Post-Exposure Prophylaxis
(PEP)
Session objectives

By the end of the session the participants will be able to:

- Understand the need for a system of post exposure prophylaxis (PEP)
- Enumerate the illnesses transmissible occupationally
- Evaluate a health care worker sustaining an injury and prescribe the appropriate PEP
- Discuss the follow up procedures after PEP
A nurse gets a needle stick while giving an injection to an HIV-positive patient. Her glove was punctured. She applies first-aid to clean her injury. She panics and calls you...

- What precautions if any, did the nurse follow while doing the procedure?
- What was the first step taken by the nurse after the injury?
- How can you relate to this incident from your work?
Environmental Transmission

What is the risk for environmental transmission of HIV?

- No environmental transmission reported
- HIV inactivated quickly outside the body
- HIV does not multiply outside the body
- Infectivity is lost quickly after fluid dries
Relative Risk of Seroconversion with Pericutaneous Injury

Source: CDC. MMWR 2001;50(RR11): 1-42
Who are at risk?

- Nursing staff and students
- Laboratory staff
- Emergency care provider
- Interns & medical students
- Laboratory staff
- Labour & delivery room staff
- Physicians
- Dentists
- Cleaning staff & mortuary staff & waste handler
- Surgeon & OT staff
## Potentially Infectious Body Fluid

<table>
<thead>
<tr>
<th>Exposure to body fluid considered “at risk”</th>
<th>Exposure to body fluid considered “not at risk”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood</td>
<td>Tear</td>
</tr>
<tr>
<td>Semen</td>
<td>Sweat</td>
</tr>
<tr>
<td>Vaginal Secretion</td>
<td>Urine / Faeces</td>
</tr>
<tr>
<td>CSF</td>
<td>Saliva</td>
</tr>
<tr>
<td>Synovial, Pleural, Pericardial, Peritoneal fluid</td>
<td>Sputum</td>
</tr>
<tr>
<td>Amniotic fluid</td>
<td>Vomitus</td>
</tr>
</tbody>
</table>

Any body fluid contaminated with “visible blood” shall be considered “at risk”
## Risk of HIV Transmission

<table>
<thead>
<tr>
<th>Exposure Route</th>
<th>Risk of HIV Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Transfusion</td>
<td>90 – 95%</td>
</tr>
<tr>
<td>Perinatal</td>
<td>20 – 40%</td>
</tr>
<tr>
<td>Sexual Intercourse</td>
<td>0.1 – 1%</td>
</tr>
<tr>
<td>Vaginal</td>
<td>0.05 – 0.1%</td>
</tr>
<tr>
<td>Anal</td>
<td>0.065 – 0.5</td>
</tr>
<tr>
<td>Oral</td>
<td>0.005 – 0.01</td>
</tr>
<tr>
<td>Injecting Drug Use</td>
<td>0.67%</td>
</tr>
<tr>
<td>Needle Stick Exposure</td>
<td>0.3%</td>
</tr>
<tr>
<td>Mucous Membrane splash to Eye, Oro-nasal</td>
<td>0.09%</td>
</tr>
</tbody>
</table>
Management of Exposure site

- Do not panic

Skin

- Wash wound & surrounding area with soap and water
- Rinse well
- Do not squeeze
- Do not use Antiseptic or Skin washes
Management of Exposure site

- **Splash of Blood / Other Potentially Infected Material**
  - **Unbroken skin**
    - Wash area immediately
    - Do not use antiseptic
  - **Eye**
    - Irrigate Eye with water
    - If using contact lens leave them in place while irrigating; remove them once eyes are cleaned and then clean
  - **Mouth**
    - Spit fluid immediately
    - Rinse mouth thoroughly with water / saline repeatedly
    - Do not use soap or disinfectant
<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild Exposure</strong></td>
<td>Mucous Membrane / non intact skin with small volume (e.g. Superficial wound with a low calibre needle, contact with eyes or mucous membrane, subcutaneous injections following small-bore needles)</td>
</tr>
</tbody>
</table>
| **Moderate Exposure** | Mucous Membrane / non intact skin with large volume  
|                     | Percutaneous superficial exposure with a solid needle (Cut or needle stick injury penetrating glove)                                                                                                        |
| **Severe Exposure** | Percutaneous with large volume  
|                     | An accidental injury with high calibre needle (e.g. 18G) with visibly contaminated blood  
|                     | A deep wound  
|                     | Transmission of significant volume of blood  
|                     | An accident with previously used IV needle / IV cannula                                                                                                                                         |
# HIV status of Source of Exposure and Risk of HIV Transmission

