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1.0 INTRODUCTION

These guidelines will outline the risk assessment and management for potential percutaneous, permucosal, or non-intact skin exposures to human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) from blood or body fluids.

The level of risk posed by accidental exposure may vary from the healthcare occupational setting to the community setting. The actual risk of exposures outside the healthcare setting is probably significantly less than in the healthcare setting. However, with the exception of community exposures to HIV, the recommended response is the same in both settings.

Those who may carry out the following procedures include emergency department staff, health unit staff, community physicians, Infection Control Practitioners, and Occupational Health Nurses/Physicians.

2.0 POLICY

All persons exposed to blood or body fluids should be assessed for potential risk of infection from HIV, HBV, and HCV, and be provided with appropriate counselling and treatment.

Post-exposure management is required when **all** of the following indications are present:

- percutaneous, permucosal, or non-intact skin exposure;
- the exposure is to blood, potentially infectious body fluid or tissue (see Table 1: “Fluids and tissues capable of transmitting bloodborne pathogens”);
- the source is considered potentially infectious (positive test, or in a higher risk group, or exposure occurred in a higher risk setting);

AND

- the exposed person is considered susceptible to at least one of the following viruses: HIV, HBV, or HCV.

3.0 GOAL

The goal of these guidelines is to minimize the risk of transmission of bloodborne pathogens in persons exposed to blood or body fluids. This will be accomplished through:

- Dissemination of these guidelines to health care workers and others who encounter persons accidentally exposed to blood or body fluids.
- Assessment of the risk of pathogen transmission to exposed persons.
- Counselling exposed persons to reduce anxiety, ensure adequate management and follow-up, and to reduce the risk of pathogen transmission to others.
- Laboratory testing of exposed persons and sources (if possible).
- Use of antiretroviral therapy and post-exposure prophylaxis in exposed persons where indicated.

4.0 DEFINITIONS

Blood or body fluid (BBF) exposure:
An event where blood or other potentially infectious body fluid (see Table 1) comes into contact with skin, mucous membranes, or subcutaneous tissue (via percutaneous injury).

Bloodborne pathogen:
Any pathogen that can be transmitted from one person to another via blood. Such pathogens may also be transmissible by other body fluids, and this varies depending on the pathogen and the type of body fluid.

Percutaneous exposure:
Blood or body fluid from one person is potentially introduced into the bloodstream of another person through the skin via needlestick, tattooing, body piercing, electrolysis, acupuncture, or other sharps injury.

Permucosal exposure:
Blood or body fluid from one person is introduced into the bloodstream of another person through permucosal contact (i.e. contact with the mucous membranes lining body cavities such as the eyes, nose, mouth, vagina, rectum and urethra).

PCR:
Qualitative HCV RNA polymerase chain reaction (Qualitative HCV PCR) identifies the presence or absence of HCV RNA in EDTA Plasma and is used for diagnosis of active infection (HCV RNA is present in blood). Please collect blood in EDTA plasma instead of serum because HCV RNA is stable for 4-5 days in plasma. Please note that quantitative HCV PCR quantifies the amount of HCV RNA in the blood, this test is more expensive and is used only for treatment monitoring. HCV PCR throughout these BBF guidelines refers to qualitative HCV PCR testing.

Non-intact skin exposure:
Blood or body fluid comes into contact with a wound < 3 days old, or with skin having compromised integrity (e.g., dermatitis, abrasions, scratches, burns).

Susceptibility:
A person is susceptible to HIV if they:
- have no history of a prior anti-HIV positive test

A person is susceptible to hepatitis B virus (HBV) if they:
- have no history of a protective antibody level (i.e. anti-HBs ≥ 10 IU/ml) following completion of a hepatitis B vaccine series;
  or
- have no history of a test result indicating immunity from prior HBV infection [i.e. HBsAg (–) and anti-HBc (+)].

