BRITISH COLUMBIA
CENTRE *for* EXCELLENCE
in HIV/AIDS

BRITISH COLUMBIA CENTRE FOR EXCELLENCE IN HIV/AIDS (BC-CfE)

HIV Post-Exposure Prophylaxis (PEP) Guidelines

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Introduction

- This guideline is intended to guide health care providers caring for persons who have experienced significant exposure to blood and/or body fluids in the work place or community setting. The risk of HIV acquisition from a given exposure depends on the likelihood the source has transmissible HIV infection, and the biological risk of HIV transmission based on the exposure that has occurred.
- This guideline is designed to deal specifically with exposures to Human Immunodeficiency Virus (HIV) and is not applicable to other exposures such as viral hepatitis.
- This guideline provides a framework for a program of expert advice and prompt antiretroviral post-exposure prophylaxis (PEP) for potential exposures to HIV.

The BC-CfE provides publicly funded antiretroviral drugs for prophylaxis of HIV exposures where it is medically indicated with a favourable risk/benefit ratio. The risk of becoming infected with HIV (which is generally extremely small from a single event) needs to be weighed against the potential risk of taking PEP [1, 2]. A 28-day course of three-drug combination antiretroviral therapy is the current standard of care for PEP [1,2]. Studies show that when antiretroviral therapy is offered in a timely manner (within 72 hours) after an HIV exposure, the risk of acquiring HIV decreases by approximately 80% [3].

The BC-CfE provides 5-day starter kits of antiretroviral PEP in all emergency rooms in BC, and outpost nursing stations and provincial prisons. It is recommended that the 5-day starter kit be initiated within two hours of the potential exposure event, if at all possible. The remaining 5 days can be used to seek more information to help assess the risk of the specific exposure and the need for continuing PEP. If needed, the remaining 23 days of treatment will be dispensed by the BC-CfE pharmacy in consultation with a BC-CfE physician.

Inquiries about the PEP program should be directed to the **BC-CfE Pharmacy: 1-888-511-6222.**

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1. Goal

To **reduce the risk of HIV transmission** to persons following exposure to blood or body fluids.

Health care providers caring for persons exposed to blood or body fluids should assess the risk of exposure to other pathogens including hepatitis B and hepatitis C viruses, and manage patients according to the recommendations of the BC Centre for Disease Control (www.bccdc.ca).

Sexual exposures may also result in the transmission of other sexually transmitted infections (STIs), e.g. viral hepatitis, syphilis, chlamydia, gonorrhea. Guidelines for the managements of persons exposed to STIs are available from the BC Centre for Disease Control (http://www.bccdc.ca). For other considerations in cases of sexual assault, refer to the BC Women's Sexual Assault Service (http://www.bcwomens.ca/health-professionals/professional-resources/sexual-assault-service-resources).

2. Definitions

2.1. Potential exposure to HIV

An event where blood or other potentially infectious body fluid from an infectious (or a potentially infectious) source comes into contact with

- subcutaneous tissue (via percutaneous exposure, by either by a needlestick or a cut with a sharp object)
- mucous membranes (eye, mouth, nose, vaginal, or anorectal)
- non-intact skin
    - Healing wound (<3 days old)
    - Skin lesion causing disruption of the epidermis

2.2. Infectious body fluids (capable of transmitting HIV)

- Blood
- Any body fluid visibly contaminated with blood
- Semen
- Vaginal/rectal secretions
- Cerebrospinal fluid (CSF); amniotic, pleural, pericardial, peritoneal and synovial fluids and inflammatory exudates
- Tissue or organs e.g. transplantation
- Breast milk

2.3. Non-infectious body fluids (unless bloody)

(Not implicated in the transmission of HIV unless visibly bloody)

- Stool, urine, tears, saliva, nasal secretions, vomitus, sputum, sweat

2.4. Infectious/potentially infectious source person

2.4.1. Source known to be HIV positive

- The risk of HIV transmission is directly related to the HIV viral load (level of HIV viral particles in the blood) of the source.
- The risk is lower if the HIV-positive source is receiving effective antiretroviral therapy and has a consistently (i.e. in at least two consecutive measurements) undetectable plasma viral load (<40 copies/mL) [4-10].
- Given that this information may not be readily available in an emergency situation, to prevent delays in starting PEP, it is recommended that the 5-day starter kit be provided in all cases of significant exposure to infectious body fluid from an HIV positive source. The need for continuation of PEP will be reassessed by the BC-CfE physician on call for PEP.

