Additional Guidance

- PEP should be initiated as soon as possible (i.e., within a few hours rather than days), (but) if appropriate for the exposure, PEP should be started even when the interval since exposure exceeds 36 hours.
- Other considerations (when choosing antiretroviral agents) include pregnancy in the HCW and exposure to virus known or suspected to be resistant to the antiretroviral drugs.
- The National Clinicians' Post-Exposure Prophylaxis Hotline (PEPline) 888-HIV-4911 (448-4911) provides access to experts who provide immediate guidance and PEP recommendations. Phones are answered from 3am - 8pm EST.

For More Information

- Post-Exposure Prophylaxis Registry for Health Care Workers: 888-PEP-4HIV (737-4448)
- Antiretroviral Pregnancy Registry: 800-258-4263
- Food and Drug Administration (FDA), for reporting unusual or severe toxicity to antiretroviral agents: 800-332-1088
- Centers for Disease Control (CDC), for reporting HIV seroconversions in health care workers who received PEP: 404-639-6425

REMEMBER: Protect yourself. Report all exposures to employee health and/or your supervisor.

To order additional copies: ***866-352-2382***
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National Clinicians' Post-Exposure Prophylaxis Hotline

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National Perinatal HIV Consultation and Referral Service
888-HIV-8765 (448-8765)

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Post-Exposure Prophylaxis (PEP)

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This card summarizes the guidelines for the management of occupational exposures to HIV, hepatitis B, and hepatitis C including recommendations for post-exposure prophylaxis. Non-occupational post-exposure guidelines are also summarized. It is intended to guide initial decisions about PEP and should be used in conjunction with other guidance provided in the full reports. View the full reports at *http://www.aidsinfo.nih.gov*

Management of Exposures

Requires immediate reporting so health care worker (HCW) can be evaluated, tested, and provided with appropriate post-exposure prophylaxis if indicated.

Treatment of Exposure Site

- Wash wounds and skin sites with soap and water
- Flush mucous membranes with water
- Use of antiseptics not contraindicated but no evidence that it will further reduce risk of transmission
- Application of caustic agents (i.e. bleach) not recommended

Evaluation of Exposure

Type of exposure
- Percutaneous injury
- Mucous membrane exposure
- Nonintact skin exposure
- Bites resulting in blood exposure

Type and amount of fluid/tissue
- Blood
- Fluids containing blood
- Potentially infectious fluid or tissue (semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids)
- Direct contact with concentrated virus

Susceptibility of exposed HCW
- HBV vaccine and response status
- HBV, HCV, and HIV status

Evaluation of exposure source
- Test known sources for HBsAg, HCV antibody, and HIV antibody
- Direct virus assays for routine screening of source patients are not recommended
- Consider use of rapid HIV antibody test
- If the source is not infected with a bloodborne pathogen, further follow-up is not recommended
- If infection status remains unknown, consider medical diagnoses, clinical symptoms, and risky behaviors
- For unknown sources, consider likelihood of exposure to a source at high risk for infection