A person is susceptible to HCV if they:
- have no history of a prior anti-HCV positive test

5.0 PROCEDURE FOLLOWING EXPOSURE TO BLOOD OR BODY FLUIDS

5.1 Cleanse

- Mucous membrane or eye: Rinse well with water and/or normal saline.
- Skin: Wash well with soap and water.
- Allow injury/wound site to bleed freely, and then cover lightly.
- Do not promote bleeding of percutaneous injuries by cutting, scratching, squeezing, or puncturing the skin. This may damage the tissues and increase uptake of any pathogen(s).
- Do not apply bleach to the injury/wound or soak it in bleach.

5.2 Triage

If percutaneous, permucosal, or non-intact skin exposure has occurred, the exposed person should immediately have a risk assessment performed by a qualified health professional, preferably within 2 hours of exposure. Common locations where this is available are emergency departments, occupational health departments, or alternate sites the BC Centre for Excellence in HIV/AIDS has supplied with antiretroviral starter kits.

When there is no indication for HIV antiretroviral therapy, the exposed person does not need to go to a hospital emergency, and can be followed by public health, occupational health, or their family physician for hepatitis B prophylaxis. **However, this depends on the time since the exposure** as hepatitis B immune globulin (HBIg) should be given as soon as possible and preferably within 48 hours following the exposure. Following a percutaneous exposure**,** HBIg should be received no later than 7 days following the exposure. Following a permucosal or sexual exposure, HBIg should be received no later than 14 days following the exposure.

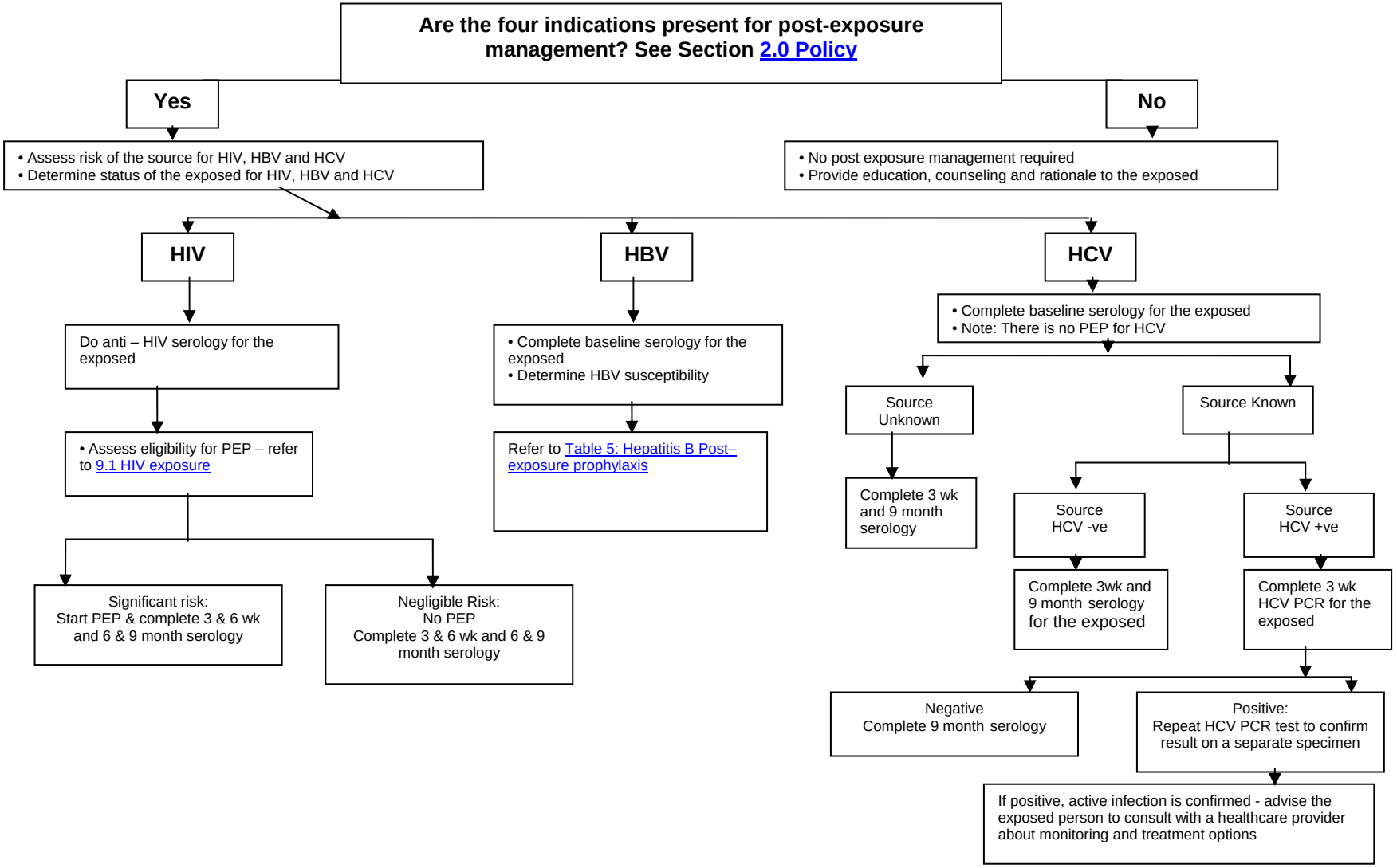
The risk of HIV infection is negligible from bites. Should a bite occur, the following are situations for which post-exposure prophylaxis may be considered:

