

HIV prophylaxis for health care providers.

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HIV continues to be a major global public health issue,

- Approximately 36.7 (34.0–39.8) million people are living with HIV.
- In 2015, globally, 2.1 (1.8–2.4) million people become newly infected

and 1.1 (0.94–1.3) million people died from HIV-AIDS related causes.

- **The global number of HIV infections among the health care personnel (HCP) attributable to sharps injuries has been estimated to be 1000 cases (range, 200–5000) per year** -the Joint United Nations Programme on HIV/AIDS(UNAIDS)

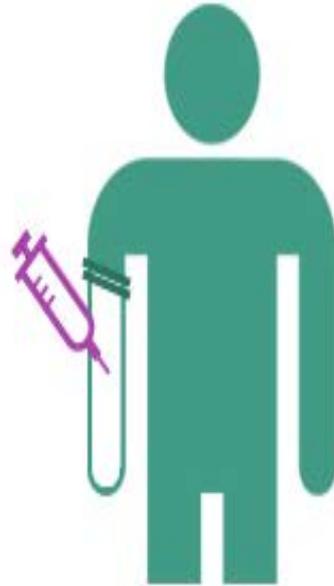
YOU CAN GET HIV VIA...



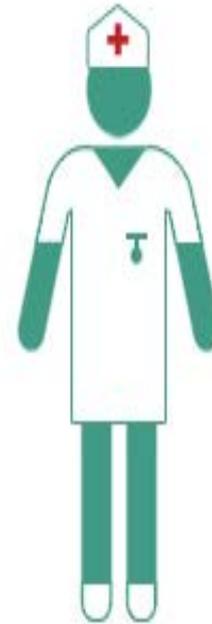
Unprotected sex



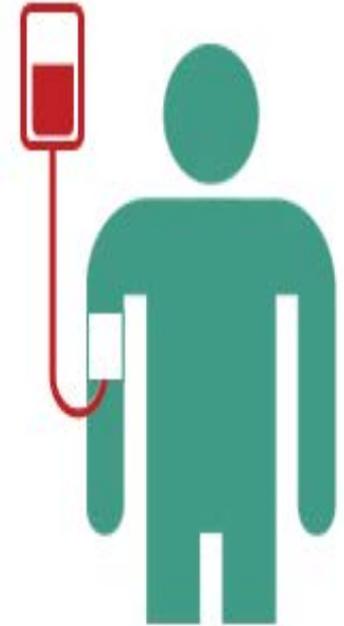
Pregnancy,
childbirth &
breastfeeding



Injecting drugs



Working in
healthcare



Blood
transfusions &
organ/tissue
transplants

- There are three main ways HIV can be transmitted in a healthcare setting, includes:
- 1. needle-stick injury,
- 2. mucous membrane exposure— such as through the eyes, nose or mouth and
- 3. if infected blood gets into an open cut or abraded skin

In one study shows that-

- **27% of needle-stick injuries resulted from improper disposal of the needle (over half of these were due to recapping the needle),**
- 23% occurred during attempts to start an IV line,
- 22% occurred during blood drawing,
- 16% were associated with an IM or SC injection,
- 12% were associated with giving an IV infusion.

HIV : Low Contagious Pathogen?

AVERAGE RISK FOR TRANSMISSION

Source	Risk
HBV	
HBeAg+	22.0% - 30.0% (100 times)
HBeAg-	1.0% - 6.0%
HCV+	1.8% (10 times)
HIV+	0.3%

Transmission Rate

ESTIMATED PER-ACT PROBABILITY OF ACQUIRING HIV FROM A KNOWN HIV-INFECTED SOURCE

Type of Exposure	Risk per 10,000
Parenteral	
Blood Transfusion	9000
Percutaneous (needle stick injury)	30
Other	
Biting Spitting Throwing body fluids including semen or saliva(mucosal exposure)	Negligible

TABLE 2. LOGISTIC-REGRESSION ANALYSIS OF RISK FACTORS FOR HIV TRANSMISSION AFTER PERCUTANEOUS EXPOSURE TO HIV-INFECTED BLOOD.

RISK FACTOR	U.S. CASES*	ALL CASES†
	adjusted odds ratio (95% CI)‡	
Deep injury	13 (4.4–42)	15 (6.0–41)
Visible blood on device	4.5 (1.4–16)	6.2 (2.2–21)
Procedure involving needle in artery or vein	3.6 (1.3–11)	4.3 (1.7–12)
Terminal illness in source patient§	8.5 (2.8–28)	5.6 (2.0–16)
Postexposure use of zidovudine	0.14 (0.03–0.47)	0.19 (0.06–0.52)

*All risk factors were significant ($P < 0.02$).

†All risk factors were significant ($P < 0.01$).

‡CI denotes confidence interval. Odds ratios are for the odds of seroconversion after exposure in workers with the risk factor as compared with those without it.

§Terminal illness was defined as disease leading to the death of the source patient from AIDS within two months after the health care worker's exposure.

How can we prevent occupational exposure to HIV?

- **“The universal precautions”**
- Pre Exposure Prophylaxis(PrEP)
- Post Exposure Prophylaxis(PEP)



The use of *universal precautions* which reduce risk of transmission of HIV & other blood-borne pathogens.

- The use of two pairs of gloves by surgeons.
- Barriers such as face shields, impervious gowns and impervious shoe covers,
- Goggles for preventing eye contact.
- Avoiding recapping of needles.
- The use of impervious needle – disposal containers.

- Disinfecting and sterilizing re-usable devices employed in **invasive procedures**
- All samples should be double-bagged,
- Transportation of samples in sealed containers.
- Gloves should be worn when drawing blood,
- Spills should be immediately disinfected with bleach.