2.4.2 Source known to be at high risk of being HIV positive

- People who inject drugs (PWID)
- Men who have sex with men (MSM)
- Persons who have had multiple transfusions of blood or blood products (e.g. hemophiliacs) prior to November 1985
- Sexual partners of persons known to be HIV positive, or at high risk of being HIV positive

2.4.3 Unknown source

- Will be assessed on a case-by-case basis
- The risk of HIV infection is negligible from an abandoned needle outside the health care setting when there is no history of the origin of the needle or the time of its abandonment [11-13]. PEP is not recommended for needlesticks from an abandoned needle. If it is felt that exceptional circumstances could merit PEP for such an event (e.g. significant exposure in a setting where there is active injection drug use), the health care provider should contact the BC-CfE Pharmacy (1-888-511-6222) for expert advice.

3. Procedures for Risk Assessment

3.1 Introduction

If antiretrovirals are indicated for PEP, they are most effective if initiated **within two hours, and not more than 72 hours**, after exposure. Therefore, the health care provider should complete a risk assessment of the exposure **as soon as possible** after presentation.

The risk assessment should include:
- Assessment of the exposed person
- Assessment of the event and nature of exposure
- Assessment of the source person(s)

The Risk Assessment Stratification Protocol (RASP) is a useful tool for estimating the risk of HIV infection for occupational exposures and to help guide decisions regarding the need for PEP based on the above information (https://www.mdcalc.com/hiv-needle-stick-risk-assessment-stratification-protocol-rasp) [14]. PEP is generally indicated if the risk level is 1/1000 (0.1%) or greater, and not indicated if the risk level is 1/100,000 (0.001%) or less. For intermediate levels of risk, PEP maybe considered on a case-by-case basis.

3.2 Assessment of exposed person

- Perform **baseline HIV serology** (HIV Ag/Ab testing) in all exposed persons not previously known to be HIV positive. If exposed person is known to be HIV positive, PEP is not indicated, and he or she should be referred for appropriate follow-up and treatment.
- If exposed person is at high risk of already being HIV positive, perform HIV point-of-care test, if available. If the exposed person is in a high risk group and history suggests potential acute HIV infection (symptoms[1] suggestive of acute HIV infection within the previous 6 weeks and history of high-risk unprotected sex or needle-sharing in the previous month), a nucleic acid amplification test (NAAT) for HIV RNA is recommended in addition to the standard HIV Ag/Ab assay. Although 4th generation Ag/Ab screening identifies most acute HIV cases, the NAAT has slightly higher sensitivity and will become positive a few days earlier. This test can be arranged by contacting the medical microbiologist at the BC Centre for Disease Control (BCCDC) *(604-661-7033).* When available, an HIV point-of-care test can be performed, and if positive, consultation with a BC-CfE physician should be undertaken prior to proceeding with prophylaxis.
- PEP should not be withheld pending the results of the HIV Ag/Ab assay or the pooled NAAT.

[1] Flu-like or mononucleosis-like illness, with or without a rash; see also www.hivguidelines.org/adult-hiv/testing-diagnosis/acute/#tab_1_0

- Perform baseline complete blood count (CBC) and differential, and creatinine with estimated glomerular filtration rate (eGFR) before starting PEP. If PEP is indicated, do not delay starting PEP while waiting for lab results.
- Perform serologic tests for hepatitis B virus (HBsAg, anti-HBc total, anti-HBs) and hepatitis C virus (anti-HCV)
- Assess for other sexually transmitted infections (gonorrhea, chlamydia, syphilis), if appropriate (http://www.bccdc.ca)
- If exposed person is female, determine whether she is or may be pregnant; if uncertain, do pregnancy test. If the exposed person is pregnant and the exposure is assessed to carry a significant risk of HIV transmission, contact the BC-CfE Pharmacy *(1-888-511-6222)* as soon as possible. If there has been a significant exposure, PEP should be started with the existing kit.

3.3 Assessment of event/exposure type (see Table 1 on page 9)
Some factors which can influence the risk of transmission include:

- In percutaneous exposure (via needle or other sharp object):
    - Solid device vs. hollow needle and gauge size
    - Visible blood on device and/or device previously in source's artery or vein
    - Depth of wound
    - Use of gloves by the exposed person
- In sexual exposures:
    - The presence of a sexually transmitted infection (especially genital ulcer disease) in either the source or the exposed individual
    - Circumcision status for insertive male partners
    - Condom use
    - Degree of physical injury (e.g. mucosal or skin break) associated with the sexual act
- In other types of events (e.g. splashes):
    - Type of fluid
    - Volume of fluid
    - Duration of exposure

Table 1: Estimated risk of HIV transmission by exposure type from known HIV positive source with detectable viral load