- Broken skin and bleeding
  and either:
  - The person bitten is HIV+ and the biter has non-intact oral mucosa
    or
  - The biter is HIV+

If antiretroviral therapy is indicated for possible HIV exposure, it should be administered **as soon as possible after exposure, preferably within 2 hours.** There is no absolute cut-off time for the initiation of antiretroviral therapy for "significant risk" exposures (see Table 4 for description of these types of exposures). Antiretroviral therapy should be initiated for eligible exposed persons even if they present more than 2 hours after the exposure. Many exposed persons in the community do not report the incident for a day or two. While use after 36 hours may not prevent HIV transmission, it is possible that it may favourably alter the subsequent disease in the exposed person, with later onset of advanced disease.

Detailed risk assessment and management of potential exposure to **ALL** pathogens (HIV, HBV, and HCV) can take place in the Emergency Department or other health facility supplied with antiretroviral starter kits by the BC Centre for Excellence in HIV/AIDS.

5.3 Blood and Body Fluid Exposure Management Algorithm: Exposed Person



5.4 Assess the risk

Complete a risk assessment of the exposure using form HLTH 2339 "Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition." The HLTH 2339 is designed as a case management tool to facilitate the collection of exposure information, recording of post-exposure treatment, and ordering of blood work. This form can be ordered at no cost from Distribution Services in Victoria by fax: (250) 952-4559 or phone: (250) 952-4008.

A process must be established by which identification of the source is kept confidential.

5.4.1 Assess the risk of transmission from the exposure

The following body substances have **not** been implicated in the transmission of HIV, HBV, or HCV **unless they contain visible blood:**

- faeces
- nasal secretions
- sputum
- sweat
- tears
- urine
- vomitus.

The risk for transmission of HBV, HCV, and HIV infection from these substances is extremely low.

Determine if there was a percutaneous, permucosal, or non-intact skin exposure to a potentially infectious body fluid posing a risk for HIV, HBV, or HCV transmission. Refer to Table 1.

Table 1: Fluids and tissues capable of transmitting bloodborne pathogens

FLUID	HIV	HBV	HCV
Blood and fluids visibly contaminated with blood	Yes	Yes	Yes
Semen	Yes	Yes	Yes
Vaginal secretions	Yes	Yes	Yes
Pleural, amniotic, pericardial, peritoneal, synovial and cerebrospinal fluids and inflammatory exudates	Yes	Yes	Yes
Saliva	No, unless contaminated with blood	Yes	No, unless contaminated with blood
Transplanted tissue or organs	Yes	Yes	Yes
Breast milk	Yes	Plausible, particularly if nipples are cracked or bleeding **or** if the mother is HBeAg positive	Plausible, particularly if nipples are cracked or bleeding
Faeces Nasal secretions Sputum Sweat Tears Urine Vomitus	No, unless they contain visible blood.		

