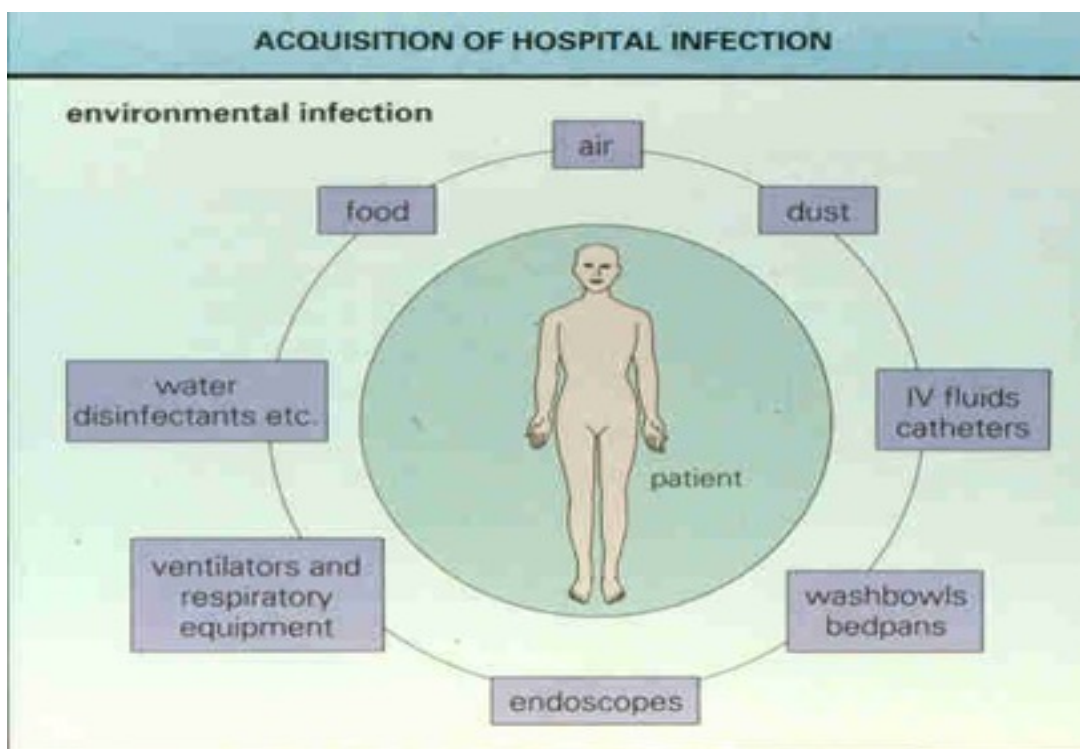
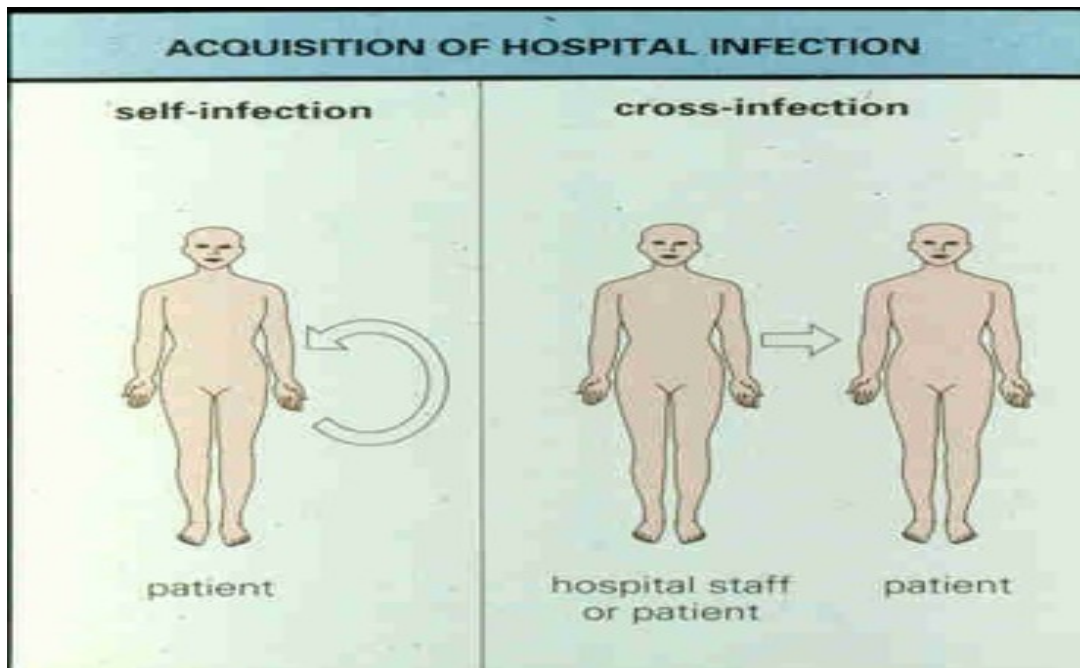
Healthcare-associated infections can develop either as a direct result of healthcare intervention (such as medical or surgical treatment) or from being in contact with an infected patient or infected belongings/surroundings in healthcare settings. Infection rates approach 8–10% in many hospitals in developing countries, the most common organisms are:

- Gram negative aerobes (ESBL *Escherichia coli*, *klebsiella*, *Pseudomonas*, *Enterobacter*, *Serratia*)
- Methacillin resistant *Staph aureus* (MRSA) - Survives well in dry conditions and horizontal surfaces
- Vancomycin resistant *Enterococcus* (VRE) - Survives well in all hospital/Nursing home environments
- *M. tuberculosis*
- *Clostridium difficile* - is well adapted to hospital environment
- *Salmonella* and *shigella*
- *Candida*
- *Acinetobacter* - Survives for long periods on hands.

ACQUISITION OF HAIs

There are basically three modes of transmission of infections.

1. **Contact transmission** like *Common cold*, *enteroviruses*, *hepatitis A*, *Influenza virus*, *infectious mononucleosis* and bacterial infections such as multiple antibiotic resistant organisms (MRSA, VRE), enteric infections, skin infections like scabies.
2. **Droplet infections** like include *Mycoplasma pneumoniae*, *pulmonary plague*, pertussis, diphtheria, *H. influenza type B*, *mumps*, and *Meningococcal meningitis*
3. **Airborne infections** like *respiratory tuberculosis (TB)*, *measles*, *chicken pox*, *SARS/ MERS CoV*, and *hemorrhagic fever with pneumonia*



Airborne vs Droplet Infections

Airborne

Very small particles of evaporated droplets or dust with infectious agent may...

- ▣ Remain in air for a long time
- ▣ Travel farther than droplets
- ▣ Become aerosolized during procedures

Examples:

- ▣ Tuberculosis
- ▣ Measles
- ▣ Varicella

Droplet

- ▣ Large particles
- ▣ Settle down quickly
- ▣ Can not travel to long distance

Examples

- ▣ Meningitis
- ▣ Diphtheria
- ▣ Mumps, pertussis, rubella
- ▣ nfluenza

Airborne transmission occurs by dissemination of inhalable infectious material. Microorganisms carried in this manner can be dispersed widely by air currents and may cause infection when inhaled by or deposited on a person's respiratory tract potentially over a long distances from the source patient, depending on environmental factors. Certain therapeutic procedures usually performed in the emergency room or the intensive care unit can generate mechanical aerosols and lead to airborne transmission of infections.