Exposure	Estimated Risk per 10,000 acts (95% Confidence Interval)	Estimated risk per act/event
Hollow Bore Needlestick injury[1]	23 (0-46)	0.23%
Needle sharing – injection drug use	63 (41-92)	0.63%
Occupational Mucous membrane exposure[2]	9 (0.6-50)	0.09%
Penile-vaginal intercourse – risk to insertive partner	4 (1-14)	0.04%
Penile-vaginal intercourse – risk to receptive partner	8 (6-11)	0.08%
Anal intercourse (risk to insertive partner)	11 (4-28)	0.11%
Anal intercourse (risk to receptive partner)	138 (102-186)	1.38%
Oral intercourse (risk to either partner)	Low (0-4)	Low

1. Risk probably lower with cuts or punctures involving solid objects (vs. hollow bore needle)
2. Risk probably lower for exposures involving non-intact skin (vs. mucous membranes)

Transmission risk increased by high plasma viral load or acute or late-stage HIV in the source.
Transmission risk in sexual exposures increased by genital ulcer disease, and decreased by male circumcision or condom use.

References:

Ippolito G, Puro V, de Carli G, and the Italian Study Group on Occupational Risk of HIV Infection. *Arch Intern Med* 1993;153:1451-1458.

Patel P, Borkoff CB, Brooks JT, et al. Estimating per-act transmission risk: a systematic review.*AIDS* 2014;28:1509-1519.

3.4 Assessment of source person

In all cases where the source person is known and available (either in person or by phone), the health care provider assessing the exposure event should seek verbal consent from the source person for the BC-CfE pharmacist or physician to access to their medical records that are directly relevant to assessing the risk of HIV transmission to the exposed person (e.g. results of recent HIV Ag/Ab testing or HIV viral load testing if source is known to be HIV+) and tailoring the PEP regimen if necessary (e.g. past and current antiretroviral use and results of drug resistance testing, if source is known to be HIV+); and for the BC-CfE to share this information with other health care providers directly involved in management of the event (e.g. the BC-CfE physician on call for PEP). Verbal consent for such access should be obtained directly from the source person and documented in the medical record of the exposed person.
The source's medical records cannot be accessed in situations where the source has not provided verbal consent for such access, and/or the consent has not been documented.

3.4.1 Source person known to be HIV positive

3.4.1.1 HIV positive source <u>not</u> receiving antiretroviral therapy

- The risk of HIV transmission from an HIV positive source person not currently receiving antiretroviral therapy will depend on the type of exposure that has occurred. In general, significant exposures to blood or potentially infectious bodily fluids would warrant initiation of prophylaxis in this setting.
- If the source person consents to having his or her medical records accessed, contact the BC-CfE Pharmacy *(1-888-511-6222)* as soon as possible. However, <u>start PEP immediately</u> while making these arrangements or if access is not granted.

3.4.1.2 HIV positive source person receiving antiretroviral therapy

- The risk of HIV transmission from an HIV positive source person who is receiving antiretroviral therapy is reduced, in relation to the viral load of the source. If the source's viral load is currently and consistently fully suppressed, the risk of transmission from a single sexual exposure may be negligible [4-7]. Undetectable viral load in the source may also reduce the risk of HIV transmission in percutaneous exposures involving blood-to-blood contact [8-10] , but the risk may still be significant in such cases; persistence of HIV in latently infected cells has been demonstrated in patients receiving antiretroviral therapy, despite absence of cell-free virus in the peripheral blood (as measured by viral load)[1].
- If the source consents to do so, blood work should be obtained in order to confirm ongoing viral load suppression.

- If the source person consents to having his or her medical records accessed, contact the BC-CfE Pharmacy *(1-888-511-6222)* as soon as possible. However, start PEP immediately while making these arrangements or if access is not granted.

3.4.2 Source known but HIV status unknown

3.4.2.1 Source available for HIV testing

- If the source person is available for interview, additional information about risk history can be obtained and permission for baseline testing can be requested to assist in determining the likelihood of HIV exposure. If available and the source person agrees, an HIV point-of-care test can be performed at this time.
- If the source person's baseline HIV test is negative, prophylaxis is not required. "Investigation of whether a source patient might be in the window period is unnecessary for determining whether HIV PEP is indicated unless acute retroviral syndrome is clinically suspected." [1] In circumstances where the source is known to be in a high risk group and has symptoms[2] suggestive of acute HIV infection , an HIV NAAT test should be requested, in conjunction with the standard HIV Ag/Ab assay, by contacting the medical microbiologist at the BC Centre for Disease Control (BCCDC) *(604-661-7033)*, and prophylaxis should be started or continued (if exposure type warranted initiation) until both results are confirmed to be negative.
- Ensure appropriate follow-up for the source person to obtain their test results through their family physician or other identified follow-up health care provider.
- RESULTS OF SOURCE TESTING CANNOT BE DISCLOSED TO THE EXPOSED INDIVIDUAL. THEY CAN BE INFORMED ONLY OF THE RECOMMENDATIONS FOR NEED FOR ONGOING PEP.

