MANAGEMENT OF HEALTHCARE WORKERS (HCWs) WHO HAVE HAD ACCIDENTAL EXPOSURES TO BLOOD/BODY FLUIDS
VA Greater Los Angeles Healthcare System

March 21, 2023

WHERE TO REPORT: *For exposures to blood/body fluids that occur during regular working hours, all employees and other healthcare workers should report to the Employee Health Service office at their geographic location.*

*At **WLA**, report to Employee Health Service (Building 304 north entrance, 7:30 am - 4:30 PM Monday-Friday except holidays). At other times, employees should report to or contact the Emergency Room at WLA for management and instructions (310-268-3169). If initial management is in the ER, all employees should be seen by Employee Health on the first working day after the injury occurs.*

Employee Health is responsible for the follow-up of all employees. Infectious Diseases will provide technical assistance and consultation as requested.

Procedural questions during working hours should be directed to one of the Infectious Diseases Physician Assistants (Suny Kun x53864, Sharon Garner x53101) in the **Human Immunodeficiency Virus Clinical Unit**. At other times these questions should go to the Infectious Diseases Fellow on-call (UCLA pager (310) 206-8477 #89321).

Urgent clinical questions should be directed to the Infectious Diseases Fellow on-call (UCLA pager (310) 206-8477 #89321). The National Clinician's Post-exposure Hotline can also be consulted for HIV questions at (888-448-4911) www.ucsf.edu/hivcntr.

IMMEDIATE TREATMENT

Percutaneous (needlestick/sharp-object) injury

Briefly induce bleeding from the wound

Wash wound with soap and water, or a disinfectant

Remove any foreign materials embedded in the wound.

Non-intact skin exposure

Wash with soap and running water, or antiseptic, if water is not available.

Mucous membranes exposure:

Irrigate copiously with tap water, sterile saline or sterile water for 10 -15 minutes.

Serious injuries (e.g. lacerations)

Prompt evaluation in the Emergency Room.

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HIV, HEPATITIS B AND HEPATITIS C TESTING OF SOURCE PATIENT

HIV Testing

If warranted by the type of exposure and clinical status of the patient, HIV post-exposure prophylaxis should be initiated without waiting for the results of HIV testing of the source patient.

HIV antibody/p24 antigen testing can be ordered by any provider; turn-around time is 2 – 3 days. Verbal consent must be obtained from the patient or surrogate.

STAT Blood based HIV Rapid testing can be performed 24 hours/day, 7 days/week at the WLA campus **only**. Verbal consent must be obtained from the patient or surrogate. Test results are available 2 – 3 hours after the laboratory receives the blood specimen. This test is only orderable through CPRS order screens for Infectious Diseases, Employee Health and the Emergency Department. **This test should be ordered only in the source patient of a blood/body fluid exposure**

Incompetent patients

Per VA legal counsel, **HIV testing is not an emergency even in the event that a healthcare worker suffers a needlestick injury;** two doctors cannot provide consent on behalf of the patient.

HIV viral load (PCR) testing will not be performed to determine management of the exposed employee unless there is clear clinical evidence of acute HIV infection. Results are not available for at least 5 – 7 days.

Hepatitis B and C testing

Any provider can order tests for Hepatitis B and C

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MANAGEMENT OF EXPOSED EMPLOYEE

Laboratory testing for exposed employee

Baseline tests

HIV testing (voluntary, requires employee consent), Hepatitis B (surface antigen, surface antibody and core antibody), and Hepatitis C testing.

If HIV post-exposure is planned or used:

- Complete blood count, anion-gap panel and metabolic panel (i.e., chemistry panel, glucose and liver function panel).
- Pregnancy testing should be done in all women of child-bearing potential.

Follow-up tests

HIV antibody/p24 antigen tests (with occupational exposure to HIV): baseline and 6 and 12 weeks post-exposure; 12 month follow-up recommended if the healthcare worker (HCW) is exposed to HIV/HCV coinfected patient and becomes HCV-seropositive. To maintain confidentiality, testing should be done through Administrative Medicine.