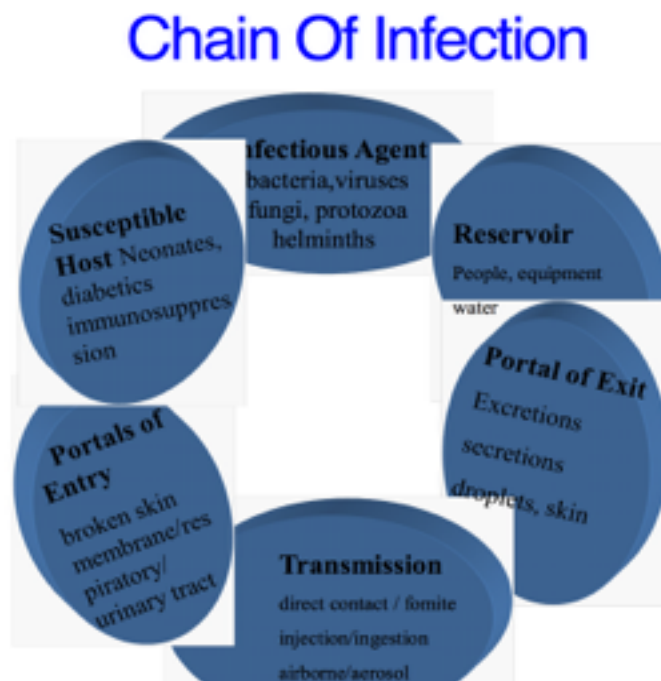
PREVENTION OF HOSPITAL ACQUIRED INFECTION:-

Standard principles: general advice:-

Everyone involved in providing care should be:

- Educated about the standard principles of infection prevention and control and trained in hand decontamination, the use of personal protective equipment, and the safe use and disposal of sharps
- Educate patients and carers about:
 - the benefits of effective hand decontamination
 - the correct techniques and timing of hand decontamination
 - when it is appropriate to use liquid soap and water or handrub
 - the availability of hand decontamination facilities
 - Their role in maintaining standards of healthcare workers' hand decontamination
- Wherever care is delivered, healthcare workers must have available appropriate supplies of:
 - Materials for hand decontamination
 - sharps containers
 - Personal protective equipment

Chain of infection:-



BREAKING THE CHAIN:

Pathogen – appropriate antibiotics

Reservoirs – patients – can we get rid of them?

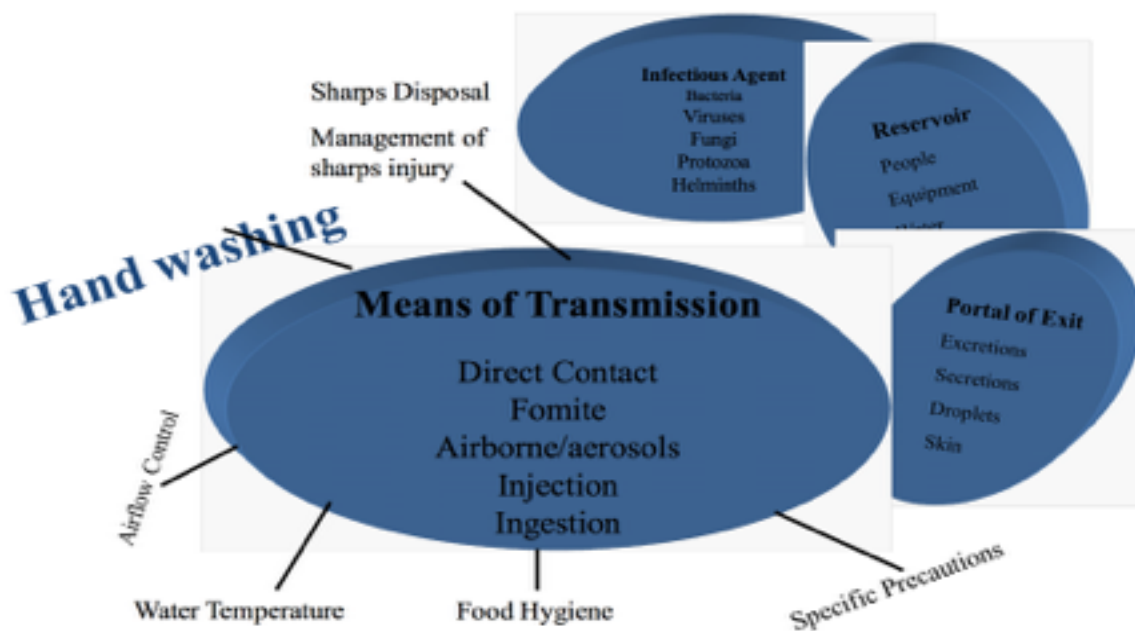
Portal of exit – Mask

Mode of transmission – isolation

Portal of entry – N-95 respirator

Susceptible host - immunizations

Breaking The Chain Of Infection



STANDARD PRECAUTIONS;

Standard precautions are meant to reduce the risk of transmission of blood borne and other pathogens from both recognized and unrecognized sources. They are the basic level of infection control precautions which are to be used, as a minimum, in the care of all patients with the following objectives:

- To reduce the risk of transmission from both recognized and unrecognized sources
- Basic level
- Every patients, Every time, Every place, Everyone.
- Basic preventive measures to be used with **ALL** patients at **ALLTIMES**
- Assumes that blood and body fluid of ANY patient could be infectious.

A simple, practicable and effective approach to infection control comprises the following components:-

- Hand Hygiene
- Use of Personal protective equipment (PPE)
- Cough and Respiratory etiquette
- Proper disposal of sharps and needles
- Proper handling of waste



Transmission Based Precautions:-

Transmission-based precautions are used in addition to standard precautions when use of standard precautions alone does not fully prevent communicable disease transmission. There are three types of transmission-based precautions--contact, droplet, and airborne - the type used depends on the mode of transmission of a specific disease. Some diseases require more than one type of transmission-based precaution (e.g. SARS, which requires airborne and contact precautions as well as eye protection with all client contact).

For Contact transmission

Use the following measure in addition to standard precautions when in contact with individuals known or suspected of having diseases spread by direct or indirect contact (examples include CCHF, Rotavirus, draining abscesses, Scabies).

- A single-patient room is preferred for patients who require contact precautions.
- In multi-patient rooms, spatial separation of >3 feet between beds is advised
- Wear clean, non-sterile gloves and gown when entering the room.
- Hands must be washed immediately after removing gloves
- Limit the movement and transport of the patient from the room.
- All re-usable items taken into an exam room or home should be cleaned and disinfected before removed. Disposable items should be discarded at point of use.

To prevent Droplet infections:

Diseases which are transmitted by this route include pneumonias, pertussis, diphtheria, influenza type B, mumps, and meningitis. Implement standard precautions and additionally

- Place patient in a separate room or in a room with another patient infected by the same pathogen (cohorting).
- Wear a surgical mask when working within 1-2 meters of the patient.
- Place a surgical mask on the patient when patient is moved from the room

For Air born infections

Diseases which spread by this mode include open/active pulmonary tuberculosis (TB), Measles, chicken pox, pulmonary plague, and haemorrhagic fever with pneumonia. Implementation of standard precautions should continue as and when needed

- The patient should ideally be placed in an Airborne Infection Isolation Room (AIIR) with the door closed. This is a single room with negative pressure ventilation. This requires sophisticated and expensive environmental control measures.
- Where this facility is not available, patient should be placed in a well ventilated separate room or area. Air from patient's room should not be circulated in other patient's area. Exhaust fans should be used to propel the air outside the room.
- A special, high filtration, particulate respirator (e.g. N 95) mask should be worn by the HCW and any other visitor.
 - Remove and discard respirator just after exiting area. The respirator may be discarded into the regular trash unless contact precautions must also be followed. In this case, place the respirator in a plastic zip-lock bag, seal and then discard into the trash. A powered air-purifying respirator (PAPR) may also be used (see PPE section).
 - If available, portable high efficiency particulate air (HEPA) filtration units may be operated in the area where the infected individual is located to filter out infectious particles. (Use of such a unit does NOT eliminate the need for employees to wear respiratory protection).
- The movement and transport of patient from the room shall be for essential purposes only. When patient is moved from the room, he should wear a simple surgical mask to reduce the dispersal of droplet nuclei.
- **Patient with skin lesions-** Cover the affected areas to prevent contact.