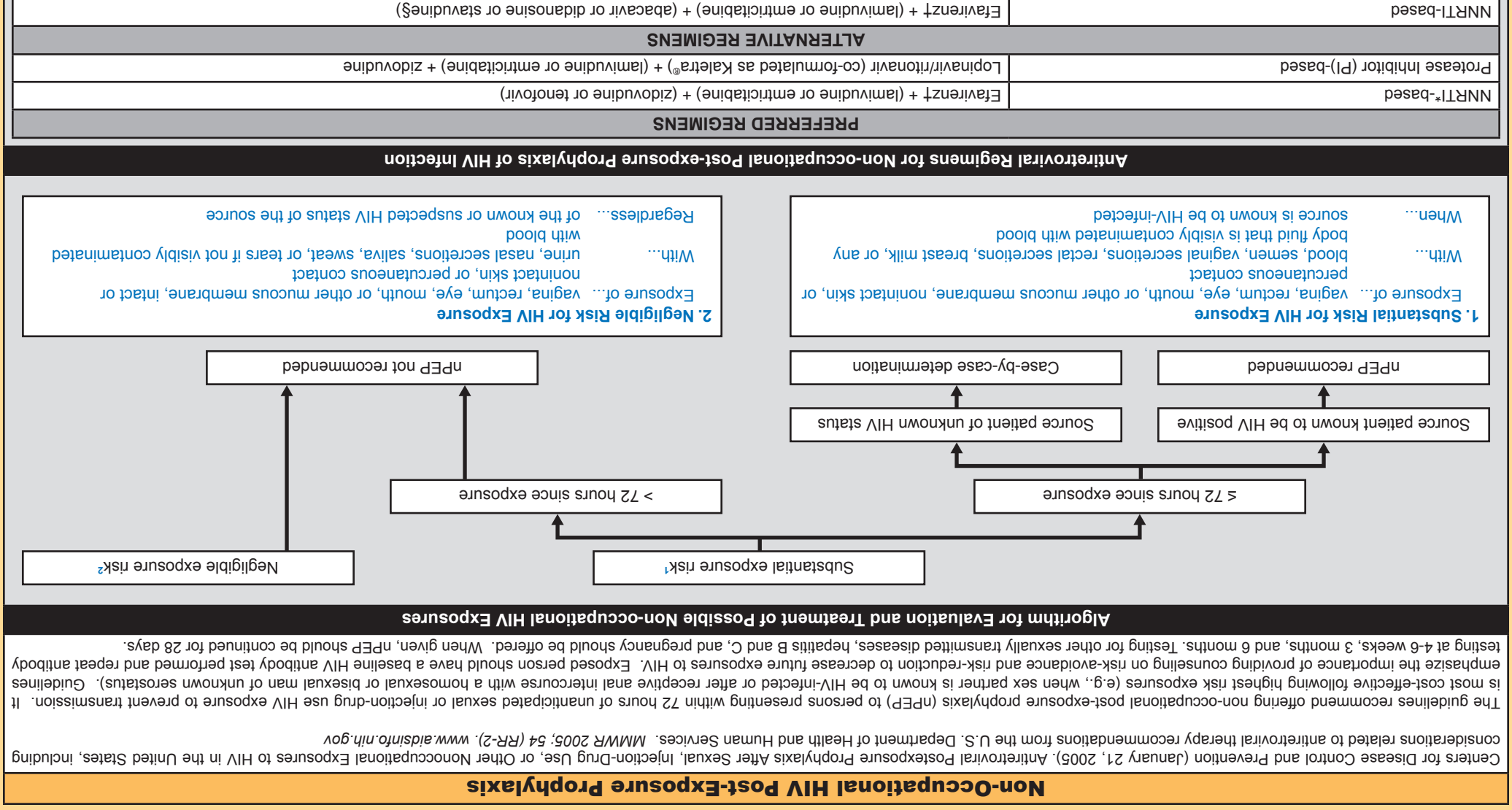
Recognizing the rapid changes that occur in this field, clinicians are encouraged to consult with their local experts or research the literature for the most up-to-date information to assist in individual treatment decisions for their patient.

Non-Occupational HIV Post-Exposure Prophylaxis

Centers for Disease Control and Prevention (January 21, 2005). Antiretroviral Postexposure Prophylaxis After Sexual, Injection-Drug Use, or Other Nonoccupational Exposures to HIV in the United States, including considerations related to antiretroviral therapy recommendations from the U.S. Department of Health and Human Services. *MMWR 2005; 54 (RR-2). www.aidsinfo.nih.gov*

The guidelines recommend offering non-occupational post-exposure prophylaxis (nPEP) to persons presenting within 72 hours of unanticipated sexual or injection-drug use HIV exposure to prevent transmission. It is most cost-effective following highest risk exposures (e.g., when sex partner is known to be HIV-infected or after receptive anal intercourse with a homosexual or bisexual man of unknown serostatus). Guidelines emphasize the importance of providing counseling on risk-avoidance and risk-reduction to decrease future exposures to HIV. Exposed person should have a baseline HIV antibody test performed and repeat antibody testing at 4-6 weeks, 3 months, and 6 months. Testing for other sexually transmitted diseases, hepatitis B and C, and pregnancy should be offered. When given, nPEP should be continued for 28 days.

