



# MANSAROVAR DENTAL COLLEGE

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**8.1.9 Policies documents regarding preventive immunization of students, teachers and hospital staff likely to be exposed to communicable diseases during their clinical work.**



Healthcare workers (HCWs) perform a wide range of activities in varying environments that can put their health and well-being at risk of harm. Immunization acts as a protective shield, keeping healthcare workers such as doctors, technicians, students in health care discipline, etc. safe.

To ensure successful immunization for HBV for all the faculty and students, Mansarovar Dental College provides ethical and effective immunization/ infection control policies for the same.

HCWs have a higher risk of exposure to HBV infection than the general population, hence routine vaccination against HBV is necessary for personnel who are likely to come in contact with blood, body fluids, or sharps.

### **Prophylaxis for HBV**

The HBV vaccine is generally administered in a three-dose vaccine series at 0, 1, and 6-month schedules. The vaccine should be administered intramuscularly in the deltoid muscle because gluteal injection leads to poor immunogenicity.

The efficacy of the vaccine is >90% after the third dose in terms of the formation of a protective antibody titre.

### **Vaccination and immunization**

Three dose Hepatitis B Vaccine, schedule of administration

The HBV a three-dose series on 0, 1, and 6months schedules.

1<sup>st</sup> shot – the day of vaccination

2<sup>nd</sup> shot – at least one month after first the 1<sup>st</sup> shot

3<sup>rd</sup> shot – 6 months after the first injection

**Contd...2**

  
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### **Post-Exposure Prophylaxis**

Post-exposure prophylaxis (PEP) refers to comprehensive medical management to minimize the risk of infection among healthcare workers (HCWs) following potential exposure to bloodborne pathogens (HIV, HBV, HCV). This includes counselling, risk assessment, relevant laboratory investigations based on informed consent of the source and exposed person, first aid, and depending on the risk assessment, the provision of short term (four weeks) antiretroviral drugs, with follow up and support.

Exposure to blood, tissue, or other body fluids like semen, vaginal secretions, cerebrospinal, pleural, peritoneal, pericardial, synovial, and amniotic fluids have a potential risk of transmission of bloodborne pathogens to healthcare workers and therefore post-exposure prophylaxis should be considered If there is:

- A percutaneous injury (for example, a needle stick or cut with a sharp object).
- Contact with a mucous membrane or non-intact skin (for example, skin chapped or abraded or dermatitis).
- Prolonged contact with intact skin or contact that involves extensive areas of skin.

**Contd...3**

  
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**Table 1.** Post-exposure prophylaxis for percutaneous or per mucosal exposure to hepatitis B virus


Vaccination/serostatus	Source		
	HBsAg-positive	HBsAg-negative	Unknown
<b>Unvaccinated</b>	Hepatitis B immunoglobulin (HBIG) single dose and initiate vaccination	Initiate vaccination	Initiate vaccination
<b>Responder to vaccine (protected)</b>	No treatment	No treatment	No treatment
<b>Non-responder</b>			
After one series (3-dose) of vaccination	HBIG single dose and initiate revaccination	No treatment	If source known to be high-risk; treat as if source were HBsAg-positive (HBIG single dose and initiate revaccination)
After 2 series (6 doses) of vaccination	HBIG two doses (separated by 1 month)	No treatment	If source known to be high-risk; (treat as if source were HBsAg-positive) HBIG single dose and initiate revaccination
Antibody response unknown	Test exposed person for anti-HBs; • If $\geq 10$ mIU/ml: no treatment • If $< 10$ mIU/ml: HBIG single dose and vaccine booster	No treatment	Test exposed person for anti-HBs • If $\geq 10$ mIU/ml: no treatment • If $< 10$ mIU/ml: initiate revaccination

### Steps To Be Taken Following an Exposure

Allow site to bleed.

1. Cuts to be washed with plenty of soap and running water.
2. Splashes into nose, mouth, skin to be flushed with water.
3. Mucous membrane like eyes/mouth to be irrigated with clean water or saline for 5 minutes.

Contd...4

  
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4. Pricked finger should not be put into mouth.
5. Do not squeeze blood from wound, this causes trauma and inflammation –increases the risk of transmission.
6. Do not use bleach, alcohol, betadine or iodine, which may be caustic and cause trauma.
7. Report immediately to the supervisor – an incident reporting form is available which is filled out and documented for follow-up.