<table>
<thead>
<tr>
<th>HIV status of Source</th>
<th>Risk of HIV Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV Negative</td>
<td>Source is not HIV infected; but consider HBV &amp; HCV</td>
</tr>
<tr>
<td>HIV +ve Low Risk</td>
<td>HIV Positive and clinically Asymptomatic</td>
</tr>
<tr>
<td>HIV +ve High Risk</td>
<td>HIV Positive and clinically Symptomatic</td>
</tr>
</tbody>
</table>
| Unknown              | Status of the patient unknown  
|                      | Neither patient nor his / her blood available for Testing  
|                      | The risk assessment will be based only upon the exposure (HIV Prevalence in the geographical area should be considered) |
Is the Source material is blood, bloody fluid or Other Potentially Infected Material (OPIM) or an instrument contaminated with one of these substances?

Yes

No

No PEP required

What Type of exposure has occurred?

Mucous Membrane or Skin integrity compromised

Intact Skin only

Percutaneous exposure

Volume

No PEP required

Severity

Small volume- few drops / short duration

Large volume- major splash / long duration

Less severe- solid needle, superficial scratch

More severe- hollow bore needle, deep injury

EC 1

EC 2

EC 2

EC 3
HIV Source code

HIV status of exposure source

- HIV negative
  - No PEP required
- HIV positive
  - Low titer exposure
    - Asymptomatic, high CD4
    - HIV SC1
  - High titer exposure
    - Advanced disease, low CD4
    - HIV SC2
- Status/Source unknown
  - HIV SC unknown
<table>
<thead>
<tr>
<th>Exposure Code</th>
<th>HIV Source Code</th>
<th>PEP Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Not warranted</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Recommended</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 or 2</td>
<td></td>
</tr>
<tr>
<td>2/3</td>
<td>Unknown</td>
<td>Consider PEP, if HIV prevalence is high in the given population &amp; risk categorization</td>
</tr>
</tbody>
</table>
## PEP Prescription

<table>
<thead>
<tr>
<th>Regimen</th>
<th>Drugs (28 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Regimen (Three drugs)*</td>
<td>Tenofovir + Lamivudine + Efavirenz</td>
</tr>
<tr>
<td></td>
<td>Tenofovir: 300 mg od ; Lamivudine: 300 mg od ; Efavirenz: 600mg od</td>
</tr>
</tbody>
</table>

- Above treatment protocol is meant in situations when source HIV patient is ART naïve or with unknown status.
- Individuals who are intolerant to Efavirenz should receive either ATV/r or LPV/r, after expert consultations.
- Further expert guidance shall be sought when the source patient is found to be treatment experienced (for e.g. source patient on second line ART).
- *The revised drug schedule will be available in the new ART Guidelines, which will be released very soon.*
a. Wherever PEP is indicated and source is ART naive or unknown: recommended regimen is:

- **Tenofovir 300 mg + Lamivudine 300 mg + Efavirenz 600 mg** once daily for 28 days

- Wherever available, single pill containing these drugs should be used

- Dual drug regimen should not be used any longer in any situation for PEP
b. The first dose of PEP regular should be administered as soon as possible, preferably within 2 hours of exposure.

c. The subsequent dose should be given at bed time on the next day with clear instructions to take it 2-3 hours after dinner & to avoid fatty food in dinner.

d. In case of intolerance to Efavirenz, regimen containing Tenofovir + Lamivudine + PI (ATV/r or LPV/r) can be used after consulting an expert (experienced physician).
e. In case of exposure, where source is on different ART, Tenofovir 300 mg + Lamivudine 300 mg + Efavirenz 600 mg should be started immediately. And an expert opinion should be sought urgently by phone/e-mail from CoE/ART Plus centre.

f. Appropriate and adequate counselling must be provided regarding possible side effects, adherence and follow up protocol.
In case of Sexual Assault:

- PEP should be provided to exposed person in case of sexual assault as a part of overall package of post sexual assault care.
- In case of sexual assault, as per the age, weight and HB level of the victim, the PEP drugs have to be provided.
Assessment of Exposed Person