Algorithm for Evaluation and Treatment of Possible Non-occupational HIV Exposures



Antiretroviral Regimens for Non-occupational Post-exposure Prophylaxis of HIV Infection

PREFERRED REGIMENS	
NNRTI*-based	Efavirenz† + (lamivudine or emtricitabine) + (zidovudine or tenofovir)
Protease Inhibitor (PI)-based	Lopinavir/ritonavir (co-formulated as Kaletra®) + (lamivudine or emtricitabine) + zidovudine
ALTERNATIVE REGIMENS	
NNRTI-based	Efavirenz† + (lamivudine or emtricitabine) + (abacavir or didanosine or stavudine§)
Protease Inhibitor (PI)-based	Atazanavir + (lamivudine or emtricitabine) + (zidovudine or stavudine or abacavir or didanosine or tenofovir‡)
	Fosamprenavir ± ritonavir + (lamivudine or emtricitabine) + (zidovudine or stavudine or abacavir or tenofovir or didanosine)
	Indinavir/ritonavir¶** + (lamivudine or emtricitabine) + (zidovudine or stavudine or abacavir or tenofovir or didanosine)
	Lopinavir/ritonavir (co-formulated as Kaletra®) + (lamivudine or emtricitabine) + (stavudine or abacavir or tenofovir or didanosine)
	Nelfinavir + (lamivudine or emtricitabine) + (zidovudine or stavudine or abacavir or tenofovir or didanosine)
	Saquinavir (hgc* or tablet)/ritonavir¶ + (lamivudine or emtricitabine) + (zidovudine or stavudine or abacavir or tenofovir or didanosine)
Triple NRTI*	Abacavir + lamivudine + zidovudine (only when an NNRTI- or PI-based regimen cannot or should not be used)

* NNRTI = non-nucleoside reverse transcriptase inhibitor; hgc = hard-gel saquinavir capsule (Invirase®); NRTI = nucleoside reverse transcriptase inhibitor.
† Efavirenz should be avoided in pregnant women and women of childbearing potential.
§ Higher incidence of lipoatrophy, hyperlipidemia, and mitochondrial toxicities associated with stavudine than with other NRTIs.
‡ Use ritonavir-boosted atazanavir regimen when combined with tenofovir (atazanavir 300 mg qd + ritonavir 100 mg qd).
¶ Low-dose ritonavir for boosting. See Basic and Expanded Post-Exposure Prophylaxis Regimens table on the reverse side of card.
** Use of ritonavir with indinavir might increase risk for renal adverse events.

HIV Post-Exposure Prophylaxis for Health Care Workers

U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV, Hepatitis B, and Hepatitis C, September 30, 2005. *www.aidsinfo.nih.gov*

Step 1: Evaluation of Exposure

Is the source material blood, blood fluid, other potentially infectious material (OPIM), or an instrument contaminated with one of these substances?
(OPIM = Semen or vaginal secretions; cerebrospinal, synovial, pleural, peritoneal, pericardial, or amniotic fluids; or tissue)

- Yes → **What type of exposure has occurred?**
  - Mucous membrane or skin, integrity compromised → Volume
    - **Small** (e.g., few drops, short duration)
    - **Large** (e.g., several drops, major blood splash and/or longer duration - several minutes or more)
  - Intact skin only[1] → No PEP needed
  - Percutaneous exposure → Severity
    - **Less Severe** (e.g., solid needle, superficial scratch)
    - **More Severe** (e.g., large-bore hollow needle, deep puncture, visible blood on device, or needle used in source patient's artery/vein)
- No → No PEP needed

Step 2: Determine the HIV Status of the Source

What is the HIV status of the exposure source?

- HIV Negative → No PEP needed
- HIV Positive
  - **Lower Titer Exposure** (e.g., asymptomatic or known low viral load (< 1500 copies/mL)) → HIV Positive Class 1[2]
  - **Higher Titer Exposure** (e.g., advanced AIDS, primary HIV infection, high viral load) → HIV Positive Class 2[2]
- Status Unknown
- Source Unknown

1. Skin integrity is considered compromised if there is evidence of chapped skin, dermatitis, abrasion, or open wound.
2. If drug resistance is suspected, obtain expert consultation. Initiation of PEP should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

Step 3: Determine the Post-Exposure Prophylaxis Recommendation[3]

EXPOSURE TYPE	HIV POSITIVE CLASS 1	HIV POSITIVE CLASS 2
Percutaneous - Less Severe	Recommend Basic Regimen	Recommend Expanded Regimen
Percutaneous - More Severe	Recommend Expanded Regimen	Recommend Expanded Regimen
Mucous Membrane/Nonintact Skin - Small Volume	Consider Basic Regimen	Recommend Basic Regimen
Mucous Membrane/Nonintact Skin - Large Volume	Recommend Basic Regimen	Recommend Expanded Regimen