3.4.2.2 Source not available for HIV testing

- When the source is unavailable or declines HIV testing, the risk of HIV exposure can be roughly be estimated using community prevalence estimates of HIV within a particular risk group within British Columbia (see Appendix I, page 23), and the type of exposure that has occurred.
- Groups considered to be at potentially higher risk for HIV infection are shown in section 2.4.2.
- Those with an exposure type associated with increased HIV transmission (see Table 1, page 9), and source belonging to a high-risk group should be offered PEP.

[2] Flu-like or mononucleosis-like illness, with or without a rash; see also www.hivguidelines.org/adult-hiv/testing-diagnosis/acute/#tab_1_0

3.4.3 Unknown source

In settings where the source identity is unknown, HIV risk may be inferred by the potential likelihood of HIV within the risk group of the source, if known (See Appendix I, page 23).
The risk of HIV infection is negligible from an abandoned needle outside the health care setting when there is no history of the origin of the needle or the time of its abandonment [11-13]. PEP is not recommended for needlesticks from an abandoned needle. If it is felt that exceptional circumstances could merit PEP for such an event (e.g. significant exposure in a setting where there is active injection drug use), the health care provider should contact the BC-CfE Pharmacy (1-888-511-6222) for expert advice.

4. Specimen handling and management of test results

Specimens from the source and the exposed person should be accompanied by the Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition form (HLTH 2339).
Specimens drawn from the source should be clearly identified on the requisition as coming from a potential HIV exposure episode so rapid turnaround (24-48 hours) can be achieved by the laboratory.
Direct communication with the laboratory is desirable. The specimens can be sent to:

- UBC Virology Laboratory at St. Paul's Hospital *(604-806-8420)*
- PHSA-BCCDC laboratory *(1-877-747-2522 or 604-707-2819)*
- On Vancouver Island, send specimens to Victoria General Hospital laboratory *(250-727-4212)*

An on-call medical microbiologist is available after-hours to facilitate shipment, testing, and reporting of results *(604-661-7073).*

It should be made clear to the lab and to the exposed person who is to receive test results. The exposed person is entitled to know if continued prophylaxis is required or not: no information regarding the source should be provided to the exposed person.

Ensure appropriate follow-up for the source person to obtain their test results through their primary care provider, admitting physician or other identified follow-up health care provider.

When the results of HIV testing are known, the risk assessment should be re-evaluated.

If the source person's HIV test result is negative, continued prophylaxis is not required. Third- and fourth-generation HIV tests, including point-of-care tests, currently in use in BC become positive a median of 18 days (range 17-22 days) after infection and have increased the diagnostic yield for early acute HIV [15-17].

5. Management Recommendations

A 28-day course of antiretrovirals is recommended for significant exposure to blood, or other potentially infectious body fluids of a person known to be HIV positive, or at high risk for HIV, when that exposure represents a substantial risk for transmission, and when the person seeks care within 72 hours of exposure [1,2].

Summary of Management Recommendations for HIV Exposures

Significant risk of HIV transmission

Material to which exposure has occurred is blood or a potentially infectious body fluid capable of transmitting HIV (semen, vaginal secretions, or any body fluid that is visibly contaminated with blood)
AND
Percutaneous exposure, or
Mucous membrane or non-intact skin exposure, or
Sexual exposure (vagina or rectum)
AND
Source is known to be HIV positive or known to be at a high risk for HIV infection
↓
Initiate PEP starter kit:
Tenofovir DF 300 mg once a day
Lamivudine 150 mg twice a day
Raltegravir 400 mg twice a day
Arrange for followup with primary care provider who will consult the BC-CfE Pharmacy to evaluate need for full 28-day course of PEP

Negligible risk of HIV transmission

Material to which exposure has occurred is a body fluid not known to transmit HIV (urine, nasal secretions, saliva, sweat, or tears if not visibly bloody)
OR
An event not known to transmit HIV (e.g. contact with intact skin; superficial scratches that do not bleed; bites unless there is blood in the mouth of the biter)
OR
Source known to be HIV negative or at low risk of HIV infection
↓
PEP NOT recommended.
Consult with BC-CfE if an unusual exposure has occurred.