- Confidential counselling and assessment by experienced physician
- Assess for pre-existing HIV infection
- Psychological support
- Documentation of injury and HIV testing in PEP Register
- Special leave if required based on assessment of exposed person’s mental health & side effects of PEP drugs
Counselling for PEP

- The risk of acquiring HIV infection from the specific source
- What is known about the efficacy of PEP
- Information on client's risk of HIV infection
- Importance of HIV testing & post-test counselling
- Risk of discontinuation of PEP drugs, if HIV test of the source patient found negative; window period has to be taken into consideration
Counselling for PEP

- Duration of PEP (4 weeks)
- Importance of drug adherence
- Common side effects, likely to be experienced
- Prevention practices at the time of PEP (Barrier protection)
- Provider should correct misconceptions during all the counselling sessions
Effectiveness of PEP depends on...

- Efficacy of PEP is best, if administered within two hours of exposure.
- Do not delay PEP while waiting for result of HIV testing.
- PEP needs to be given within 72 hours of exposure.
- Informed consent must be obtained before testing a source as per National guidelines.
- Base line rapid HIV testing of HCW before PEP.
- Positive HIV result in HCW helps in stopping the PEP (Refer to ART Centre for registration in HIV care).
Case Study 1

An House Surgeon was accidentally got a bleeding injury in her finger, while removing IV cannula after an IV infusion from a PLHIV, who is on First line ART (TLE) for the past four months, admitted for managing diarrhoea and dehydration.

Identify the Source Code and Exposure Code

If PEP is necessary, how will you manage the House Surgeon?
Case Study 2

An Hospital Worker reports an accidental intramuscular needle prick sustained by him 24 hours earlier, while cleaning the area around an in-patient ward of an Hospital in Maharashtra

He noticed i.m-needle stuck to his finger causing a mild bleeding injury

What are the Exposure and Source Codes?

Will you offer PEP to the Hospital Worker?

How will you manage the the Hospital Worker?
Case Study 3

A lab technician, 25 years, pregnant, got her finger injured, while collecting the blood sample for the routine CD4 testing from a PLHIV on Second line ART (Tenofovir+Lamivudine+Atazanavir/ritonavir) for the last one year.

- What are the Exposure and Source Codes?
- Will you offer PEP to the Hospital Worker?
- How will you handle the situation?
- Delay in reporting exposure more than 72 hours
- Unknown source
  - Local epidemiology & severity of exposure
- Known or suspected pregnancy; Do not delay PEP
- Breast feeding issues
- Source person on ART or possibility of drug resistance
- Major toxicity of PEP regimen
- Intolerance or Non adherence
- Psychological problems
Clinical follow-up

- Monitor for Acute sero-conversion illness
  - Within 3-6 weeks after exposure
  - If suspected, refer to ART centre

- Avoid:
  - Blood donation
  - Breast feeding
  - Pregnancy

- Person should use precautions:
  - Sexual relationship (CONDOM protection)
  - Adherence & Adverse Drug Reaction counselling
### Laboratory follow-up

<table>
<thead>
<tr>
<th>Timing</th>
<th>In persons taking Standard PEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks 2 &amp; 4</td>
<td>Complete Blood Count (For AZT patients)</td>
</tr>
<tr>
<td>Weeks 6</td>
<td>HIV-Ab</td>
</tr>
<tr>
<td>Weeks 12 (Month 3)</td>
<td>HIV-Ab</td>
</tr>
<tr>
<td>Weeks 24 (Month 6)</td>
<td>HIV-Ab</td>
</tr>
</tbody>
</table>
Prevention

- Universal precautions

- Primary prevention:
  - Avoid occupational exposure to blood & Other Potentially Infected Material (OPIM)
  - Personal Protective Equipment (PPE)

“NO” to Recapping of Needle
Universal Precautions
Prevention is the key step!

Eye Shield
Always use protective gear
Consider all blood samples infectious

Follow universal precautions practices
Safe handling of sharp instruments
Use needle destroyers
Key Points

- Treat all patients / samples as potentially infectious
- Implement Universal Precaution plan in the facility
- Use barriers to prevent blood / body fluid contact
- Prevent percutaneous injuries
- Document and Report injury or exposure
- Implement PEP plan and sensitize all the Health Care Workers (HCW)
- Promote hepatitis B vaccination