5.4.2 Assess the risk of transmission from the source

Determine if the source of the blood or body fluid is known. If the source person discloses they are HIV+, contact the BC Centre for Excellence in HIV/AIDS to obtain advice regarding appropriate anti-retroviral therapy for the exposed person.

Obtain the source person's consent for testing for anti-HIV, anti-HCV, HBsAg, anti-HBs, and anti-HBc. The appropriate pre- and post-test counselling should be done for each test. Obtaining informed consent from the source is an integral part of all post-exposure testing procedures, as is maintaining confidentiality of all information.

If the attending physician of the source person is known, that physician may, without breaching confidentiality, or with the patient's permission, provide some insight into whether or not the exposure should be regarded as higher risk.[1]

If point of care (POC) HIV tests are available, they can be used for testing of the source individual as this is identified as an appropriate use of POC HIV testing. Knowledge of the HIV status of source individuals during the evaluation of blood and body fluid exposures can guide decision-making regarding the administration of post-exposure prophylaxis. POC HIV testing of source individuals reduces the time to result availability and may avoid unnecessary post-exposure prophylaxis and anxiety in the exposed person.

Discuss the following with the source person:

- Why/how their test results are needed for the post-exposure management of the exposed person, as well as for possible follow-up of their own test results should any be positive
- That their consent is also needed for:
  - disclosure of their test results to their own follow-up physician (so that they can be contacted if any of their test results are positive)
  - disclosure of their test results to the exposed person's follow-up physician
  - disclosure of their test results to the exposed person's worksite occupational health and to the Worker's Compensation Board (in the instance of an occupational exposure)
- That the exposed person will **not** be informed of their (the source) test results, nor their identity. The exposed person will only be told whether or not to continue HIV prophylaxis.
- How they can be contacted if any of their test results are positive. The name of their follow-up physician is required if they have chosen anti-HIV testing non-nominally.

[1] British Columbia Centre for Excellence in HIV/AIDS. (2009). Accidental Exposure Guidelines. Available at http://www.cfenet.ubc.ca/sites/default/files/uploads/docs/Accidental_Exposure_Therapeutic_Guidelines.pdf

Inform the source that:

- Anti-HIV testing may be done nominally (using their real name) or non-nominally. A non-nominal identifier can be their first name and initials, with their birth date, or it may be a chosen pseudonym and their birth date. Clients can choose to be tested using initials only, but have follow-up using their real name or the reverse.
- If the non-nominal option is chosen, positive HIV results will be reported to the Medical Health Officer using only their initials or the pseudonym they chose.
- For all HIV positive results, whether they chose nominal or non-nominal testing, a case report will be sent to public health, where a public health nurse with specialized training will be responsible for the required follow-up. This public health nurse will call their follow-up physician to offer support for the newly positive client, assistance with partner counseling or other needs identified by the client and physician. This follow-up will occur whether the test is ordered by name or by a non-nominal option.
- Testing for HBV and HCV can only be done nominally.
- Positive HBV and HCV test results will be forwarded to public health and that public health or their physician will contact them to follow-up the positive test result(s)

When the source is unknown, each individual exposure should be carefully evaluated for the risk of each specific pathogen in the source in that community and in that particular setting. High-risk settings include needle-exchange program sites, acute care, drug and alcohol treatment clinics, and communities known to have a higher incidence of HIV, HBV, and HCV. Except for exposures in a high-risk setting, HIV prophylaxis will not be given for an unknown source.

If the source refuses testing, carefully consider the reasons for refusal. If there is no reason to suspect the source is in a high-risk group for HIV, HBV, HCV and that the refusal is based on other factors than fear of disclosure, then consider this a low risk source. It is not appropriate to consider persons who refuse testing as being positive.

Do not wait for test results before commencing treatment.

If the test result(s) is negative, the source person may be uninfected **or** may be in the window period for laboratory detection (i.e. the period of time after exposure and infection in which blood tests are negative).

The window period for HIV infection is most often 4 – 6 weeks. It is estimated that under the standard testing algorithm, approximately 95% of individuals will show detectable antibodies to HIV by 4 to 6 weeks, with >99% having sero-converted by 3 months. Accordingly, 3 months is the recommended interval for HIV testing following a risk event or exposure. The window period for HBV infection ranges from 4 weeks to 6 months. The window period for HCV infection (measured by anti-HCV) may be 6 months or longer in immunocompromised patients. In order to detect infection earlier, HCV PCR is recommended at 3 weeks.