Where possible patient care equipment should stay in the room e.g. stethoscope, glass thermometer, sphygmomanometer etc. should be disinfected thoroughly with alcohol/spirit.

Eye Protection:-

If eye protection is indicated, wear goggles or a face shield during ALL contact with the individual, not just when splashes or sprays are anticipated, as with standard precautions.

System of isolation precautions for infection control (Recommended by the United States Healthcare Infection Control Practices Advisory Committee.)

Type of precaution	Selected patients	Major specifications
		Handwashing before and after every patient contact*
		Gloves, gowns, eye protection as required
		Safe disposal or cleaning of instruments and linen
		Cough etiquette: Patients and visitors should cover their nose or mouth when coughing, promptly dispose used tissues and practice hand hygiene after contact with respiratory secretions
Standard	All patients	
	Colonization of any bodily site with multidrug-resistant bacteria (MRSA, VRE)	In addition to standard precautions: Wash hands with soap and water before and after leaving the patient's room
	Enteric infections (<i>C. difficile</i> , <i>E. coli</i> O157:H7, viral infections (RSV, HSV, enterovirus, parainfluenza))	Private room preferred; cohorting allowed if necessary Gloves required upon entering room. Change gloves after contact with contaminated secretions.
Contact	Scabies	Gown required if clothing may come into contact with the patient or environmental surfaces, or if the patient has diarrhoea
	Impetigo	Minimize risk of environmental contamination during patient transport (e.g. patient can be placed in a gown)
	Noncontained abscesses or decubitus ulcers (especially for <i>Staphylococcus aureus</i> and group A streptococcus)	Noncritical items should be dedicated to use for a single patient if possible

Droplet	Known or suspected:	In addition to standard precautions:
	<i>Neisseria meningitidis</i>	Private room preferred; cohorting allowed if necessary
	<i>Haemophilus influenzae</i> B	Wear a mask when within 3 feet of the patient
	<i>Mycoplasma pneumoniae</i>	Mask the patient during transport
	<i>Bordetella pertussis</i>	Cough etiquette: Patients and visitors should cover their nose or mouth when coughing, promptly dispose used tissues and practice hand hygiene after contact with respiratory secretions
	Diphtheria	
	Pneumonic plague	
	Influenza, Rubella	
	Mumps	
	Adenovirus, RSV	
	Parvovirus B19	
Airborne	Known or suspected:	In addition to standard precautions:
	Tuberculosis	Place the patient in an AIIR (airborne infection isolation room), [a monitored negative pressure room with at least 6-12 air exchanges per hour]
	Varicella	Room exhaust must be appropriately discharged outdoors or passed through a HEPA (high-efficiency particulate aerator) filter before recirculation within the hospital
	Measles	A certified respirator must be worn when entering the room of a patient with diagnosed or suspected tuberculosis. Susceptible individuals should not enter the room of patients with confirmed or suspected measles or chickenpox.
	Smallpox	Transport of the patient should be minimized; the patient should be masked if transport within the hospital is unavoidable
	SARS	Cough etiquette: Patients and visitors should cover their nose or mouth when coughing, promptly dispose used tissues and practice hand hygiene after contact with respiratory secretions

Disease	Recommended IPC precautions	Patient placement
	Always use in addition to Standard Precautions	
MERS CoV	Airborne Precautions	Airborne infection isolation room (AIIR)
Avian influenza (H5N1,H7N9)	Airborne precautions	
	http://www.cdc.gov/flu/avianflu/novel-flu-infection-control.htm for current avian influenza guidance	
	Airborne precautions	Airborne infection isolation room (AIIR)
Influenza (Human)	Droplet precautions	Single room with good ventilation and lighting
Severe Acute Respiratory Syndrome (SARS)	Airborne Precautions	Airborne infection isolation room (AIIR)
Cholera	Contac precautions	Infectious disease ward with standard bed spacing and good ventilation/lighting
Typhoid		
Viral Hepatitis		
Shigella species		
y e r s i n i a enterocolitica		
CCHF	Contact precautions	Use of PPE recommended
Dengue	Not transmitted from person to person	Apply Screens on bed and use mosquito repellants
Leishmaniasis		
Measles	Airborne Precautions	Airborne infection isolation room (AIIR)
Anthrax	C u t a n e o u s : C o n t a c t Precautions	Single room
	Pulmonary: Not transmitted from person to person	
	Environmental/spores: Wear respirator (N95 mask or PAPRs), protective clothing; decontaminate persons with powder on them	

Diphtheria	Droplet precautions	Single room
Tuberculosis	Contact and/or Airborne Precautions	Airborne infection isolation room (AIIR)
Pneumococcal pneumonia		
Chicken pox / Varicella		
Meningitis (N. Meningitidis or H. influenzae)	Droplet Precautions	Single room
Viral hemorrhagic fevers due to Lassa, Ebola, Marburg, Crimean-Congo fever viruses	Contact precautions. Use N95 or higher respirators when performing aerosol-generating procedures	Single-patient room preferred
Zikra		
Scabies		Multi-patient rooms, >3 feet spatial separation between beds
B. Pertussis Adenovirus, Rhinovirus, N. meningitides Group A streptococcus Influenza virus (H1N1, H2N3)	Droplet precautions	Single patient room preferred

Discontinuation of precautions

- Transmission-Based Precautions remain in effect for limited periods of time (i.e., while the risk for transmission of the infectious agent persists or for the duration of the illness.
- For most infectious diseases, this duration reflects known pattern of persistence and shedding of infectious agents associated with the natural history of the infectious process and its treatment

HAND WASHING / SANITIZATION

Handwashing today is the single most important intervention before and after patient contact.

Every health-care worker is required to act responsibly and without fail to apply the techniques for hand washing at every patient encounter. They also should advise patients and families of the importance of hand washing and give them permission to remind the staff. Decontamination refers to the process for physical removal of blood, bodily fluids and the removal or destruction of micro-organisms from the hands.