The premise of universal precautions is that **every specimen should be handled as if it came from someone infected with a blood-borne pathogen.**

WHAT TO DO AFTER AN OCCUPATIONAL EXPOSURE?

Immediate measures :

- Use soap and water to wash any wound or skin site that came into contact with infected blood or fluid.
- Flush exposed mucous membranes with water.
- Eyes should be irrigated with clear water, saline or sterile eye irrigants
- Avoid “milking” or squeezing out needle stick injuries or wounds
- Report to the concerned authority ,psychological counselling.
- Determine need for antiretroviral therapy

POST EXPOSURE PROPHYLAXIS (PEP)

When healthcare workers- accidentally exposed to HIV through needle stuck injury or due to exposures outside healthcare setting, for example, through unprotected sex or sexual assault.

- Anti-retrovirals (ARVs) have been used to prevent infection in such case of accidental exposures.
- This intervention is called Post-exposure Prophylaxis (PEP) .

US Public Health Service Guidelines for management of Occupational Exposure to HIV and Recommendations for Postexposure Prophylaxis (CDC,2005) updates the recommendations for the management of healthcare personnel (HCP) who experience occupational exposure to blood and/or other body fluids that might contain HIV. (Published in January 2015)

The principles of exposure management remain unchanged but recommended HIV postexposure prophylaxis (PEP) regimens and the duration of HIV follow-up testing for exposed personnel have been updated.

RECOMMENDATIONS:

This report emphasizes the importance of primary prevention strategies. The following is a summary of recommendations:

1. PEP is recommended for all HCP when occupational exposures to HIV occur;
2. HIV status of the exposure source patient should be determined, if possible, to guide need for HIV PEP;

HIV Testing of the Source Patient

- If the source patient is **known** to be HIV infected from medical record - PEP should be given.
- If the HIV sero-status of the source patient is **unknown**-
Rapid HIV testing with an FDA-approved fourth-generation antigen /antibody combination assay
- If the source patient consents to HIV testing and the HIV screening test is **positive** -PEP for the exposed worker.

HIV Testing of the Source Patient

- If the **HIV testing result is not immediately available** or a complete evaluation of the exposure is unable to be made within 2 hours of the exposure--

PEP should be initiated while source testing and further evaluation are underway.

- When the source patient is **confirmed to be HIV-negative, clinicians should discontinue the PEP regimen before completion.**

Recommendations:

3. PEP medication regimens should be started:

- as soon as possible after occupational exposure to HIV,
- and they should be continued for a 4-week duration;

4. New recommendation—PEP medication regimens should contain:

3 (or more) antiretroviral drugs for all occupational exposures to HIV;

Recommended Preferred Regimen of PEP

Tenofovir disoproxil fumarate 300 mg PO daily +
Emtricitabine 200 mg PO daily Plus
Raltegravir 400 mg PO twice daily or
Dolutegravir 50 mg PO daily.

The recommended duration of PEP is 28 days

Preferred alternative PEP regimens:

**1. Tenofovir disoproxil fumarate 300 mg PO daily
+ Emtricitabine 200 mg PO daily**

**Plus one of the following ritonavir-boosted protease inhibitors
(Darunavir 800 mg PO daily, or Atazanavir 300 mg PO daily, or
Fosamprenavir 1400 mg PO daily and Ritonavir 100 mg PO
daily)**

2. Tenofovir disoproxil fumarate + Emtricitabine + Zidovudine

**3. Tenofovir disoproxil fumarate + Emtricitabine +
Lopinavir/ritonavir**

**4. Zidovudine + Lamivudine + one of the following ritonavir-
boosted protease inhibitors: (Darunavir, Atazanavir, Fosamprenavir,
or Lopinavir)**

PEP can reduce the risk of HIV infection by over 80%.

- If started soon after exposure,
- Adherence to a full 28-day course of ARVs is critical to the effectiveness of the intervention.

Recent evidence shows PEP uptake has been often insufficient:

- only 57% of the people who initiated PEP have completed the full course and
- rates were even lower at 40% for victims of sexual assault.

Recommendations:

5. Expert consultation is recommended for any occupational exposures to HIV .

6. Close follow-up for exposed personnel should be provided that includes:

counselling,

baseline and follow-up HIV testing, and

monitoring for drug toxicity;

follow-up appointments should begin within 72 hours of an HIV exposure.

Recommendations:

7. new recommendation—

a. if a newer fourth-generation combination HIV p24 antigen-HIV antibody test is utilized for follow-up HIV testing **of exposed HCP:**

- HIV testing may be concluded **4 months after exposure** ,

b. if a newer testing platform is not available, follow-up-

- HIV testing is typically concluded **6 months after a HIV exposure.**

Offer exposed worker first dose of PEP while evaluation of exposure is underway.

Source patient known to be HIV-
INFECTED by medical record

Complete 28 day PEP
regimen

Source patient
HIV STATUS
UNKNOWN

Obtain consent for
rapid HIV testing
of source patient

Obtain HIV RNA assay
from source patient;
continue PEP until results
are available

Positive

Negative

Confirm by
HIV RNA
assay

Confirmed
as negative

Stop
PEP

TAKE HOME MESSAGE:

- The risk of infection of HCP after percutaneous or mucosal membrane exposure increase with-
 1. A large volume of blood and
 2. A high titre of HIV in source patient's blood(AIDS)
 3. Length of exposure time.
- The use of universal precautions is crucial for prevention.
- PEP with three drugs cART appears to be highly effective.
- Adherence to a full 28-day course of ARVs is critical to the effectiveness of the intervention

References:

- 1.Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection WHO, June 2016.
- 2.Pre exposure Prophylaxis for the Prevention of HIV Infection in the United States, Centre for disease control, 2014

Imagine
the world
without
HIV