PEP should be offered, and initiated as early as possible, to all individuals with the exposure that has the potential for HIV transmission, and ideally within 2 hours (but certainly within the first 72 hours) of exposure and the risk evaluated as soon as possible.


Exposures that may warrant occupational PEP include:

- Parenteral or mucous membrane exposure (splashes to the eye, nose or oral cavity)
- The following bodily fluids may pose a risk of HIV infection: blood, blood-stained saliva, breast milk, genital secretions, cerebrospinal, amniotic, rectal, peritoneal, synovial, pericardial or pleural fluids.

PEP is recommended for the following conditions

1. When the exposure source is HIV Reactive
2. When the source patient is at high risk of HIV
3. When the status of the source patient is unknown


Contd...5

  
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4. Exposure of per-cutaneous, mucous membrane, and nonintact skin by the infectious source material. The pharmacological regimen to be followed for post-exposure prophylaxis is –
- Basic regimen: zidovudine (300 mg) + lamivudine (150mg), 12 hourly x 4 weeks
  - expanded regimen: basic regimen + nelfinavir 750 mg 8 hourly x 4 weeks
  - PEP to be stopped before 8 weeks in case patient is found HIV negative



  
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Mansarovar Dental College provides effective infection prevention and control. It is central to providing high-quality health care for patients and a safe working environment for those that work in healthcare settings.

### Procedures and practices for infection prevention and control

- A two-tiered approach to precautions is used to interrupt the mode of transmission of infectious agents.
- **Standard precautions:** these refer to work practices that are applied to all patients receiving care in health facilities, regardless of their diagnosis or presumed infectious status so as to minimize the risk of transmission of infectious agents in all situations. Standard precautions minimize the likelihood of transmission of infectious agents between HCWs and patients, and from patient to patient.
- **Transmission-based precautions:** Transmission-based precautions are precautions required to be taken based on the route of transmission of organisms like contact precautions, airborne precautions, etc.

**Standard precaution** - standard precautions involve work practices that are essential to provide a high level of protection to patients, health care workers, and visitors which include the following:

- Hand washing and antisepsis
- Use of PPE when handling blood, body substances, excretion, and secretions
- Appropriate handling of patient care equipment and soiled linen.
- Prevention of needle prick injury
- Environmental cleaning and spills management
- Appropriate handling of waste

Contd...2

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## **1. Hand hygiene**

The WHO guidelines on hand hygiene in healthcare (2009) suggest that hand hygiene is the single most important measure for prevention of infection. Hands can become contaminated with infectious agents through contact with a patient, patient surroundings, the environment, or other HCWs. Hand hygiene removes dust/soil, organic material and transient microorganisms from the skin and reduces the risk of cross-contamination.

### **Hand washing with soap and water**

Indications: when there is visibly heavy contamination, e.g., with proteinaceous material, blood or body fluids

- ✓ After attending to a patient with suspected/confirmed
- ✓ After using toilet
- ✓ Before and after having food
- ✓ Adequate number of sinks with running water and soap should be available in the haemodialysis unit to facilitate hand washing.


### **Hand rubbing using alcohol-based preparation**

Use alcohol-based hand rubs (ABHR), when hands are not visibly soiled or tap and running water is not available

#### ***Advantages of ABHR***

- Easily accessible at point of care
- Excellent antimicrobial activity against Gram-positive and Gram-negative vegetative bacteria, *M. tuberculosis* and a wide range of fungi
- Generally good antimicrobial activity against enveloped viruses

**Contd...3**

  
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### ***Disadvantages of ABHR***

- Lesser and/ or variable antimicrobial activity against non-enveloped viruses
- No activity against protozoan oocysts and bacterial spores

### **Antimicrobial use and management**

Appropriate antimicrobial use may be achieved through the following:

- Formulate standard treatment guidelines (STGs) or hospital antibiotic policy with a multidisciplinary approach using the local antibiogram.
- Provide ongoing education on rational use of antibiotics to clinicians and ensuring implementation of antibiotic policies. x Restrict use of selected antibiotics.
- Before initiating antibiotic treatment, submit appropriate specimens for bacteriological examination to the laboratory and select an antibiotic based on the clinical spectrum of disease, sensitivity pattern, patient tolerance and cost.
- Based on culture results, use an agent with as narrow a spectrum as possible with appropriate dosage, frequency, administration time and duration of antimicrobial therapy.
- Discontinue antimicrobial therapy based on predefined criteria. x Monitor surveillance of AMR and antimicrobial use.
- Carry out periodic prescription audits.
- Create hospital formulary through pharmacy and revise periodically.
- Develop strategic interventions through a collaborative approach to improve infection control and rational antibiotic use.
- Use antimicrobial prophylaxis only when the benefits outweigh the risks. Some indications are: selected surgical prophylaxis, prophylaxis of bacterial endocarditis. Note that antibiotic prophylaxis is not a substitute for appropriate aseptic surgical technique and other infection control measures.