- Resident flora Normal flora , live on skin, usually not pathogenic, **difficult to remove**, e.g. *coagulase negative Staph*, *micrococci*, *coryneform bacteria*.
- Transient flora Not normal flora, external source, **easy to remove** e.g. *E.coli*, *Klebsiella*, *Pseudomonas*, *MRSA*, *viruses*, *fungi*, *parasites*

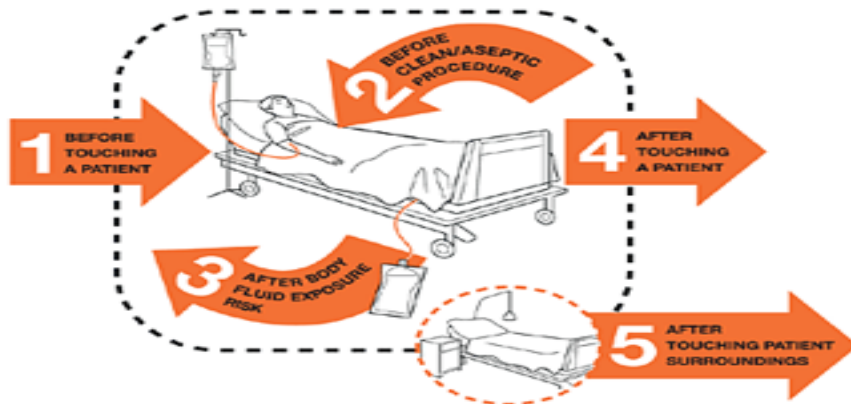
Community acquired

- Enteric fever *Salmonella typhi* & *paratyphi*
- Dysentery *Shigella*, *Campylobacter*, *Entamoeba histolytica*
- Diarrhea *Vibrio cholera*, *Salmonella enteriditis*, *Escherichia coli*
- Common cold and other infections
- Parasitic diseases

Hospital acquired or Nosocomial *infections Pseudomonas, Klebsiella, MRSA, VRE* etc.

Hand hygiene is the simplest and most cost-effective way of preventing the transmission of infection. It reduces the incidence of community and healthcare associated infections. Appropriate hand hygiene can minimize microorganisms acquired on hands and thus breaks the chain of infection transmission and reduces person-to-person transmission.

When to wash hands:



Hand washing steps:



Alcohol-based hand rubs or hand sanitizer

- * Alcohol-based hand disinfectant is an acceptable alternative to soap and water in all situations EXCEPT in the setting of *Clostridium difficile*, for which soap and water should be used.
- * Alcohol based disinfectant are available in the form of liquids, gels and foams and are
 - More effective than soaps
 - Require less time
 - Cause less skin irritation and dryness

The use of non alcohol based versions are generally not recommended. They are best for institutions like ours where hand washing facilities are scarce. Hand washing should still be carried out if there is visible contamination and after using a toilet.



All staff having patient contact must

- Keep nails short and clean
- Not wear false nails, wrist watches or rings
- Roll back sleeves to prevent cross infection

Respiratory or cough etiquette

This strategy is targeted at all with Respiratory Tract infection (including facility staff) and include:

- Cover mouth/nose with tissue when coughing or sneezing or with elbow when tissue is not available
- Use surgical masks
- Wash hands after contact with respiratory secretions
- HCW who has respiratory infection should avoid contact with patient or wear a mask while providing care.



PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Personal protective equipment includes the use of gowns, gloves, aprons, eye protection and face masks.
- The use of these equipments is usually based on assessment of the risk of micro-organism transmission to the patient or to the carer as well as the risk of contamination of the health-care practitioner's clothing and skin by the patient's blood, bodily fluids, secretions or excretions.

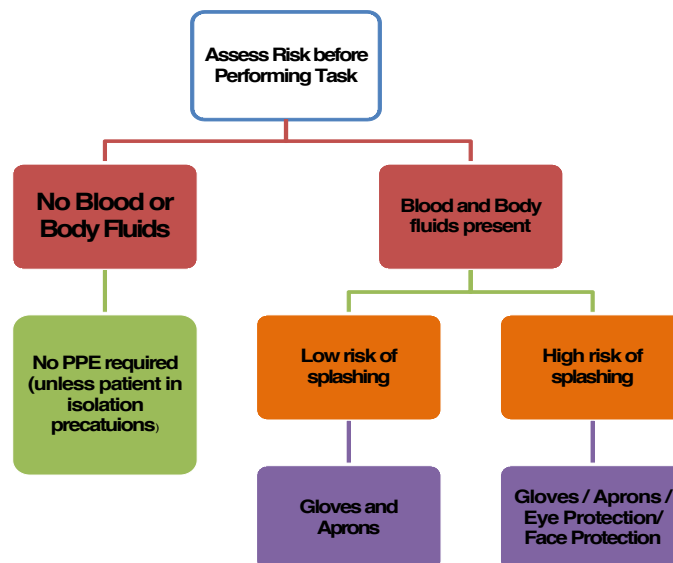
Wear gloves:

- When hand contamination is anticipated.

Wear gowns:

- during procedures that cause splashing or spraying of blood/body substances
- Masks and eye protection
- When splashes may occur

Risk Assessment for PPE



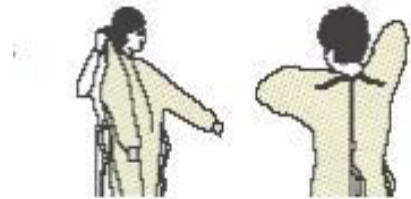
SEQUENCE OF SAFE DONNING AND REMOVAL OF PPE

Example of Safe Donning and Removal of Personal Protective Equipment (PPE)

DONNING PPE

GOWN

- Fully cover torso from neck to knees, arms to end of wrist, and wrap around the back
- Fasten in back at neck and waist



MASK OR RESPIRATOR

- Secure ties or elastic band at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



GOGGLES/FACE SHIELD

- Put on face and adjust to fit



GLOVES

- Use non-sterile for isolation
- Select according to hand size
- Extend to cover wrist of isolation gown



SAFE WORK PRACTICES

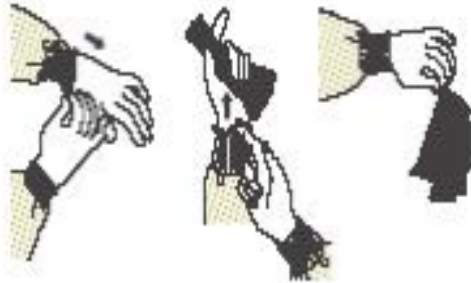
- Keep hands away from face
- Work from clean to dirty
- Limit surfaces touched
- Change when torn or heavily contaminated
- Perform hand hygiene

REMOVING PPE

Remove PPE at doorway before leaving patient room or in anteroom

GLOVES

- Outside of gloves are contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist



GOGGLES/FACE SHIELD

- Outside of goggles or face shield are contaminated!
- To remove, handle by “clean” head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container



GOWN

- Gown front and sleeves are contaminated!
- Unfasten neck, then waist ties
- Remove gown using a peeling motion; pull gown from each shoulder toward the same hand
- Gown will turn inside out
- Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle



MASK OR RESPIRATOR

- Front of mask/respirator is contaminated – DO NOT TOUCH!
- Grasp ONLY bottom then top ties/elastics and remove
- Discard in waste container



Infection control and prevention measures in Operation Theatre

Infection control is not only important but also essential to ensure better safety to the staff and all those patients who undergo any surgical procedures in the operation theatres (OT). All these measures mentioned below are mandatory for all the OT staff to make sure that the health care service provider as well as the patients remain safe from hospital acquired infections.

Theatre Attire:

Theatre attire is necessary for identification of theatre personnel, and is designed to minimise the potential transfer of micro organisms between theatre staff and patients. This uniform also presents a professional image of the staff.

Proper colour (usually green) scrub trouser , which should be washed daily and whenever visibly soiled.

Proper washable , antistatic and light weight shoes covering the whole of the foot is necessary for OT staff.

Hairs should be completely covered with disposable cap and donned before scrubbing for any procedure.

Jewellery[wrist watch, ring, earrings] etc should not be worn by OT staff as they potentially harbour bacteria.

Fingernails should be cut clean.

Theatre staff with open cuts, wounds or skin breaks should cover these with a waterproof dressing.

For essential visits to wards or other departments the OT dress should be covered with gowns.