The risk of current infection of the source person with HIV, HCV, or HBV can be assessed even while the source test results are unknown or if the source refuses testing. Table 2 specifies the indicators for increased risk of transmission from the source to the exposed person. This information can be used to determine the source person's risk of current infection, and the subsequent requirement for post-exposure treatment of the exposed person.

Table 2: Indicators for increased risk of transmission from the source to the exposed person

HIV	HBV	HCV
The source is a person who has ever had:	**The source is a person who has ever had:**	**The source is a person who has ever had:**
• high-risk sexual behaviour (e.g., multiple sex partners, anal sex)	• high-risk sexual behaviour (e.g., multiple sex partners, anal sex)	• high-risk sexual behaviour (e.g., multiple sex partners, anal sex)
• a sexual partner who is an injection drug user (IDU), or who is HIV+, or who has a history of multiple transfusions of blood or blood products prior to Nov. 1985 ❶	• a sexual partner who is an IDU, or who has acute or chronic HBV, or who has a history of multiple transfusions of blood or blood products prior to Jan. 1972 ❶	• a sexual partner who is an IDU, or who is HCV+, or who has a history of multiple transfusions of blood or blood products prior to May 1992 ❶
• injection drug use	• injection drug use	• injection drug use
• a diagnosis of other sexually transmitted disease(s)	• a diagnosis of other sexually transmitted disease(s)	
• a history of multiple transfusions of blood or blood products prior to Nov. 1985 ❶	• a history of multiple transfusions of blood or blood products prior to Jan. 1972 ❶	• a history of multiple transfusions of blood or blood products prior to May 1992 ❶
• blood contact with a known case of HIV infection	• blood contact with a known case of HBV infection for which there was no provision of post-exposure prophylaxis	• blood contact with a known case of HCV infection
• tattoo, body piercing, electrolysis, acupuncture	• tattoo, body piercing, electrolysis, acupuncture	• tattoo, body piercing, electrolysis, acupuncture
• emigration from a country where HIV is endemic	• emigration from a country where HBV is endemic	• emigration from a country where HCV is endemic
• a history of dialysis	• a history of dialysis	• a history of dialysis
• a history of receipt of blood-derived coagulation products before July 1988❷	• a history of receipt of blood-derived coagulation products before January 1972	• a history of receipt of blood-derived coagulation products before July 1988 or a history of receipt of IV immunoglobulin products prior to 1997❷

❶ In Canada, testing of donated blood for anti-HIV began in November 1985; for HBsAg in January 1972; and for anti-HCV first generation in June 1990 and anti-HCV second generation in May 1992.

❷ All factor concentrates distributed in Canada were wet heat treated after July 1988. IV immunoglobulin products were either PCR tested for HCV or had solvent detergent virucidal treatment after 1997.

5.5 Determine the HIV, HBV and HCV status of the exposed person

Determine the status of the exposed person with respect to prior infection with HIV, HCV or HBV and previous immunization against HBV. This base line testing is very important for occupational exposures and possible compensation by WorkSafe BC.

Obtain informed consent and draw blood for testing. Obtain consent from the exposed person for disclosure of their lab results to their:

- Worksite occupational health and
- Follow-up physician

Inform the exposed person that:

- Anti-HIV testing may be done nominally (using their real name) or non-nominally. A non-nominal identifier can be their first name and initials, with their birth date, or it may be a chosen pseudonym and their birth date. Clients can choose to be tested using initials only, but have follow-up using their real name or the reverse.
- If the non-nominal option is chosen, positive HIV results will be reported to the Medical Health Officer using only their initials or the pseudonym they chose.
- For all HIV positive results, whether they chose nominal or non-nominal testing, a case report will be sent to public health, where a public health nurse with specialized training will be responsible for the required follow-up. This public health nurse will call their follow-up physician to offer support for the newly positive client, assistance with partner counseling or other needs identified by the client and physician. This follow-up will occur whether the test is ordered by name or by a non-nominal option.
- Testing for HBV and HCV can only be done nominally.
- Positive HBV and HCV test results will be forwarded to public health and that public health or their physician will contact them to follow-up the positive test result(s).

