Post-exposure prophylaxis (PEP) following sexual, injection drug use, and occupational exposures among travelers

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No conflicts to declare

Objectives

On completion of this session, participants will be able to:
• Understand indications and risks/benefits of HIV post-exposure prophylaxis (PEP) following sexual, injection, community and occupational exposures
• Decide whether PEP is needed
• Provide PEP and follow-up
• Address special considerations for travelers

Higher risk
Hollow bore
Visibly bloody
High viral load

What about scratches?
Not studied ...and won’t be.
Splashes to mouth?  
Splashes to eye?

Percutaneous  
Mucous membrane

What is a portal of entry to skin?
• Open cuts, wounds, etc.
• Sufficient size to allow entry below skin
• Recent enough to not have developed protective barrier
• Not raw cuticles, etc.

Case from the PEP line
• A nurse on a medical mission to Central America sustained a needlestick though his latex glove while drawing blood on a 37 year old man admitted for severe injuries following an automobile accident. The patient’s mental status was altered, so no past history was available.
• Twenty minutes later, with the patient stabilized, he removed the glove and looked at the his finger, noting a drop of blood at the site.

Risk of Transmission:  
Needlestick in the Healthcare Setting

What’s the transmission risk?
A. 0.23 %  
B. 2.3 %  
C. 23.0 %  
D. 32.0 %

What immediate measures should be taken after exposures?
Lightly wash needlestick/cut area with soap and water.
– Do not "milk" site
– Do not apply peroxide, alcohol, etc.
Flush splashes to the nose, mouth, or skin with water.
Irrigate eyes with clean water, saline, or sterile irrigants.
What's the transmission risk?
A. 0.23 %
B. 2.3 %
C. 23.0 %
D. 32.0 %

Risk of Transmission:
Needlestick in the Healthcare Setting

STOP!
It depends on the source viral load
Early infection VL can be extraordinarily high
Undetectable VL - considered to be untransmittable
Unknown in-between

Parenteral
Transfusion 925.0
Injection drug use (IDU) 6.3
Needlestick, etc. (occupational) 2.3
(Beware re-used needles in medical settings)

Mucous Membrane/Skin (portal of entry) 0.9

A 33 y.o. man had unprotected insertive vaginal intercourse last night with a woman he met in a bar. He was inebriated and does not know anything about her HIV or health status. He does have contact information for her.
Case from the PEPline

- A 33 y.o. man had unprotected insertive vaginal intercourse last night with a woman he met in a bar. He was inebriated and does not know anything about her HIV or health status. He does not have contact information for her.

- A 33 y.o. man had unprotected insertive penile and receptive anal sex last night with a man he met in a bar. He was inebriated and does not know anything about his HIV or health status. He does not have contact information for him.

Case from the PEPline

- A 33 y.o. woman had unprotected receptive vaginal intercourse last night with a man she met in a bar. She was inebriated and does not know anything about his HIV or health status. She does not have contact information for him.

Risk of Transmission

What’s the transmission risk?

Depends on the viral load, route of exposure and risk profile of source.

Baseline HIV Testing of Source Person

Rapid Test (a game-changer for occupational PEP)

4th Generation antigen-antibody test

What’s the sequence of appearance of laboratory markers for HIV-1 infection?
Window period for 4th Gen HIV Ag-Ab Test

Most are positive within 2-3 weeks.
Consider obtaining HIV RNA (HIV viral load) if source might have been exposure in last 6 wks
Nearly 100% within 3 mos.

Most (60%) have acute HIV (viral syndrome) in 1-8 weeks
Need to ask about history of exposure

Baseline HIV Testing of Source Person

Rapid Test (a game-changer for occupational PEP)
4th Generation antigen-antibody test
Consider obtaining HIV RNA (HIV viral load) if source might have been exposure in last 6 wks.
Also: Concurrent HBV & HCV testing

The PEP Decision

Note: Exposures are medical emergencies

How effective is PEP?
No occupational transmission in 14+ years
Marked decrease in perinatal transmissions

The PEP Decision

Offer PEP or not?
Risks vs. benefits
Patient’s choice
The PEP Decision

Offer PEP or not?

Risks vs. benefits

Default: can treat and stop

Can be reassuring

Allows time for test results

Allows time for HCP reconsideration

Allows for further consultation

Standard 3-drug PEP Preferred Regimen:

Tenofovir + emtricitabine (Truvada™) 1 qd

plus

Raltegravir (Isentress™) 400mg bid

or dolutegravir (Tivicay™) 50mg qd (not if in early pregnancy or of childbearing potential)

• Treat for 28 days

• Excellent tolerability, proven potency in HIV infection

• Drug interactions

• Screen for renal and hepatic disease

Alternative WHO-recommended PEP regimens

Tenofovir DS plus either

emtricitabine (Truvada™) 1 qd or

lamivudine (3TC) 300mg/300mg 1 qd

plus

Ritonavir-boosted lopinavir (Kaletra™)

200mg/50mg 2 bid

• Treat for 28 days

• Excellent tolerability, proven potency in HIV infection

• Few drug interactions

• Screen for renal and hepatic disease

Providing PEP Internationally: Nuts and Bolts

Travelers are known to take more risks abroad than at home

• Alcohol, drugs, sexual encounters

HIV prevention check list

• Condoms

• Discussions

• Q? Have you ever taken PEP before?