Standard precautions:

Standard Precautions are the basic infection prevention and control measures necessary to reduce the risk of transmission of micro-organisms from recognised and unrecognised sources of infection.

Gloves should be worn by staff whenever contact with blood or body fluids is expected.

A clean disposable mask should be used for each operation.

Surgical face masks should be worn by all staff during orthopaedic procedures. Surgical face masks (level 1) should be used by all OT staff at all times.

Full face protection (level 2 masks) should be used in case of threat of any airborne infection. Specialised masks for MDR TB should also be available at OT.

Disposable plastic aprons are to be worn whenever there is a possibility of transfer of body fluids to staff uniforms.

Goggles . face shields and visors are mandatory for any procedure involving aerosol contamination.

Properly sterilized surgical gowns should be used by all personnel taking part in surgical procedures.

Hand scrub : The usual practice is using Chlorhexidine or povidone-iodine soap." Application of chlorhexidine or povidone-iodine result in similar initial reductions of bacterial counts (70–80%), can go upto 99% after repeated application. Rapid regrowth occurs after application of povidone-iodine, but not after use of chlorhexidine" (www.ncbi.nlm.nih.gov/books/NBK144036/). Hands should be scrubbed with warm water and not with hot water as the latter removes the safety cover from the hands.Hexachlorophene has been banned worldwide because of its high rate of dermal absorption and subsequent toxic effects

Stipulated time for scrub : The WHO criteria for the time to scrub hands before surgery.A study by O'Shaughnessy and colleagues used 4% chlorhexidine gluconate in scrubs of 2, 4, and 6- minutes duration. A reduction in post-scrub bacterial counts was found in all three groups. Scrubbing for longer than 2 minutes did not confer any advantage. This study recommended a 4-minute scrub for the surgical team's first procedure and a 2-minute scrub for subsequent procedures.

Theatre traffic:

The personnel entering and leaving the OT should be limited to as few as possible. This reduces the risk of transfer of pathogens from one area of the OT to another. It also reduces the noise pollution and cause less disturbance to the surgeon. Doors should always be closed when not in use.

Runners:

One should be appointed inside of the OT to fetch any equipments needed by the surgical team. Another should be appointed outside and should not enter the OT premises and should be responsible to fetch any thing required from outside. This minimises the risk of transmission of airborne pathogens.

Additional Precautions for specialized cases:

Cases with known infective status should be put last on the list.

Status of HIV, HBV, HCV or any other known infective problem should be properly documented on the chart of the patient and all the OT staff verbally and loudly informed of the same.

Theatre personnel in contact with the patient should wear a disposable plastic apron and gloves. [preferably specialized gloves]

Bed/trolley linen should be changed in the anaesthetic room by staff wearing gloves and aprons and put into red linen bags with alginate liners.

The trolley or bed should be cleaned with detergent and disinfected.

Soft materials, e.g. BP cuffs must be thoroughly washed and dried.

Disposable tourniquets must be used.

Theatre environment and equipment should be cleaned with detergent and disinfected. The standard solution for this process is Actichlor or Actichlor plus. [contrary to the international standards we are using simple phenyl which is insufficient].

For any risk of droplet transmission; appropriate level mask within 3 feet of the patient should be used. For known or suspected multiple drug resistant TB (MDRTB) an FFP3 respirator must be worn because of the more serious consequences of infection. Staff should use an FFP2 respirator mask if performing sputum-inducing procedures on a patient with suspected pulmonary tuberculosis.

Prevention of Surgical site infection :

Hair removal prior to surgery on OT table.

Maintenance of normothermia

Antibiotic prophylaxis within 30 mins of surgery.

Strict glycemic control.

Cleaning of the OT :

Cleaning Between Patients:

Each case should be assessed individually with all items which have been in contact with the patient cleaned with either detergent wipes or a detergent solution. Any body fluid spills should be cleaned and disinfected with a solution of Actichlor plus (NPSA 2009). Blood Spillage: Should be cleaned up using detergent and warm water, before disinfection with a solution of Actichlor, or by using a solution of Actichlor plus & Weekly Cleaning Schedule

Cleaning of all theatre furniture and equipment should take place at the end of each list.

Operating tables should be thoroughly cleaned and should be raised to their full height so bases can be thoroughly cleaned, then lowered again afterwards.

Pre-planned Annual Cleaning & Maintenance (PPM)

This includes deep cleaning of walls, ceilings etc., painting of walls, changing of ventilation filters, general maintenance and inspection of fixtures, fittings and lights.

Standards of Environmental Cleanliness

The operating room and accompanying rooms, i.e. anaesthetic room, prep area etc. should be kept free of unnecessary equipment & clutter to facilitate cleaning. Theatres should be free of visible dust. Storage of consumables, supplies etc should be kept to a minimum in theatre, and stock should be rotated to ensure there is no build up of dust or bio-burden. Storage of equipment & consumables should be above floor level. Ventilation grilles should not be obstructed or occluded

Brooms should not be used as it increases the chances of airborne infections. Vacuum cleaners should instead be used.

CLEANING, DISINFECTION, AND STERILIZATION OF INSTRUMENTS AND SUPPLIES;

Three types of disinfectants:

1. Steam sterilization (for hospital equipment and supplies)
2. Heat sterilization (for glassware and metal)
3. Chemical sterilization (i.e., glutaraldehyde immersion for 10 or more hours) for heat sensitive supplies.

Cleaning and use of endoscopes:

Laryngoscopes and bronchoscopes should be washed with thorough clean water and then sent to sterilization unit.

Sigmoidoscope, Colonoscopes and laparoscope should be thoroughly washed immediately after use and this is usually done by the surgeon himself/herself. Then it is sent back to sterilization unit. The solution used for sterilization of these instruments is

4% Gluteraldehyde (Korsolex Basic). The time duration is 15 mins with the following regime.

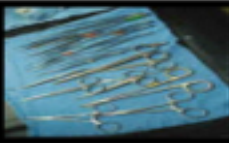

1 L (water) : 40ml (Korsolex basic).

Training

It is the responsibility of the department head to offer relevant training to theatre staff in relation to infection prevention and control during the perioperative period.



Classification of infection risk associated with the decontamination of medical devices

Risk	Application	Recom.	Example
High risk item	Sterile body area	Sterilization	
Intermediate risk	Mucous membrane	High level disinfection	
Low risk item	Intact skin	Cleaning	

PROPER DISPOSAL OF SHARPS TO PREVENT NEEDLE STICK/SHARP INJURIES;

- The most common occupational exposure to blood is NSI (needle stick injury)
- Most significant risk is:
 - HCV: 39%,
 - HBV: 37%
 - HIV :4.4%
 - Rare:
 - Other hepatitis viruses
 - Cytomegalovirus (CMV)
 - Epstein-Barr virus (EBV)
 - Parvovirus
 - Treponema pallidum (syphilis)
 - Yersinia
 - Plasmodium

Recapping the syringe needle

Wrong way



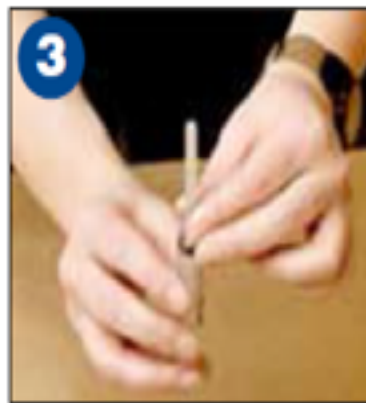
The right way



1 Place the cap on a flat surface. Remove your hand from the cap.



2 With one hand, hold the syringe and use the needle to 'scoop up' the cap.



3 When the cap covers the needle completely, use the other hand to secure the cap on the needle hub. Be careful to handle the cap at the bottom only (near the hub).