HBV tests: Baseline HBsAb/HBsAg/HBcAb for healthcare worker and source. If the source patient is HBsAg positive or if the status cannot be obtained, followup testing with HBcAb and HBsAg six months after the exposure should be checked in healthcare workers who are not HBV-immune at the time of exposure (i.e., baseline HbsAb <10 mIU/mL.

HCV tests: HCV antibody test in source, with HCV RNA testing for known positive antibody in the past or with current antibody positive. HCV antibody, ALT at baseline for healthcare workers. For healthcare workers without current HCV infection (baseline hepatitis C antibody test is negative OR baseline hepatitis C antibody test is positive but HCV RNA is negative), follow up testing is warranted if the source patient is HCV RNA positive (even if the HCV RNA level is less than the lower limit of quantitation of the assay). Follow up testing should also be performed if the HCV status of the source patient cannot be adequately assessed (e.g., the source is anti-HCV-positive but the RNA status is unknown or no testing was performed). HCV RNA can be performed 6 weeks after exposure.

If post-exposure prophylaxis (PEP) is used:

- Drug-toxicity monitoring should include a complete blood count, anion-gap panel and metabolic panel ((i.e., chemistry panel, glucose and liver function panel) 2 weeks after starting PEP. If subjective or objective toxicity is noted, dose reduction or drug substitution should be considered with expert consultation, and further diagnostic studies may be indicated.

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Management of exposure to HIV

Risk Stratification:

Infectious fluids: blood, semen, vaginal secretions, and cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids

Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they are visibly bloody

Percutaneous exposure: The overall risk of HIV seroconversion is 0.3% (95% confidence interval, 0.2%–0.5%) following a needlestick injury from a source patient who is HIV-infected.

Mucosal exposure: The risk of HIV seroconversion after a mucosal exposure to infectious fluid is 0.09% (95% confidence interval, 0.006%–0.5%).

Skin contamination: The risk is increased for exposures involving a high titer of HIV, prolonged contact with an infectious fluid, or contact involving an extensive area, or an area in which skin integrity is visibly compromised. For skin exposures without increased risk, the risk for drug toxicity outweighs the benefit of post-exposure prophylaxis.

Risk factors for HIV infection in health-care workers after percutaneous exposure to HIV-infected blood

Risk factor	Adjusted odds ratio*	(95% CI †)
Deep injury	16.1	(6.1–44.6)
Visible blood on device	5.2	(1.8–17.7)
Procedure involving needle placed directly in a vein or artery	5.1	(1.9–14.8)
Terminal illness in source patient (surrogate for high HIV viral load)	6.4	(2.2–18.9)
Post-exposure use of zidovudine	0.2	(0.1– 0.6)

*All were significant at p<0.01. † Confidence interval

While the risk of transmission from an occupational exposure to a source patient with an undetectable serum viral load is thought to be very low, PEP should still be offered.

Results based on a case-control study — France, United Kingdom, and United States, January 1988–August 1994

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Recommendations for use of HIV post-exposure prophylaxis (PEP)

Post-exposure prophylaxis regimens should typically include three active antiretroviral agents

While the risk of transmission from a source patient with an undetectable viral load is very low, PEP should still be offered; infection could be transmitted by cellular virus

Exposure	Source material	Antiretroviral regimen
Percutaneous	HIV-Positive	Recommend PEP
	Source known, but HIV status unknown	Consider PEP if source known to be at high risk
	Unknown source	Consider PEP for select high-risk exposures
	HIV-Negative	No PEP
Mucous membrane or non-intact skin	HIV-Positive	Recommend drug PEP
	Source known, but HIV status unknown	No PEP
	Unknown source	No PEP
	HIV-Negative	No PEP

Source patient with unknown status:

Initiation of post-exposure prophylaxis (PEP) should be decided on a case-by-case basis, based on the exposure risk and likelihood of HIV infection. In 2013, previously unknown HIV infection was diagnosed in approximately 0.1% of persons tested for HIV at GLA.

Especially in a highest or increased risk percutaneous injury, the decision to implement therapy does not require prior proof that the source patient is HIV infected. If additional information becomes available, decisions about PEP can be modified.