If uncertain whether to initiate PEP, consult the BCCfE Pharmacy *(1-888-511-6222).*

5.1 Negligible risk of transmission

- No PEP is recommended.
- The treatment of a high anxiety level in the exposed person is reassurance, counselling, and education, not antiretrovirals. PEP carries certain risks and should be provided for medical indications only.

- Anxiety in this situation can be extremely high and the exposed person should be counselled thoroughly by someone familiar with this type of event and, if necessary, referred for professional counselling.

5.2 Significant risk of transmission

- Assess baseline risk of HIV in the exposed person and perform **baseline HIV Ag/Ab test**
- Baseline lab work for PEP (CBC and differential, creatinine and eGFR), viral hepatitis (HBsAg, anti-HBc total, anti-HBs, anti-HCV) if appropriate, pregnancy (if appropriate), and other sexually transmitted infections (if appropriate)
- Start PEP as soon as possible (within 72 hours, preferably within 2 hours)
- Patients must follow up with their primary care provider or designated alternate care provider (if no primary care provider is identified) as soon as possible (within the 5-day period of the starter kit) to arrange continuing PEP (if appropriate) and follow-up testing
- The BC-CfE Pharmacy can be contacted *(1-888-511-6222)* by the primary care provider to evaluate need to receive the full 28-day PEP regimen based on results of any laboratory results that may have been requested at initial exposure.
- For individuals receiving 28 days of therapy, follow-up laboratory monitoring (CBC and differential, creatinine, eGFR) should be completed at weeks 2 and 4 of therapy if any abnormalities were detected at baseline.
- The BC-CfE Pharmacy can be contacted *(1-888-511-6222)* in cases of medication intolerance or toxicity for evaluation of adjustment of the PEP regimen.
- Patient information sheet and instruction form for medication renewal in the 5-day starter kit to be delivered to the follow-up provider by the patient.
- See Counselling Guidelines, Appendix II, page 24.

5.2.1 Antiretroviral regimen for PEP

The PEP starter kit consists of a 5 day supply of:

Tenofovir DF: one tablet (300 mg) once a day
Lamivudine: one tablet (150 mg) twice a day
Raltegravir: one tablet (400 mg) twice a day

A full course of PEP is 28 days. The health care provider following the patient should contact the BC-CfE Pharmacy *(1-888-511-6222)* before the completion of the 5-day starter kit and prescribe an additional 23 days of the same regimen, if the BC-CfE physician agrees that continued PEP is appropriate based on the currently available information (which may include further information on the source's HIV status, viral load, antiretroviral therapy, and/or HIV drug resistance, if the source person has agreed to have their medical records accessed).

The BC-CfE physician may recommend modification of the regimen in the following situations:

- Significant toxicity or intolerance
- Source on antiretroviral therapy and/or has history of known or suspected resistance to any agents in the PEP regimen
- If the exposed person is pregnant, contact the BC-CfE pharmacy (1-888-511-6222) for advice. However, in a significant exposure, the existing kit should be given as soon as possible[3].

5.2.2 Contraindications to Antiretroviral Therapy

- A careful medication history (including prescription and non-prescription medications, supplements and alternative therapy) should be obtained and questions regarding drug interactions should be directed to the BC-CfE Pharmacy *(1-888-511-6222).*
- Avoid or use with extreme caution in persons with **chronic renal insufficiency (**estimated glomerular filtration rate [eGFR] <50 mL/min). Specific cases should be discussed with a BC-CfE physician or pharmacist *(1-888-511-6222).*

5.2.3 Potential Adverse Effects

Tenofovir DF: Tenofovir DF is usually well tolerated and side effects are generally mild. They may include nausea, diarrhea and gas. Rarely, patients have had kidney changes when taking tenofovir DF and appropriate lab testing should be done. Close monitoring is advised in patients with a history of kidney disease, risk factors for kidney disease (e.g. diabetes, hypertension), or who are receiving concomitant medications with nephrotoxic potential (e.g. high dose non-steroidal anti-inflammatory drugs [NSAIDS]).

[3]Tenofovir DF, lamivudine, and raltegravir are recommended antiretroviral agents both for treatment of HIV during pregnancy [15] and for PEP in pregnant women [1,2].

Lamivudine: Lamivudine is usually well tolerated in short-term therapy and side effects are rare. A reversible decrease in white blood cell count is the most common side effect but is very rare. Tingling of the hands and feet (peripheral neuropathy) is very unlikely to occur with one month of treatment.

Raltegravir: Raltegravir is generally well tolerated. Side effects are uncommon and can include headache, insomnia, fatigue, dizziness, mild abdominal pain, vomiting, and diarrhea [19].