Providing PEP Internationally: Nuts and Bolts

Bring meds from US?

Get meds in-country?

Expensive

28-day supply: $800 - $2200

Starter packs (5-7d): pharmacies often will not break bottle to supply 5-d starter packs. Ask first!

• PEP covered by most private insurance post exposure

• Anticipatory PEP may not be covered

• Probably covered for medical travel

• Occupational Health coverage variable

• Drug company assistance

• Available but doesn’t help for international emergencies
Providing PEP Internationally: Nuts and Bolts

Bring meds from US?
- Expensive
- Make sure there are no restrictions on bringing medications in (importing?)
- Label bottles with neutral language: “Take one per day after infection exposure.”

Get meds in-country
Pre-travel inquiry:
- Medical travel: inquire with host
- Internet search for country-specific resources
- Availability of medications
- Prescription vs. OTC
- Which clinics, physicians, pharmacies?
- Availability of testing
- Beware counterfeit drugs

Follow-up of Exposed
Follow-up (?in 3 days)
- Ensure adherence
- Side effects (symptoms)
- Counseling and Support
- Is lab testing for drug toxicity needed at 2 wks? 4 wks?
- HIV antibody at 6 wks, 12 wks
- Counseling to reduce future risks

Why are there no new occupational HIV cases reported in US?
- Safety devices
- Institutional compliance
- Better habits
- Less stressful work situations (?)
- Fewer HIV+ patients in hospitals
- PEP
- Poor reporting (+ doubt it)
- Stricter case definition
- Decreased viral load in population

Hepatitis Exposure Risks: Percutaneous
Hepatitis B (without immunity)
- Source has HBsAg+ and eAg-
  1 – 6% clinical hepatitis
  23 – 37% serologic evidence
- Source has HBsAg+ and eAg+
  22 – 31% clinical hepatitis
  37 – 62% serologic evidence
- Hepatitis C: 0.2 % ←*new*
Hepatitis Exposure Risks: Mucous membrane and Cutaneous with Portal of Entry

Hepatitis B – considered to be very small
Hepatitis C – considered to be very small

Most HCP and young persons have been immunized
Many don’t know whether they responded

Hepatitis B vaccine: protective immunity after
1 dose $\rightarrow > 50\%$
2 doses $\rightarrow > 70\%$
3 doses $\rightarrow > 90\%$

Response: HBsAb titre $\geq 10\text{mIU/ml}$

Post-exposure
HB Vaccine $= 70\%$ benefit as PEP when given w/in 24 hr
HBIG $= 70\%$ benefit as PEP when given w/in 24 hr

Give “as soon as possible” after exposure
- Ideally within 24 hours

Post-exposure Prophylaxis for Hepatitis B

<table>
<thead>
<tr>
<th>Source HBsAg</th>
<th>Source HBsAg</th>
<th>Source unknown or unavailable for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>HBIG x 1 and initiate HB vaccine series</td>
<td>Initiate HB vaccine series</td>
<td>Initiate HB vaccine series</td>
</tr>
</tbody>
</table>

Unvaccinated

Previously vaccinated:

- Known responder: No treatment
- Known nonresponder: HBIG x 1 and initiate revaccination or HBIG x 2

Antibody response unknown:

- If adequate, no treatment is necessary
- If inadequate, administer HBIG x 1 and vaccine booster

Antibody response unknown:

- Test exposed person for anti-HBs
  - If adequate, no treatment is necessary
  - If inadequate, administer vaccine booster and recheck titer in 1-2 months

Hepatitis C

No prophylaxis

Exposure $\rightarrow$ infection (as measured by HCV RNA) usually 1-2 wks
Exposure $\rightarrow$ HCV Ab usually 2-3 months, but not 97% until 6 mos

25% clear the infection

Testing Recs: HCV RNA 3-6 wks, HCV Ab 6 mos
Hepatic enzymes 4-6 wks

Pregnancy
PEP considered safe except dolutegravir (raltegravir OK)

Human Bites
Biter & bitten: blood in mouth prior to the exposure?

Found Needle

Special circumstances
Discarded needles in community settings have not transmitted HIV. Why not?

- Already-low occupational needlestick transmission rate (0.23%) and cutaneous portal of entry rate (0.09%)
- Drying effects over time
- Inoculum volume

Test the needle? **No!**

**‘Found Needle’**
Sharp object (e.g., needle, lancet, broken whiskey bottle, etc.) in park, trash, hotel room, etc.

**‘Found Needles’**
PEPline discourages PEP

There are some extraordinary circumstances when PEPline has recommended PEP for found needles, such as: during a police raid in which a needlestick is sustained from a freshly bloody needle presumably used to inject drugs.

**Summary: Transmission is preventable!**

Safe sexual and occupational practices
PrEP in selected cases
Timely PEP in others
Plan ahead
Seek care promptly
Adherence to regimen

**Thank you!**