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Timing of initiation of HIV post-exposure prophylaxis (PEP):

PEP should be initiated promptly, preferably within 1–2 hours postexposure. Animal studies suggest that PEP probably is not effective when started later than 24–36 hours postexposure.

Initiating therapy after a longer interval (e.g., 1–2 weeks) may be considered for the highest risk exposures; even if infection is not prevented; early treatment of acute HIV infection may be beneficial.

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Antiretroviral regimens for HIV post-exposure prophylaxis (PEP)

Number of agents: post-exposure prophylaxis regimens should typically include three active antiretroviral agents.

Recommended regimen: Once daily tenofovir AF & emtricitabine & bictegravir (Biktarvy™); do not use Biktarvy™ for CrCl< 30.

Alternatives.

- **Preferred alternative:** Once daily Darunavir & cobicistat & tenofovir AF & emtricitabine (Symtuza™ single tablet regimen) do not use if CrCl< 30. Check drug-drug interactions prior to use.

- **Other alternative:** Once daily lamivudine 300 mg (DO NOT USE COMBIVIR™) plus dolutegravir 50 mg (Dovato™ single tablet regimen). Fewer drug-drug interactions and may be used with CrCl < 30.

Antiretroviral resistance and selection of post-exposure prophylaxis

- An HIV strain is more likely to be resistant to a specific antiretroviral agent if it is derived from a patient who has had an HIV viral load > 500 for 3 – 6 months while receiving antiretroviral therapy.
- Assistance from Infectious Diseases should be sought for management of exposure to HIV that is likely to be resistant to one or more anti-retroviral agents.

Contraindicated regimens

- **Abacavir-containing products are CONTRAINDICATED** for use as post-exposure prophylaxis unless B*5701 testing has been previously performed and HLA B*5701 has been shown to be absent. Persons with HLA B*5701 have a 60% risk of developing hypersensitivity reactions which can be severe and fatal. Caution should be taken to not accidentally prescribe TRIUMEQ, which is a combination of dolutegravir with abacavir and lamivudine
- Post-exposure prophylaxis with nevirapine is CONTRAINDICATED. Fatal hypersensitivity reactions can occur.

Pregnancy

- **Efavirenz is a CLASS D AGENT in pregnancy (Positive Evidence of Fetal Risk). Do not use for HIV prophylaxis in pregnancy**, especially during the first trimester or in women of child-bearing potential who are not using effective contraceptives.
- There are no specific contra-indications to the use of other anti-retroviral agents recommended in this document for post-exposure prophylaxis during pregnancy.
- Further information regarding the safety of anti-retroviral agents during pregnancy and the effects of individual agents on the effectiveness of hormonal birth control can be found at http://aidsinfo.nih.gov/guidelines/html/3/perinatal-guidelines/0/.

Breastfeeding: Breast -feeding is not a contraindication to use of post-exposure prophylaxis, given the high risk of mother-to-infant transmission with acute HIV infection during breast-feeding. To completely eliminate risk, discontinuation of breast-feeding can be considered.

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Dosing recommendations, duration of therapy and other medication side effects

The recommended duration of HIV prophylaxis for an exposure to infectious material from an infected patients is 4 weeks (28 days)

Agent	Standard Adult dosage#	Side effects and toxicities
INSTI (integrase strand transfer inhibitor)-based combination therapy		
Biktarvy™ May be taken with or without food	1 tablet once daily (200 mg emtricitabine/25 mg tenofovir alafenamide/50 mg of bictegravir) Avoid if CrCl < 30	Nausea, vomiting, diarrhea; headache; asthenia; flatulence; and renal impairment.
Dovato™	1 tablet once daily	Nausea, vomiting, diarrhea; headache; asthenia; flatulence; and renal impairment. Preferred for patients with CrCl < 30

May be taken with or without food	(50 mg of dolutegravir plus 300 mg of lamivudine)	
PI (protease inhibitor)-based combination therapy		
Darunavir/cobicistat/TAF/FTC (Symtuza®). Take with food	1 tablet once daily 800 mg darunavir/150 mg cobicistat/TAF 10 mg/FTC 200 mg Avoid if CrCl < 30	Diarrhea, nausea, vomiting; asthenia; ↑ transaminases; hyperglycemia; fat redistribution; lipid abnormalities; possible increased bleeding in persons with hemophilia; and pancreatitis

[#] Combination products should be used whenever possible.