Do not wait for test results before commencing post-exposure treatment.

If the exposed person is known to be HIV, HBV, or HCV positive prior to the exposure, they do not require post-exposure management for that particular pathogen.

5.6 Determine the requirement for post-exposure management

Post-exposure management is required when **all** of the following indications are present:

- percutaneous, permucosal, or non-intact skin exposure;
- the exposure is to blood, potentially infectious body fluid or tissue (see Table 1: "Fluids and tissues capable of transmitting bloodborne pathogens");
- the source is considered potentially infectious (positive test, or in a higher risk group, or exposure occurred in a higher risk setting);

AND

- the exposed person is considered susceptible to at least one of the following viruses: HIV, HBV, HCV.

6.0 COUNSEL

Provide post-exposure counselling in the health facility, with more detailed counselling to be provided by the family physician, other designated physician, or public health nurse at a follow-up visit. Counselling should include points in section 10.0 "Blood and Body Fluid Exposure Counselling Guidelines" and the guidelines provided by the BC Centre for Excellence in HIV/AIDS in the antiretroviral starter kit, if the kit is being provided to the exposed person.

7.0 ARRANGE CLINICAL AND LABORATORY FOLLOW-UP

If possible, take the required initial bloodwork of the exposed person and source while they are in the health facility. Use the HLTH 2339: "Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition.

For HIV testing, send the specimen(s) to the BCCDC Public Health Microbiology & Reference Laboratory (604) 707-2839 or (604) 707-2819; or UBC Virology Laboratory (604) 806-8420. Identify the specimen(s) as a blood and body fluid (BBF) exposure incident so that rapid turn around can be achieved. Also phone the lab to notify staff that the specimen has been sent.

On Vancouver Island all testing is done at Victoria General Hospital's Hepatitis Lab (250) 727-4212.

For testing done at the BCCDC Public Health Microbiology & Reference Laboratory, results may be obtained by phoning (604) 707-2800, Monday to Friday from 8am – 5pm.

If specimens need to be sent to the BCCDC Public Health Microbiology & Reference Laboratory after regular working hours, contact the BCCDC Medical Microbiologist on call to receive instructions: phone: (604) 661-7033).

After hours contact the BCCDC Medical Microbiologist on call if there is an urgent need to discuss results. Phone: (604) 661-7033.

Clinical and laboratory follow-up should be arranged with the exposed person's family physician or other physician designated by the health facility or their delegate. Use the "Letter for Follow-up Physician," (HLTH 2340), which outlines tests performed and specifies the timing of further tests. This form can be ordered at no cost from Distribution Services in Victoria by fax: (250) 952-4559 or phone (250) 952-4008.

Give the white copy (copy 1) of the HLTH 2340 to the exposed person so that they can give it to the follow-up physician.

Table 3 summarizes the testing of the exposed person.

Table 3: Testing of the exposed person ❶

TIME SINCE EXPOSURE	Anti-HIV	Anti-HCV	HBsAg ❷	Anti-HBs ❷	Anti-HBc ❷	RATIONALE FOR TESTING OF THE EXPOSED PERSON
ASAP usually in Emergency	√	√	√	√	√	To check baseline status of the exposed person. Negative or non-reactive test results suggest no prior infection.
3 weeks after exposure	√	√				If source is HCV+ or in a high risk group, test exposed person for HCV infection by PCR ❸ If HCV PCR +, early treatment may be beneficial. If the exposed person is confirmed HCV PCR+, active infection is present and there is no need to test for anti-HCV.
6 weeks after exposure	√	❹	❹	❹	❹	To check whether seroconversion has occurred. A change from the initial negative (or non-reactive) test result to a positive (or reactive) result indicates that seroconversion has occurred. Seroconversion following a blood or body fluid exposure does not definitively establish that the exposure was the source of the virus if the exposed person has other risk factors.
6 months after exposure	√	❹	√	√	√	
9 months after exposure	√	√	√	√	√	A negative (or non-reactive) test result at 9 months following exposure indicates that infection has not occurred from this exposure. Testing at 9 months is primarily to rule out infections resulting from a prolonged incubation period that may occur after the administration of HBIg or antiretrovirals, or immunosuppression.