6. Follow-up Recommendations

- Follow-up is required for persons having had a significant risk exposure to HIV, regardless of whether PEP is started.
- Follow-up should be done by the exposed person's primary care provider. If they do not have a primary care provider, identify an alternate provider for follow-up.
- For follow-up of exposure for persons at risk for hepatitis B and/or C, see http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Epid/CD%20Manual/Chapter%201%20-%20CDC/CPS_CDManual_BBFExpManage.pdf
- Follow-up testing should be performed according to the following schedule:

If PEP is started:

- 2 and 4 weeks after exposure (while on PEP): CBC and differential, creatinine, eGFR, if any abnormalities were present on baseline testing.
- 3 and 6 weeks after end of PEP: HIV Ag/Ab test
- 3 months after end of PEP: HIV Ag/Ab test

If PEP is not started:

- 3 and 6 weeks after the exposure: HIV Ag/Ab test
- 3 months after the exposure: HIV Ag/Ab test
- In cases where the risk of HIV transmission is estimated to be negligible, follow-up testing may still be considered, especially for events occurring in an occupational setting.

See also the Management of Percutaneous or Permucosal Exposure to Blood or Body Fluid Letter for Follow-up Physician form, HLTH 2340 (http://www2.gov.bc.ca/assets/gov/health/forms/2340fil.pdf).

7. WorkSafe BC Claims for Occupational Exposures

- If the incident occurred in an occupational setting, complete and submit WorkSafeBC forms. https://www.worksafebc.com/en/forms-resources#sort=relevancy&f:language-facet=[English]

- Ensure that the exposure is reported to the employer and properly documented. Adequate documentation including HIV testing is important if the worker becomes HIV positive. For the WorkSafeBC to accept a claim for seroconversion, the most likely cause must be the work exposure.

- The exposed worker must be tested for HIV as soon as possible after the exposure as described above.

- The circumstances of the exposure must be investigated to identify causes and contributing factors and implement corrective actions, in order to prevent future exposures occurring in a similar manner.

8. Management of exposures in children

The risk of children being infected with HIV from accidental needlestick injuries [11-13], biting, or sexual assaults are very low. No data are available that show that PEP will decrease the risk of infection in children who sustain needlestick injuries or sexual assault.

PEP should be considered for children where the exposure is likely to have resulted in a transfer of potentially infectious body fluid to the recipient. In children, this would most commonly occur from blood or semen from a youth or adult who is known to be HIV-positive or could potentially be HIV-positive. PEP should be considered for children sustaining sexual assault resulting in vaginal or anal penetration.

PEP should only be considered for human bites in children that result in the skin being broken and when bleeding has occurred and there is blood in the mouth of the biter who is known to be HIV positive. The risk of HIV infection is negligible in bites from children. Should a child bite an HIV-positive person, PEP may be considered if there is blood in the mouth of the child and there are areas of non-intact mucosa.

If required, PEP is recommended for a total of 28 days. Pediatric starter kits are not available. See dose modifications in Table 2, page 19.

Appropriate follow-up management of children should be made with either the family physician or a designate. The remaining 23-day supply of drugs must be ordered as soon as possible through the BC-CfE Pharmacy (1-888-511-6222).

Table 2: PEP dosing recommendations for children

Drug	Child's weight	Dose
Tenofovir DF 300 mg tablet[1] (≥ 2 years of age)	8 to < 16 kg	75 mg (one quarter tablet) once daily
	16 to < 25 kg	150 mg (one half tablet) once daily
	25 to < 35 kg	225 mg (three-quarter tablet) once daily
	≥ 35 kg	300 mg (one tablet) once daily
Lamivudine 150 mg tablet[2]	< 14 kg (and ≥ 4 weeks of age)	4 mg/kg/dose twice daily
	14 to < 20 kg	75 mg (one-half tablet) twice daily
	≥ 20 to < 25 kg	75 mg (one-half tablet) in a.m. and 150 mg (one tablet) in p.m.
	≥ 25 kg	150 mg (one tablet) twice daily
Raltegravir 400 mg tablet (≥ 2 years of age)	< 10 kg	8 mg/kg/dose twice daily
	10 to < 14 kg	100 mg (one-quarter tablet) twice daily
	14 to < 25 kg	200 mg (one-half tablet) twice daily
	≥ 25 kg	400 mg (one tablet) twice daily

Notes:

1. Tenofovir DF tablet is difficult to split. Parents should get a pill splitter. The tablet may be crushed and mixed with a small amount of jam, yogurt or peanut butter to mask the bitter taste.
2. Lamivudine tablet can be crushed and mixed with food.
3. Children < 36 kg may be unable to swallow tablets or capsules. The tablets in the starter pack can be used to initiate therapy and then promptly consult with Oak Tree Clinic pharmacist (604-875-2212 extension 2) or pediatrician (604-875-2250).
4. For children < 2 years of age, contact the on-call Pediatric Infectious Diseases specialist (604-875-2161) or the Oak Tree Clinic pediatrician (604-875-2250).