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Administrative Issues

All cases requiring post-exposure-prophylaxis (PEP) for HIV or Hepatitis B will have the PEP initiated in Administrative Medicine Section as outlined by the current protocol (see below). **ER staff may prescribe a 7-day supply of anti-retroviral medications.** This prescription does not require approval by Infectious Diseases. However, there must be documentation that this prescription is being given for PEP.

Consult Infectious Diseases service to evaluate all persons receiving postexposure HIV prophylaxis regimens within 7 days of their start, either in clinic or (preferably) via e-consult.

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HIV post-exposure prophylaxis resources and registries

National Prevention Information Network (NPIN)	(800) 458-5231 www.ucsf.edu/hivcntr
Needlestick CDC –	1-888-448-4911, http://www.cdc.gov/niosh/topics/bbp/emergnedl.html

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Post-exposure Prevention of Hepatitis B infection

HBV Vaccination Status	HBsAg+ Source	HBsAg- Source	Source Unknown
Unvaccinated	HBIG x 1, Initiate HBV vaccine series	Initiate HBV vaccine series	Initiate HBV vaccine series
Previously vaccinated			

Known responder	No treatment	No treatment	No treatment
Known non-responder	HBIG x 1 and initiate HBV vaccine series or HBIG x 2	No treatment	IF high risk, treat as if source were HBsAg+
Unknown response	Test for anti-HBs 1. If HBsAb >10 mIU/mL, no RX 2. IF HbsAb <10 mIU/m, HBIG x 1 and vaccine booster	No treatment	Test for anti-HBs 1. If HBsAb >10 mIU/mL, no RX 2. IF HbsAb <10 mIU/m, vaccine booster and check HbSAb titer, HBcAb and HbSag in 1 – 2 months

Known responder: **defined as person with known anti-HBs antibody level of ≥** 10 mIU/mL at any time following vaccination

Known non-responder: **defined as person who has failed to achieve an** anti-HBs antibody level of ≥ **10 mIU/mL to primary vaccination or subsequent booster courses of vaccination.** Persons who do not respond to an initial 3-dose vaccine series should be offered the HEPLISAV-B hepatitis B vaccine.

Risk of infection following percutaneous exposure to HBsAg-positive donor blood**: ~6% if donor blood is HBeAg-negative and 19-37% if donor blood is HBeAg-negative**

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Post-exposure Prevention of Hepatitis C infection*:*

- No post-exposure interventions have been shown to decrease the transmission of Hepatitis C.
- Risk of infection following percutaneous exposure to HCV RNA-positive blood**: 1 – 2%**

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References

1. CDC. Updated US Public Health Service Guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR. 2005; 54:RR-9:1-17.
2. CDC. Case-control study of HIV seroconversion in health-care workers after percutaneous exposure to HIV-infected blood—France, United Kingdom, and United States, January 1988–August 1994. MMWR 1995;44:929–33.
3. Henderson DK, Dembry L, Fishman NO, et al. SHEA Guideline for Management of Healthcare Workers Who Are Infected with Hepatitis B Virus, Hepatitis C Virus, and/or Human Immunodeficiency Virus. Infect Control Hosp Epidemiol. 2010; 31:203-232.
4. HIV prophylaxis following occupational exposure. New York State Department of Health AIDS Institute. http://www.hivguidelines.org/clinical-guidelines/post-exposure-prophylaxis/hiv-prophylaxis-following-occupational-exposure/; updated October 2014, accessed July 3, 2015.

5. Kuhar DT, Henderson DK, Struble KA, et al. Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis. Infect Control Hosp Epidemiol 2013;34(9):875-892
6. Weber DJ. Prevention of hepatitis B virus and hepatitis C virus infection among healthcare providers. UpToDate. https://www.uptodate.com/contents/prevention-of-hepatitis-b-virus-and-hepatitis-c-virus-infection-among-health-care-providers. Updated December 6, 2022, accessed February 24, 2023.

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