❶ If the source person tests negative for HBV, HCV, and HIV and is not in a high-risk group, only baseline testing of the exposed person is indicated.
❷ See Table 5: Hepatitis B post-exposure prophylaxis
❸ If HCV PCR+, a second sample needs to be tested to confirm the result.
❹ Not required
Note: If the exposed person is a pregnant woman, request HBV testing as close to delivery as possible.

8.0 RECORD

The white and yellow copies (copies 1 and 2) of the "Management of Percutaneous or Permucosal Exposure to Blood or Body Fluid/Laboratory Requisition" (HLTH 2339) contain information pertaining to the source person. **For reasons of confidentiality, the white copy should be forwarded ONLY to the laboratory that will be doing testing for the exposed person (and/or the source person). If it is an occupational exposure, the yellow copy should be forwarded ONLY to the exposed person's worksite occupational health department.**

The health care worker should record information on the exposed person's chart or emergency record form with respect to the risk assessment and post-exposure management or, if accessible, record in the Public Health Information System (iPHIS) notes section.

If it is an occupational exposure, follow WorkSafe BC guidelines for injury reporting. This must not delay emergency assessment and management. **Forward the pink copy (copy 3) to WorkSafe BC – they will pay the physician/health care facility for the completion of the form for occupational exposures. The pink copy may be faxed to WorkSafe BC at (604) 276-3195 (Lower Mainland) or Toll Free 1-888-922-3299.**

Attach the **goldenrod copy (copy 4**) of the "Management of Percutaneous or Permucosal Exposure to Blood or Body Fluid/Laboratory Requisition" (HLTH 2339) to the record established for the exposed person.

Complete HLTH 2340 (Letter to Physician). Give white copy to client. Distribute other copies as indicated on bottom on the form.

9.0 POST-EXPOSURE TREATMENT

9.1 HIV exposure

9.1.1 Antiretroviral therapy

For sources known to be or may possibly be infectious for HIV, determine whether the type of exposure presents a risk of transmission for which antiretroviral therapy is warranted. Table 4 specifies stratification of HIV exposures.

Table 4: Stratification of HIV exposures

EXPOSURE RISK	TYPE OF EXPOSURE	RECOMMENDATION
SIGNIFICANT RISK: • Infectious body fluid and an HIV positive source or a known high-risk source. See Subsection 5.4.2 – Table 2.	Any percutaneous exposure to infectious body fluids ❶ • Mucous membrane or non-intact skin exposure (3 or more drops for 3 or more minutes) • In the event of a large prolonged exposure of blood on intact skin, assess the integrity of the skin. If appropriate, treat as a significant risk exposure.	Antiretroviral starter kit. **Consult with BC Centre for Excellence in HIV/AIDS as soon as possible in all cases. (Centre Pharmacy 1-888-511-6222 or Centre physician hotline 1-800-665-7677)**
NEGLIGIBLE RISK: • Source known or presumed to be HIV negative OR • Injury not known to transmit HIV OR • Body fluid not known to transmit HIV	• Percutaneous, mucous membrane or skin exposure to non-infectious body fluid – source HIV positive or negative. • Bites unless there has clearly been transmission of infected blood. • A superficial scratch that does not bleed. • Injuries received in fights would rarely be appropriate indications for prophylaxis unless it is clear that transfer of infected blood has occurred.	No antiretrovirals recommended. Offer counselling clarifying the negligible risk of HIV infection and advise re: risk prevention (i.e., preventing recurrences of exposure incidents).

❶ Antiretrovirals (ARTs) are not provided free to persons exposed to HIV as part of their personal lives (e.g. consensual adult sex, or sharing drug injection equipment). However, the assessing physician may elect to prescribe ARTs for these situations and should consult with the BC Centre for Excellence in HIV/AIDS regarding which ARTs to prescribe.