Disposal



MANAGEMENT OF OCCUPATIONAL EXPOSURE TO HBV, HCV AND HIV

Definition

To provide the guidelines for the management of healthcare workers who have had an occupational exposure to blood and/or body fluids.

Comments

1. Occupational exposure is defined as percutaneous injury (e.g. a Needle stick or cut with sharp object) or contact of mucous membranes (e.g. splashes to eyes, nose, oral cavity) or non-intact skin (e.g. exposed skin that is chapped, abraded or afflicted with dermatitis) that may place the healthcare worker (HCW) at risk for infection with Hepatitis B virus (HBV), Hepatitis C virus (HCV) or human immunodeficiency virus (HIV).
2. Potentially infectious materials include blood, body fluids containing visible blood and tissue as well as medical supplies, equipment or environmental surfaces contaminated with these substances.
3. The following fluids are considered potentially infectious: cerebrospinal fluid, synovial fluid, pleural fluid, pericardial and amniotic fluids, semen and vaginal secretions. **Faeces, saliva, sputum, nasal secretions, sweat, tears, urine and vomit are not considered potentially infectious unless they contain blood.**

Procedure

- A. Any exposed HCW should report immediately to the Infection Control Team during working hours or to the Emergency Department (ED) after working hours or over the weekend. The HCW should report the incident to his/her supervisor. A report form should be completed.
- B. The employee should adhere to the following steps immediately post exposure.
 1. First Aid

If you experienced a needle stick or sharps injury or were exposed to the blood or other body fluid of a patient during the course of your work, immediately follow these steps:

 - a. Percutaneous injuries
 - i. Wash needle sticks and cuts with soap and water.
 - ii. Then apply isopropyl alcohol 70%.
 - iii. Bandage appropriately.
 - b. Mucocutaneous and non intact skin exposures

- i. Flush splashes to the nose, mouth or non-intact skin with water.
 - ii. Irrigate eyes with clean or sterile water or saline.
 - iii. Flush site for 10 minutes.
- 2. Reporting the Injury
 - a. The employee should report the incident to his/her supervisor and complete the form.
 - b. The report should include:
 - i. The date and time of the incident.
 - ii. The location where the incident occurred.
 - iii. The department where the employee works
 - iv. The source patient Medical Record Number (MRN), if known.
- C. The physician evaluating the exposure should obtain the following information:
 - 1. The name and identification of the source.
 - 2. The time and date of the exposure.
 - 3. The nature of the exposure (e.g. non-intact skin, mucosal or percutaneous, human bite).
 - 4. The type of fluid involved (e.g. blood, blood-contaminated fluid or other contaminated fluid).
 - 5. The body location of the exposure and the contact time with the contaminated fluids.
 - 6. Infection status of the source (e.g. HIV, HCV, HBsAg). If known, include the date of testing.
 - 7. The exposed HCW should be questioned about the circumstances of the exposure:
 - a. For percutaneous injuries, the depth of the wound, solid versus hollow needle, sharps use in the source patient.
 - b. HBV immunization and post-immunization titer, if known (the HCW's medical records can be reviewed to ascertain this information).
 - c. Previous testing for HIV, HBV and HCV.
 - d. Tetanus immunization status.
 - e. Current medical condition.
- D. The exposed HCW's blood should be tested for HBV, HCV and HIV. Follow institutional policies for consent requirements to obtain the source patient's blood for testing.
- E. The source individual's blood should be tested as soon as possible to determine HBV (HBsAg, HBsAb, anti-HBc), HCV (anti-HCV) and HIV (HIV test) serological status. When the source individual is already known to be infected with HCV or HIV, testing the source need not to be repeated.
 - 1. The nurse will notify the patient's responsible physician of the incident.
- F. Counsel the employee regarding the risk of transmission of blood borne pathogens and post-exposure prophylaxis.

G. HBV post-exposure prophylaxis (PEP) is determined by the HBsAg status of the source and the immune status of the exposed person. Recommended post-exposure prophylaxis for exposure to Hepatitis B virus. Post-exposure prophylaxis with Hepatitis B immunoglobulin (HBIG) and/or vaccine should be administered as soon as possible (preferably within 24hours).

- a. The effectiveness of HBIG when administered more than 7 days after percutaneous or mucosal exposure is unknown.
- b. If the exposed person has an adequate antibody response (>10 mIU/ml) documented after completion of an HBV vaccination series, no testing or treatment is needed.
- c. Hepatitis B vaccine and HBIG can be administered simultaneously at separate sites (the vaccine should always be administered in the deltoid muscle).

Recommended Post-Exposure Prophylaxis (PEP) for Hepatitis B Virus

Employee Status	Source Patient Status		
	HBsAg Positive	HBsAg Negative	Unknown
Unvaccinated	HBIG*x1 and initiate HB vaccine series	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated a. Known responder+	No treatment	No treatment	No treatment
b. Known non-responder++	HBIG*x2 or HBIG*x1 and initiate revaccination	No treatment	If known high-risk source, treat as source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, HBIG x 1 and vaccine booster	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, initiate vaccination	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, initiate vaccination

Legend:

HBsAg: Hepatitis B surface antigen.

HBIG: Hepatitis B immunoglobulin.

HB vaccine: Hepatitis B vaccine to be given IM in the deltoid muscle.

Anti-HBs: Antibody to Hepatitis B surface antigen.

* Dose: 0.06mg/kg IM to be administered at a different site from the HB vaccine, using a different syringe.

+ A responder is defined as a person with adequate serum levels of anti-HBs (>10mIU/ml) tested 1-2 months after vaccine completion.

++ A non-responder is defined as a person with serum anti-HBs levels <10mIU/ml, as tested 1-2 months after vaccine completion (2 series).

H. Persons exposed to an **HCV-positive** source should have the following baseline and follow-up testing.

1. Baseline testing for anti-HCV, HCV RNA and ALT.
2. Follow-up testing for HCV RNA 4 to 6 weeks after exposure.
3. Follow-up testing for anti-HCV, HCV RNA and ALT 4 to 6 months after exposure.
4. No post-exposure prophylaxis is currently recommended for HCV.

J. **HIV post-exposure prophylaxis (PEP):**

1. These recommendations apply to situations in which the HCW has been exposed to a source person who either has or is considered likely to have HIV.
2. If PEP is offered and taken and the source is later determined to be HIV negative, PEP should be discontinued.
3. The majority of occupational exposures do not result in transmission of HIV. The exposed HCW should be counselled about the risk of transmission based on the severity, volume, route of exposure and viral load of the HIV source and the potential toxicity of anti-retroviral agents.
4. The average risk of HIV transmission after percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3 percent and approximately 0.09 percent after mucous membrane exposure.
5. The average risk of HIV transmission after non-intact skin exposure is less than the risk for mucous membrane exposure.
6. The risk for transmission after exposure to fluids or tissues other than HIV-infected blood is likely to be considerably lower than that for blood exposure.
7. PEP should be initiated as soon as possible, preferably within hours or up to 24 to 36 hours after exposure. The benefit of PEP is greatly diminished after 72 hours.
8. Persons receiving PEP should complete a full **4-week** regimen. Obtain baseline HIV levels and CBC with differential liver and renal profile and then re-evaluate clinically 72 hours post-PEP initiation and at 2 and 4 weeks after the initiation of PEP.
9. HIV serological screening should be performed at baseline and 6 weeks, 12 weeks and 6 months following the exposure, unless the source tests negative for HIV infection.
10. Refer any HCW identified with an HIV infection to specialty care. The recommendation to consider PEP should indicate that it is optional; a decision to treating clinician regarding the risks versus benefits of PEP.