3. **Source of unknown HIV status:** PEP generally not warranted; consider basic regimen for source with HIV risk factors. **Unknown source:** PEP generally not warranted; consider basic regimen where exposure to HIV-infected person likely

Basic and Expanded Post-Exposure Prophylaxis Regimens (All regimens are for 28 days)[4]

REGIMENS	COMMENTS	DOSAGE FORM
Basic Regimens		
(Zidovudine 300 mg bid with food or Tenofovir DF 300 mg qd) + (Lamivudine 300 mg qd or 150 mg bid or emtricitabine 200 mg qd); Combivir® 1 tab bid; Truvada® 1 tab qd.	Experience with AZT in PEP regimens; serious toxicity rare for PEP; nausea and fatigue common; probably safe in pregnancy; source patient may have resistant virus. FTC may cause ↑ pigmentation palms/soles in dark-skinned persons, esp. African-Americans and Hispanic. FTC same resistance and safety as 3TC. ↑ TDF concentration with atazanavir and lopinavir/ritonavir, monitor for TDF toxicity. Due to ↓ in ATV levels, boosted ATV regimen recommended with TDF (ATV 300 mg qd + RTV 100 mg qd). Truvada® may be better tolerated than Combivir®.	Zidovudine (Retrovir®, AZT, ZDV) : 100 mg capsules, 300 mg tablets, 10 mg/mL syrupTenofovir DF (Viread®, TDF): 300 mg tab Lamivudine (Epivir®, 3TC): 150 mg or 300 mg tablets, 10 mg/mL oral solution Emtricitabine (Emtriva®, FTC): 200 mg caps and 10 mg/mL oral solution (note: adult dose of solution is 240 mg (24 mL) po qd) Combivir® (AZT + 3TC) tablets: each tab contains 300 mg AZT and 150 mg 3TC Truvada® (TDF + FTC) tablet: each tab contains 300 mg TDF and 200 mg FTC
Alternate Basic Regimens		
(Lamivudine 300 mg qd or 150 mg bid or Emtricitabine 200 mg qd) + Stavudine 40 mg (30 mg if < 60 kg and 20-30 mg if toxicity occurs) bid	Generally well-tolerated; serious toxicity rare; patient may have resistant virus; neuropathy or lactic acidosis may occur	Lamivudine: see above Emtricitabine: see above Stavudine (Zerit®, d4T): 15, 20, 30, 40 mg caps; 1 mg/mL oral solution
Didanosine 400 mg qd (250 mg if < 60 kg) on an empty stomach + (3TC or FTC) same dose as above	Diarrhea (more common with Non-EC dosage forms); neuropathy, lactic acidosis, or pancreatitis may occur; serious toxicity rare; patient may have resistant virus; can be taken without regard to meals when combined with tenofovir. Combination often recommended when resistant virus is suspected or documented (seek expert consultation).	Didanosine (Videx®, Videx EC®, ddI): 125, 200, 250, 400 mg caps (Videx EC®; preferred form); 25, 50, 100, 150, 200 mg buffered chewtabs (no longer available in the U.S.); or 10 mg/mL oral solution (Videx®, must use 2 tabs for each dose) Lamivudine: see above Emtricitabine: see above
Preferred Expanded Regimens – Basic or Alternate Basic Regimen plus:[5]		
Lopinavir/ritonavir 400 mg LPV/100 mg RTV (2 tabs) bid	Generally well-tolerated; potential for serious or life-threatening drug interactions; hyperlipidemia can be severe; GI adverse effects common; take solution with food	Lopinavir/ritonavir (Kaletra®, LPV/RTV): 200 mg LPV/50 mg RTV per tab; 400 mg LPV/100 mg RTV per 5mL oral solution
Alternate Expanded Regimens – Basic or Alternate Basic Regimen plus:[5]		
Atazanavir ± ritonavir; ATV 400 mg qd with food; when used in combination with TDF, use boosted ATV regimen (ATV 300 mg qd + RTV 100 mg qd with food)	Generally well-tolerated; hyperbilirubinemia/ jaundice common; potential for serious or life-threatening drug interactions; do not use with proton pump inhibitors, separate antacids by 2 hours, H-2 blockers by 12 hours; Use caution with ATV and drugs that cause PR prolongation (e.g., diltiazem), must avoid this drug during late pregnancy	Atazanavir (Reyataz®, ATV) 150 mg or 200 mg caps Ritonavir (RTV, Norvir®): 100 mg caps, 80 mg/mL oral solution
Fosamprenavir ± ritonavir; fos-APV 1400 mg bid (without RTV) or fos-APV 1400 mg qd + RTV 200 mg qd or fos-APV 700 mg bid + RTV 100 mg bid	GI adverse effects common; rash; potential for serious or life-threatening drug interactions; do not coadminister with oral contraceptives	Fosamprenavir (Lexiva®, fos-APV): 700 mg tabs Ritonavir: see above
Indinavir ± ritonavir; IDV 800 mg bid + RTV 100 mg bid without regard to food (preferred dosing) or IDV 800 mg q8h on an empty stomach	Serious toxicity (e.g. nephrolithiasis) possible; consumption of 8 glasses of fluid/day required; hyperbilirubinemia common, must avoid this drug during late pregnancy; potential for serious or life-threatening drug interactions; separate dosing 1 hour from antacids or ddI (non-EC forms)	Indinavir (Crixivan®, IDV): 100, 200, 333, 400 mg caps Ritonavir: see above
Saquinavir 1000 mg bid + ritonavir 100 mg bid with food	GI adverse effects common; potential for serious or life-threatening drug interactions	Saquinavir (Invirase®, SQV): 200 mg caps, 500 mg tabs Ritonavir: see above
Nelfinavir 1250 mg po bid with meal or light snack	Diarrhea; potential for serious or life-threatening drug interactions	Nelfinavir (Viracept®, NFV): 250 mg or 625 mg tabs
Efavirenz 600 mg qhs	Rash can be severe and difficult to differentiate from acute seroconversion; CNS side effects; teratogenic, do not use during pregnancy; potential for serious or life-threatening drug interactions	Efavirenz (Sustiva®, EFV): 50, 100, 200 mg caps, 600 mg tabs