References:

1. https://aidsinfo.nih.gov/guidelines/html/2/pediatric-arv-guidelines/0
2. http://app.hivclinic.ca/

References

1. Kuhar DT, Henderson DK, Struble KA, et al. for the US Public Health Service Working Group. 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: 875-92
2. Centers for Disease Control and Prevention. Updated guidelines for Antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States, 2016: recommendations from the U.S. Department of Health and Human Services. Available at: https://stacks.cdc.gov/view/cdc/38856
3. Cardo DM, Culver DH, Ciesielski CA, et al. A case-control study of HIV seroconversion in health care workers after percutaneous exposure. Centers for Disease Control and Prevention Needlestick Surveillance Group. *New Engl J Med* 1997; 337:1485-90.
4. Attia S, Egger M, Muller M, Zwahlen M, Low N. Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *AIDS* 2009; 23:1397-404.
5. Cohen MS, Chen YQ, McCauley M, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *New Engl J Med* 2011; 365:493-505.
6. Rodger AJ et al for the PARTNER study group. Sexual activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. *JAMA* 2016;316(2):1-11. 7.
7. Patel P, Borkoff CB, Brooks JT, et al. Estimating per-act transmission risk: a systematic review. *AIDS* 2014;28:1509-1519.
8. Wood E, Kerr T, Marshall BDL, et al. Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study. *British Medical Journal*. 2009 16 May 16:338(7704):1191–1194.
9. Kirk G, Galai N, Astemborski J, et al. Decline in community viral load strongly associated with declining HIV incidence among IDU: In: *Proceedings of the 18th Conference on Retroviruses and Opportunistic Infections*; 27 Feb to 2 March 2011, Boston, MA, USA; 2011.
10. Solomon SS, Mehta SH, McFall AM, et al. Community viral load, antiretroviral therapy coverage, and HIV incidence in India: a cross sectional, comparative study. *The Lancet HIV*. 2016; 3: e183–190.
11. Papenberg J, Blais D, Moore D, et al. Pediatric injuries from needles discarded in the community: epidemiology and risk of seroconversion. *Pediatrics* 2008; 122:e487-92.
12. Rogowska-Szadkowska D, Chlabicz S. Transmission of HIV through needlestick injuries in the community setting. *HIV & AIDS Review* 2010;9:37-40.
13. Osowicki J, Curtis N. Question 2: A pointed question: is a child at risk following community-acquired needlestick injury? *Arch Dis Child* 2014; 99:1172-5.
14. Vertesi L. Risk Assessment Stratification Protocol (RASP) to help patients decide on the use of post-exposure prophylaxis for HIV exposure. *CJEM* 2003; 5:46-48.

15. Gilbert M, Cook D, Steinberg M, et al. Targeting screening and social marketing to increase detection of acute HIV infection in men who have sex with men in Vancouver, British Columbia. *AIDS* 2013; 27:2649-54.
16. Krajden M, Cook D, Mak A, et al. Pooled nucleic acid testing increases the diagnostic yield of acute HIV infections in a high-risk population compared to 3rd and 4th generation HIV enzyme immunoassays. *J Clin Virol* 2014; 61:132-7.
17. BC Centre for Disease Control. Communicable Disease Control Manual - Chapter 5: Point of Care HIV Test Guidelines for Health Care Settings. May 2014. Available at: www.bccdc.ca.
18. Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission. *Recommendations for use of antiretroviral drugs in pregnant HIV-1-infected women for maternal health and interventions to reduce perinatal HIV transmission in the United States. October 26, 2016.* Available from: https://aidsinfo.nih.gov/contentfiles/lvguidelines/PerinatalGL.pdf. Accessed April 26, 2017.
19. Mayer KH, Mimiaga MJ, Gelman M, Grasso C. Raltegravir, tenofovir DF, and emtricitabine for postexposure prophylaxis to prevent the sexual transmission of HIV: safety, tolerability, and adherence. *J Acquir Immune Defic Syndr* 2012; 59:354-9.