11. HIV PEP Regimens:

- a. Basic 2-drug regimen
 - i. Zidovudine (ZDV), 300mg twice per day PLUS Lamivudine (3TC), 300mg once per day or
 - ii. Combivir (ZDV + 3TC), 1 tablet twice per day
- b. Alternative drug regimens (used for high-risk exposure)
 - i. Kaletra, 2 tablets twice per day PO PLUS ZDV, 300mg PO twice per day PLUS 3TC, 300mg once per day PO or
 - ii. Kaletra, 2 tablets twice per day PO PLUS Combivir, 1 tablet PO twice per day

Recommended HIV Post-Exposure Prophylaxis (PEP) for Percutaneous Injuries

Exposure Type	HIV Positive	HIV Positive Class 2	Source of unknown HIV status	Unknown Source	HIV Negative
L e s s Severe	Recommend basic 2-drug PEP	Recommend expanded ≥3 drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP for sources with HIV risk factors	Generally, no PEP warranted; however, consider basic 2-drug PEP in settings in which exposure to HIV-infected person is likely	No PEP warranted
M o r e Severe	Recommend expanded ≥3-drug PEP	Recommend expanded ≥ 3 - d r u g PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP for sources with HIV risk factors	Generally, no PEP warranted; however, consider basic 2-drug PEP in settings in which exposure to HIV-infected persons is likely	No PEP warranted

Legend:

HIV positive, class 1: asymptomatic HIV infection or known low viral load (e.g. <1,500 RNA copies/ml)

HIV positive, class 2: symptomatic HIV infection, acquired immunodeficiency syndrome, acute seroconversion or known high viral load.

Recommended HIV Post-Exposure Prophylaxis (PEP) for mucous membrane exposure and non-intact skin exposure

Exposure Type	HBsAg Positive	HBsAg Negative	Unknown	Unknown Source	HIV Negative
S m a l l volume	C o n s i d e r basic 2-drug PEP	Recommend ed basic 2-drug PEP	Generally, no PEP warranted	Generally, no PEP warranted	N o P E P warranted
L a r g e volume	Recommend ed basic 2-drug PEP	Recommend e d expanded ≥ 3 - d r u g PEP	Generally, no PEP warranted ; however, consider basic 2-drug PEP for sources with HIV risk factors	Generally, no PEP warranted ; however, consider basic 2-drug PEP in settings in which exposure to HIV-infected persons is likely	N o P E P warranted

Counselling for employees exposed to viral hepatitis and HIV for the duration of the follow-up:

1. Refrain from donating blood, semen, plasma or tissue.
2. Pregnant or lactating women should be advised against breast feeding.
3. Personal items such as toothbrushes and razors should not be shared.
4. Sexual intercourse should involve protection.

Please contact the Infection Control Team LRH in the event of any needle stick or sharp injury.

MANAGEMENT OF INFECTIOUS DISEASES OUTBREAKS

Definition

To provide guidelines to manage an infectious disease outbreak in the hospital, including early identification, initiation of appropriate control/containment measures to prevent the spread and assigned responsibilities.

Equipment / Material

1. Microbiology and other relevant daily/weekly reports.
2. Data collection forms (computer program compatible).

Comments

1. An outbreak (cluster, epidemic) is an increase in the incidence of a particular infection or colonization over the expected rate.
2. Epidemic associated infections are often clustered temporarily or geographically suggesting that the infection are from a common source or are secondary to person to person transmission and are associated with specific device or procedure.
3. The efficient and effective control of an outbreak requires a multidisciplinary effort with well-defined responsibilities for all stakeholders.

Procedure

Activity	Responsible Person(s)
Notify the Infection Control Officer (ICO) or designee of potential outbreak.	Infection Control Team (ICT)
Identify patient and HCW contacts of cases.	ICT, Director of Nursing Services (DON)/ Designee
Identify cases, verify the diagnosis and search for additional cases.	Attending Physician(s), Charge Nurse, ICT, Staff Health Clinic, Microbiology Laboratory
Conduct epidemiological investigation and institute isolation and barrier precautions to assess source(s), pathogen(s) and the mode of transmission.	ICP (Infection control physician)
Notify Microbiology Laboratory of need for diagnostic tests.	ICP
Establish an ad-hoc committee to manage the potential outbreak.	Infection Control Officer, ICP and DON and others as deemed necessary.
Advise Hospital Administration.	Infection Control Officer/Designee
Inform and assess patient contact for prophylaxis.	Attending Physician, ICPs, Infection Control Officer/Designee

Direct HCWs to the Staff Health Clinic for assessment.	Infection control staff (for physicians), Nurse Manager (for other healthcare workers)
Assess HCWs for prophylaxis and work exclusion.	Staff Health Clinic
Designate infected and non-infected cohort areas as required. Move infected cohort to an alternate location as determined by census, patient status and admitting needs.	Director of Infection Control/Designee, ICP, Director of Nursing Services, Department Chairman
Declare unit/ward closure if necessary.	Infection Control Officer/Designee in consultation with Hospital Administration and Department Chairman and DON.

EMPLOYEE OCCUPATIONAL HEALTH PROGRAM

All healthcare workers (HCWs) are at risk of exposure to an environment in which the potential of an unknown infection hazard always exists.

Procedure

1. Assist in the prevention and control of occupationally acquired infections and hazards, particularly those related to hospital work.
2. Identify any infection risk related to employment and institute appropriate preventive measures.
3. Assess and determine the immune status and immunization requirements of employees for vaccine-preventable diseases and institute the appropriate measures.
4. Assist administration in the hiring and/or assigning of employees to work that is suitable to the employees' capabilities.
5. Provide treatment and medical advice to individual employees and act as a resource for employees to obtain care.
6. Monitor and investigate infectious diseases, potentially harmful infectious exposures and outbreaks of infections among HCWs.
7. Establish and maintain accurate and confidential medical records of employees.
8. Assist in the provision of a safe working environment for patients and staff.

PRE-EMPLOYMENT HISTORY

The pre-employment history and assessment provides the basis of pre-employment evaluation for all Health Facilities employees.

Exceptional circumstances may allow some potential employees to start work before the completion of all medical assessments. However, continued employment or recontracting is dependent on the successful completion of all necessary tests.

Procedure

1. Recruiters will advise and instruct all potential employees of the pre-employment medical requirements.

2. The employee will be given a pre-employment package that depends on the status of hiring (i.e., international hire, local hire or locum position).
3. All potential employees must fulfil the requirements outlined on the pre-employment physical form.
4. The completed pre-employment history form, the physical form and the official (original) copies of laboratory and other test reports will form the basis of a medical record chart for each employee.
5. Newly hired healthcare staff should attend the IC Orientation and education.
6. Pre-employment history regarding vaccination profile such as Hepatitis B, Chicken Pox, Measles, MMR, BCG, etc.
7. Baseline screening of all healthcare workers for Hepatitis B (HBV), Hepatitis C (HCV), Hepatitis A (HAV), HIV, rubella IgG, measles IgG, varicella IgG and syphilis.
8. Determining the immune status of healthcare workers against hepatitis B, measles, mumps, rubella and varicella for administration of appropriate vaccine.
9. Vaccination against hepatitis B after screening and the response to hepatitis B vaccination is monitored to offer a second dose series of the vaccine to the non-responders.

