



Ministry of Health & Family Welfare
Government of India

Preventing Infections among Healthcare Workers

Training Session – VIII



National Center for Disease Control, New Delhi

Outline

Preventing infections among HCWs

- Hazards in healthcare environment
- Human factors affecting safety
- Training and education of HCWs
- Safe work practices
- Occupational health programme
- Pre-employment assessment
- Occupational vaccination programme
- Post-exposure management programme

Preventing infections among HCWs

- Healthcare workers (HCWs) perform a wide range of activities in varying environments that can put their health and well-being at risk of harm
- Adherence to standard precautions and transmission-based precautions help in protecting HCWs as well as patients from transmission of infection
- Safe work practices help in preventing exposure to hazards in the workplace

Hazards in healthcare environment

- **Physical:** e.g. injuries while lifting, shifting patients
- **Chemical:** e.g. exposure to toxic chemicals such as disinfectants
- **Biological:** e.g. infections transmitted in the healthcare environment
- **Radiation:** e.g. radiation in X-ray and radiotherapy units
- **Psychological:** e.g. stress due to understaffing, night shifts
- **Ergonomic:** e.g. backache or neck ache or eye strain due to poorly designed seats, computer workstations
- **Accidents/ falls** due to lack of patient safety arrangements

Major biological hazards

- **Blood-borne infections:** e.g. HBV, HCV, HIV
- **Respiratory infections:** e.g. influenza, TB, COVID-19
- **Others:** e.g. viral haemorrhagic fevers (VHFs) such as Ebola virus disease (EVD), Nipah, Zika etc.

Needle-stick injury (NSI)

- NSI is a cutaneous cut, scratch or puncture from a needle that was contaminated with a patient's blood, whether or not the injury drew blood
- According to CDC, the risk of transmission for bloodborne infections after needle-stick/cut exposure infected blood is
 - 0.3% for HIV
 - 2.7–10% for HCV
 - 6–30% for HBV [depends on the hepatitis B e antigen (HBeAg) status]

Human factors affecting safety

- A number of individual factors affect a person's performance, thus predisposing them to error
- Two factors with the greatest impact are fatigue and stress
- Strong scientific evidence links fatigue and impaired performance, making it a known risk factor for safe practice

Training and education of HCWs

- Induction and refresher training must be provided to all HCWs in IPC
- Training should include all cadres of health care facility staff including supervisory, managerial, security, cleaning, house keeping and contractual staff
- There should be a training calendar for refresher training schedule on who and when should be trained
- Safety of workers, patients and visitors should be emphasized
- Training should be participatory and based on the skills and competency of HCWs
- Preferably the training should be conducted in local language

Safe work practices

- Standard precautions
 - Hand hygiene
 - PPE
 - Safe injection practice
 - Respiratory hygiene and cough etiquette
 - Environmental cleaning and disinfection
 - Waste management
 - Sterile instruments and devices.
- Transmission-based precautions

In the event of an epidemic, special isolation precautions as per directives from public health authorities and PPE are required

Occupational Health Programme

- Evaluation for general health of employees including infectious diseases at entry, periodically as required
- Before being allowed to work in high-risk areas, all staff should be assessed and offered testing and/or vaccination for specific infectious diseases
- Details of medical history, vaccination for hepatitis B, immune disorders should be recorded
- Except in cases of outbreaks, routine screening of HCWs for a carrier state is NOT recommended
- HCWs can be protected from HAIs by preventive health checkups once a year, immunization, and PEP immediately after accidental occupational exposure to a patient's blood and body fluids

Post-exposure management programme

- Create awareness about the reporting facility regarding sharp injuries/ exposure among the staff
- Conduct orientation of new employees to IPC policies of the facility
- Develop specific post-exposure policies, and ensure their compliance
- Educate and train the staff on standard work precautions, risk associated with exposure, vaccination and prophylaxis/ treatment options available

This is an essential component of the IPC programme and a policy must be in place to prevent and manage infections in HCWs

Post-exposure management programme contd.

- Prompt reporting and record-keeping of all occupational exposures
- Evaluation of type of exposure and risk of seroconversion involved
- Counselling and treatment of exposures, post-exposure vaccination/ drugs/ immunoglobulin
- Follow-up testing

Steps for blood borne infections

- Wash the exposure site with soap and water
- Prompt reporting of exposure
- Type and severity of exposure to be assessed and recorded (skin/ percutaneous/ mucous membrane exposure; depth of injury, volume of blood/ body fluid/ body secretions)
- Exposure source, whether known case of infection with HIV, HBV or HCV

Recommended PEP regimens after exposure to HIV



Exposed person	Preferred regimen for PEP drugs and dosages	Alternate regimen (if preferred regimen is not available/ contraindicated) Drugs and Dosages
Adolescents and Adults (>10 years of age and >30kg weight)	Tenofovir 300mg + Lamivudine (300mg) + Dolutegravir (50mg) Fixed Dose Combination (FDC – one tablet OD), immediately within 2 hrs of exposure (Preferably within 72 Hours), either at day time or at night	Tenofovir 300mg + Lamivudine (300mg) (FDC – one tablet OD) + Lopinavir (200mg)/Ritonavir (50mg) (2 tablets BD) OR Tenofovir 300mg + Lamivudine (300mg) +Efavirenz (600mg) (FDC – one tablet OD)
Children (≥6 years of age and ≥20kg weight)	Zidovudine + Lamivudine (Dosage as per weight band) + Dolutegravir (50mg) (One tablet OD)	If Hb <9 gm/dl : Abacavir + Lamivudine (Dosage as per weight band) + Dolutegravir (50mg) (One tablet OD)
Children (<6 years of age and <20kg weight)	Zidovudine + Lamivudine (Dosage as per weight band) + Lopinavir /Ritonavir (Dosage as per weight band)	If Hb <9 gm/dl : Abacavir + Lamivudine + Lopinavir /Ritonavir (Dosage as per weight band)

**HCP should be counselled about the safety of the PEP drugs
Duration of PEP is 28 days, regardless of PEP regimen**

Summary

- Preventing infections among HCWs – workers at risk
- Hazards in healthcare environment
- Biological Hazards
- Human factors affecting safety
- Training and education of HCWs – safe work practices
- Occupational health programme
- Pre-employment assessment
- Vaccination requirements
- Post-exposure management programme – bloodborne infections



Questions ?