Contacts and Resources

- **BC CfE Pharmacy** (general PEP inquiries)
  1-888-511-6222

- **BC Public Health Microbiology & Reference Laboratory**
  1-877-747-2522 or 604-707-2819

- **BCCDC Medical microbiologist on call** (re: HIV pooled NAAT in cases of suspected acute HIV; specimen shipping and handling, results reporting)
  604-661-7033

- **BCCDC Blood and Body Fluid Exposure Management** (August 2016)
  http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Epid/CD%20Manual/Chapter%201%20-%20CDC/CPS_CDManual_BBFExpManage.pdf

- **BCCDC Communicable Disease Control Manual**; Chapter 5 – Sexually Transmitted Infections; Guidelines for Testing, Follow up, and Prevention of HIV (October 2016). http://www.bccdc.ca/resource-gallery/Documents/Communicable-Disease-Manual/Chapter%205%20-%20STI/HIV_Guidelines_Testing_FollowUp_Prevention.pdf

- **BC Treatment Guidelines, Sexually Transmitted Infections in Adolescents and Adults** (2014) http://www.bccdc.ca/resource-gallery/Documents/Communicable-Disease-Manual/Chapter%205%20-%20STI/CPS_BC_STI_Treatment_Guidelines_20112014.pdf

- **BC Women's Sexual Assault Service Resources**
  http://www.bcwomens.ca/health-professionals/professional-resources/sexual-assault-service-resources

- **Oak Tree Clinic**
  - Pharmacist604-875-2212 extension 2
  - Pediatrician/ Infectious Disease specialist:604-875- 2250 or 604-875-2161

- **Risk Assessment Stratification Protocol (RASP)**
  https://www.mdcalc.com/hiv-needle-stick-risk-assessment-stratification-protocol-rasp

- **UBC Virology Laboratory**
  604-806-8420

- **Victoria General Hospital Laboratory**
  250-727-4212

APPENDIX I: RISK ASSESSMENT: ESTIMATED PROBABILITY OF HIV FOLLOWING A SINGLE EXPOSURE IN BRITISH COLUMBIA

	Source Person in Major Risk Group			Source Person Not Known to be in a Major Risk Group		
	Known HIV+	PWID	MSM	Man	Woman	Gender Unknown
Estimated probability of being HIV+[1]	100%	13%	23%	0.009%	0.002%	0.006%
Estimated probability of seroconversion after sexual exposure[2]						
Penile-vaginal intercourse (risk to insertive partner)	0.04%	0.005%	0.01%	0.000004%	0.000001%	0.000002%
Penile-vaginal intercourse (risk to receptive partner)	0.08%	0.01%	0.02%	0.000007%	0.000002%	0.000005%
Insertive anal intercourse	0.11%	0.01%	0.025%	0.00001%	0.000002%	0.000007%
Receptive anal intercourse	1.38%	0.2%	0.3%	0.0001%	0.00003%	0.00008%
Oral sex[3]	0.01%	0.001%	0.002%	0.0000009%	0.0000002%	0.0000006%
Estimated probability of seroconversion after parenteral exposure[2]						
Percutaneous needle stick[4]	0.23%	0.03%	0.05%	0.00002%	0.000009%	0.00001%
Needle-sharing injection drug use	0.63%	0.08%	0.14%	0.00006%	0.00001%	0.00004%
Occupational mucous membrane exposure[5]	0.09%	0.01%	0.02%	0.00001%	0.000002%	0.000005%

PWID, person who injects drugs; MSM, men who have sex with men

1. Based on PHAC data 2014; Moore D et al., JAIDS 2016; I-Track 2013
2. Based on estimates for each exposure type from Patel et al., AIDS 2014 [7] and Ippolito G et al., Arch Int Med 1993
3. Low risk for both receptive and insertive oral sex; 95% confidence interval around the estimate is 0-4 per 10,000 exposures [7]
4. Risk probably lower with solid object [Ippolito et al.]
5. E.g. splashes to eyes, nose, mouth; risk probably lower with exposure to non-intact skin [Ippolito et al.]

Appendix II: Counselling Guidelines

Precautions to avoid transmission to others

While awaiting the test results (three months), take the following precautions to prevent potential HIV transmission to others:

- Abstain from sexual intercourse or use a latex condom with a water-based lubricant at all times during intercourse.
- Do not donate blood, plasma, organs, tissue or sperm.
- Do not share toothbrushes, razors, needles or other implements which may be contaminated with blood/body fluids.
- Do not become pregnant.
- Nursing women who experience a potentially significant exposure should be advised to discontinue breastfeeding while waiting for the source's test results. If the source is found to be HIV negative and it is determined that PEP is not necessary, breastfeeding can be resumed.
- The risk of transmission to others is extremely small and the need for precautions should be discussed with a consultant familiar with HIV transmission.