IMMUNIZATION GUIDELINES FOR HEALTHCARE WORKERS

Make sure you have been immunized against Hepatitis B since it is very easy to transmit!

1. Optimal vaccination of HCWs can prevent the transmission of certain diseases and prevention is more cost effective than case management and outbreak control.
2. All live vaccines should be given on the same day or separated by at least 1 month.
3. In addition to immunization, all HCWs should be oriented regarding:
 - a. Hand Hygiene
 - b. Modes of disease transmission.
 - c. The importance of presenting themselves to employee health when they suspect an infectious disease may be present (e.g., rash, fever)
 - d. TB control measures.
 - e. The importance of cooperating with the Infection Prevention and Control Department.
 - f. The importance of complying with standard precautions.
 - g. The importance of screening and immunization.

Routine immunizations recommended for healthcare personnel

Generic name	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Hepatitis B recombinant vaccine	<ol style="list-style-type: none"> 1. Give IM 2. Give 3-dose series (1st dose immediately, 2nd dose in 1 month, 3rd dose 5 months after 2nd dose). 3. Anti-HBs serological testing 1-2 months after 3rd dose 	HCWs at risk of exposure to blood and body fluids	<p><u>Precautions</u> Moderate or severe acute illness, with or without fever.</p> <p><u>Contraindication</u> Severe allergic reaction after a previous dose or to any vaccine component. Not contraindicated in pregnancy and may be administered to a pregnant woman who is eligible for it.</p>	HCWs who have ongoing contact with blood and body fluids should be tested 1-2 months after completing the vaccination series to determine serologic response.
Influenza vaccine	One dose of trivalent influenza vaccine (TIV) annually.	All HCWs	<p><u>Precautions</u> Moderate or severe acute illness, with or without fever.</p> <p><u>History of</u> Guillain-Barre Syndrome 6 weeks after previous influenza vaccination.</p> <p><u>Contraindication</u> Severe allergic reaction to previous dose or any vaccine component (e.g., egg)</p>	No evidence of maternal or fetal risk when vaccine was given to pregnant women with underlying conditions that render them at high risk for serious influenza complications.

Typhoid vaccine		food handlers every 2-3 years	Both the Vi polysaccharide and Ty21a vaccines are contraindicated in patients with a history of hypersensitivity to any component of the vaccine.	No data have been reported on the use of either typhoid vaccine in pregnant women. Vi polysaccharide parenteral vaccine should be given to pregnant women only if clearly needed
Tetanus - Diphtheria Acellular Pertussis (Tdap)	One-time dose of Tdap to all HCWs younger than 65 years of age.	All HCWs in direct patient care, with priority given to those having contact with infants younger than 12 months of age.	<p><u>History of</u> hypersensitivity to the vaccine or its components.</p> <p><u>History of</u> Encephalopathy or Guillain-Barre Syndrome (GBS) less than 6 weeks after previous dose of tetanus containing Toxoid.</p> <p><u>Precautions</u> Moderate or severe acute illness, with or without fever.</p> <p>The safety of the vaccine in pregnant women has not been determined.</p>	

Hep B: Written documentation of vaccination along with the level of anti-HBs 1-2 months postvaccination is mandatory for HCWs

Vaccination record should be maintained in HCW personal file.

WASTE MANAGEMENT

Appropriate measure should be taken for proper segregation, collection and disposal of health care waste through proper training of the staff, practicable SOPs and tough enforcement.

This falls in the domain of waste management team comprising the facility manager, sanitary inspector (Waste management officer) and the incinerator operator who works under the supervision of hospital director. The shall report to the infection control committee.

Remember to

- ☐ Wear a full set of PPE and heavy duty/rubber gloves, when handling infectious waste (e.g. solid waste or any secretion or excretion with visible blood)
- ☐ Goggles provide greater protection from splashes.
- ☐ Avoid splashing when disposing of liquid infectious waste.

WHO recommended Color Code for developing countries

Type of waste	Color code
Highly infectious	Red
Infectious, Pathological, Anatomical	Yellow
Sharp	Yellow colored box
Chemicals, Pharmaceuticals	Brown
Radioactive	Silver
General waste	Black



OR SIMPLY TWO BINS/CONTAINER can be used in resource constraint facilities as is the case with our institution.

- Yellow or red Bin for Infectious Waste
- Green or blue or black Bin for General Waste
- And Red resistant container of sharps, needles etc.



ENVIRONMENTAL (Facility) CLEANING AND SPILLS-MANAGEMENT;

Common agents used for environmental cleaning

- Chlorine and Chlorine compounds
- Ethyl or isopropyl alcohol (70-90%)
- Quaternary ammonium germicidal solutions
- Phenolic germicidal detergent solutions

Facility cleaning shall be prioritized as below.

Minimal Risk	Low Risk	Intermediate Risk	High Risk
Offices Storage areas Archive	•Kitchen •Laboratories •Waiting lounges •Ambulatory patient clinic •Rehabilitation rooms	•Emergency CSSD •Bacteriology lab	•Operating rooms •ICU •Burn units •Oncology department •Infectious diseases department



PEST CONTROL

Cockroaches, flies, ants, mosquitoes, mites, rats, lizards, pigeons, stray cats and dogs and occasionally, snakes are pests that may constitute a nuisance or an infestation in healthcare facilities. Pests are agents or vectors for the mechanical transmission of disease-causing microorganisms.

Insect habitats are characterized by warmth, moisture and availability of food. Insects forage and feed on substrates, including but not limited to food scraps from kitchens, food from vending machines, discharges on dressings, other forms of human detritus, medical wastes, human wastes and routine solid waste.

The direct association of insects with disease transmission (apart from vector transmission) is small. However, prevention efforts are recommended.

Modern approaches to institutional pest management usually focus on:

1. Eliminating food sources, indoor habitats and other conditions that attract pests.
2. Excluding pests from the indoor environments.
3. Applying pesticides as needed.

Recommendations

1. The Pest Control Team may be organized among the Support Services Director, Pest Control Service, Facility Manager, Housekeeping and Pest Control Subcontractor/ Supervisor. The functions of this team are as follow:
 - a. Discusses progress of pest control activities
 - b. Monitors and evaluates pest control activities
 - c. Solves problems facing pest control activities
 - d. Points out deficiencies in pest activities and recommends rectifications
 - e. Discusses and rules on contractor's discrepancies
3. Pre-foundation pest control treatment: planning and designing of facilities need to guarantee that every expansion and new project has to include pre-foundation pest control treatment that gives warranty of 20 years termite free buildings.
4. Problem areas where pest control personnel must check frequently and spray under and behind to kill the pests effectively:
 - a. Wall-side skirting is a possible breeding place for cockroaches.
 - b. Loose or missing door rubber gaskets are common hiding place for cockroaches.
 - c. Cabinets with closed base that are difficult to clean under where pests can hide.
 - d. Window ledges that help birds to nest and breed.

Lastly we should have

VISITORS/ATTENDANT POLICY

DOGS and CATs FREE POLICY

WATER and FOOD restriction in LRH from outsides

**YOU CAN CONTACT THE INFECTION CONTROL COMMITTEE FOR QUERIES
AND ASSISTANCE**

Infection Control Team

- Prof. Dr. Khalid Mahmood. 03005907441
- Prof. Taj Ali. 03005966099
- Mr. Sardar Ali. 03219015214
- Infection Control Nurse/ Nursing Director. 033339303240

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