4. Use of qd regimens may improve adherence to PEP
5. Most expanded regimens interact with combination oral contraceptives; instruct patients to use barrier or alternate method of birth control

Post-Exposure Prophylaxis for Hepatitis B Virus

Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis – June 29, 2001. Available online at *www.aidsinfo.gov*

Management of Exposures to HBV

- Any blood or body fluid exposure to an unvaccinated person should lead to the initiation of the hepatitis B vaccine series
  - Recombivax HB® 10 mcg or Energix-B® 20 mcg IM at 0, 1, and 6 months
- When Hepatitis B Immune Globulin (HBIG) is indicated, it should be administered as soon as possible after the exposure (preferably within 24 hours, but is recommended up to 1 week following an occupational exposure)
  - Hepatitis B vaccine can be administered simultaneously with HBIG but at a separate site
- Test for anti-HBs 1-2 months after last dose of vaccine[1]

VACCINATION/AB RESPONSE OF WORKER	TREATMENT		
	Source HBsAg (+)	Source HBsAg (-)	Source unknown or not available for testing
Unvaccinated	HBIG (0.06 mL/kg IM) x 1 and vaccinate	Vaccinate	Vaccinate
Vaccinated-responder[1]	No PEP	No PEP	No PEP
Vaccinated-nonresponder	HBIG (0.06 mL/kg IM) x 1 and revaccinate or HBIG (0.06 mL/kg IM) x 2 (at time of exposure and 1 month after exposure)	No PEP	If known high risk treat as HBsAg (+)
Vaccinated-Ab response unknown	Test exposed person for anti-HBs 1. If adequate, no PEP necessary 2. If inadequate, administer HBIG x 1 and vaccine booster	No Treatment	Test exposed person for anti-HBs 1. If adequate, no PEP necessary 2. If inadequate, give vaccine booster and recheck titer in 1-2 months

1. Adequate anti-HBs[3] 10 mIU/mL

Post-Exposure Management for Hepatitis C Virus

Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis – June 29, 2001. Available online at *www.aidsinfo.gov*

Management of Exposures to HCV

- Perform testing for anti-HCV for the source
- Perform baseline testing for anti-HCV and ALT activity for the exposed person
- Perform follow-up testing
  - Anti-HCV and ALT activity at 4-6 months or
  - HCV RNA by PCR at 4-6 weeks for earlier detection
- Confirm anti-HCV results reported positive by enzyme immunoassay with supplemental test [e.g. recombinant immunoblast assay (RIBA) or HCV RNA by PCR]

Post-Exposure Management for HCV

- No regimen proven beneficial for PEP
- Early identification of chronic disease and referral for management
- Immediately refer HCW to hepatitis C specialist for management