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## **2. Personal protective equipment**

Personal protective equipment (PPE) refers to physical barriers, which are used alone or in combination, to protect mucous membranes, airways, skin and clothing from contact with infectious agents.

PPE should be used by:

- HCWs who provide direct care to patients and who may come in contact with blood, body fluids, excretions, and secretions;
- Support staff including cleaners, and laundry staff in situations where they may have contact with blood, body fluids, secretions, and excretions.
- Laboratory staff, who handle patient specimens;
- Family members who provide care to patients and are in a situation where they may have contact with blood, body fluids, secretions and excretions;
- HCWs in a haemodialysis unit, because of the high risk of transmission of blood-borne infections during the various activities associated with haemodialysis and handling of equipment; and Patients in a haemodialysis unit, in the form of a barrier over clothing during cannulation and decannulation, central line connection, disconnection/ dressing change.

PPE includes gloves, aprons and gowns, facial protection, footwear and hair cover or cap.

## **4. Prevention of injuries from sharps**

### **Handling sharps**

Handling sharps (needles, scalpels, etc.) is one of the most hazardous activities carried out by HCWs in the course of their duties. Sharps should be handled with extreme caution to avoid injuries during use, disposal or reprocessing.

- Used needles must not be recapped by hand; if necessary, use the single hand "scoop" method.
- Used needles should not be bent or broken after use.

**Contd...5**

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-5-

- Used sharps should be disposed of immediately in designated puncture-proof containers (labelled with a biohazard symbol) located in the area where the items were used, for transport to the incinerator or pit or as per HCF policy for waste disposal,
- Sharps should be used only once. A handful of sharp instruments must not be picked up simultaneously.
- While handling sharps, the sharp end of instruments shall be positioned away from oneself and others.
- If injured by sharps, contact the ward, clinic or unit supervisor immediately for further management.
- Sharps should be disposed of in a puncture proof container, as recommended by BMW guidelines.

### 5. Safe handling of patient-care equipment

Equipment that has been in contact with a patient should be disinfected or sterilized as appropriate before use for another patient.

- Equipment that has been soiled with blood or body fluids should be decontaminated and cleaned to prevent transfer of microorganisms to other patients and the environment.
- Cleaning of patient-care areas and equipment should be carried out by a team of dedicated personnel trained in the appropriate cleaning procedures. Responsibility and accountability for cleaning should be assigned.
- A hospital disinfection policy should be prepared for appropriate cleaning, disinfection and sterilization of patient-care devices that come in contact with mucous membranes and access sterile tissues. The policy should be strictly followed and monitored. Accountability and responsibility should be assigned.
- Heavy duty or strong utility gloves must be worn during decontamination, cleaning and disinfection of instruments.
- Soiled patient-care equipment should be handled in a manner that prevents exposure of skin and mucous membranes and contamination of clothing and environment.

Contd...6

  
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### Infection Control Policy

-6-

#### **Airborne precautions:**

The airborne route of infection occurs through droplet nuclei of 1–5 micron that are disseminated through the air. These droplet nuclei can remain suspended in the air for varying periods of time and can travel long distances (>1 metre) and from room to room. Droplet nuclei arise from the drying of suspended droplets carrying the infectious agent.

*Diseases that spread by the airborne route include:* pulmonary or laryngeal tuberculosis, measles, chicken pox, pulmonary plague and viral haemorrhagic fever with pneumonia. Transmission of droplet nuclei at a short range may occur with SARS-CoV, human influenza, and other viral respiratory infections, during performance of aerosol-generating procedures.

Persons caring for patients with airborne infections should take the following precautions besides those related to patient placement and transport:

#### **Respiratory protection:**

persons entering the airborne infection isolation room should wear a particulate respirator, e.g. a N95 mask with a proper fit.


#### **Restricted entry:**

susceptible healthcare personnel should be restricted from entering the room of patients known or suspected to have airborne infections.

#### **Immunize susceptible persons:**

susceptible persons should be immunized as soon as possible following unprotected contact with vaccine-preventable infections.



  
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