Note: Prophylaxis is not recommended for needlesticks from abandoned needles when they are outside the healthcare setting or when there is no history of the use of the needle or the time of abandonment.

Antiretroviral therapy will vary for children, pregnant women, and for those exposed to a source known to have been on antiretroviral therapy, or a source whose HIV infection is known to be drug resistant. The BC Centre for Excellence in HIV/AIDS will tailor a prophylactic regimen for these individuals. Immediately contact the BC Centre for Excellence in HIV/AIDS (Centre Pharmacy 1-888-511-6222 or Centre physician hotline 1-800-665-7677).

The starter kit contains a 5-day supply of antiretroviral medications according to current recommendations of the BC Centre for Excellence in HIV/AIDS.

Within three days, follow-up should occur with the exposed person's family physician or physician designated by the Emergency Department so that an assessment can be made of the need for a full month of antiretroviral therapy.

This physician should also ensure completion of post-exposure follow-up testing and hepatitis B immunoprophylaxis.

A full one-month course of antiretroviral medication will be provided, if indicated, by the BC Centre for Excellence in HIV/AIDS through the exposed person's family physician or designated follow-up physician. For guidelines regarding the ongoing management of those on a one month course of antiretroviral medication, physicians should consult the BC Centre for Excellence in HIV/AIDS website:
http://www.cfenet.ubc.ca/content.php?id=12

Antiretroviral starter kits will be provided for all accidental exposures to HIV from blood or body fluid occurring in health care facilities. For most community exposures, antiretrovirals will not be provided unless there is significant risk. Antiretrovirals are not recommended for needlesticks from an abandoned needle in a community setting when there is no history of the origin of the needle or the time of its abandonment. There are several reasons for this: (i) there has never been a HIV seroconversion anywhere from a community exposure, (ii) there are real risks from the anti-retrovirals, and (iii) risks from the antiretrovirals outweigh the theoretical risk of seroconversion from a community exposure.

The guidelines can also be applied to manage victims of sexual assault. The BC Women's Hospital Sexual Assault Service has drafted a detailed protocol for managing HIV exposure in victims of sexual assault; this protocol is available from the Sexual Assault Service at
http://www.bcwomens.ca/Services/HealthServices/Sexual+Assault+Services/Resources.htm

The BC Centre for Excellence in HIV/AIDS does not provide provincially funded antiretrovirals to persons exposed to HIV as part of their personal lives (e.g. consensual adult sex or sharing drug injection equipment).

As these activities have the potential risk of transmission for HIV, the individual may wish to discuss the need for antiretrovirals with their family doctor. These medications can be acquired privately at a pharmacy with a prescription from a physician.

9.1.2 Post-exposure HIV testing

The exposed person should be tested for anti-HIV at the time of the exposure in order to determine whether they are already seropositive. If the test result at the time of the exposure is negative, post-exposure follow-up HIV testing of the exposed person should be undertaken at:

- **3 weeks**
- **6 weeks**
- **6 months**
  and
- **9 months**

If the source person tests anti-HIV negative and is not in a high-risk group within the HIV window period, only baseline testing of the exposed person is indicated.

If point-of-care testing (rapid HIV test) is done, and the result for the source person is positive, antiretroviral prophylaxis should be provided to the exposed person until confirmatory testing is done. Confirmatory Western Blot testing of the source should be used to determine if the point-of-care test is a true positive. Inform the source that this confirmatory testing will be done. In a high risk exposure, even if the rapid HIV test is negative, antiretroviral prophylaxis should be given to the exposed person until confirmatory testing is completed. Refer to the BC Centre for Disease Control Communicable Disease Control Manual – Chapter 5 Sexually Transmitted Infections:

- Appropriate Use of Point of Care HIV Testing in BC, available at: http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap5.htm
- Client Counseling Guidelines – POC Test, available at: http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap5.htm

9.1.3 Post-exposure HIV antiretroviral therapy in children

The risk of children being infected with HIV from accidental needlestick injuries, biting, or sexual assault is very low. Antiretroviral agents should be considered for children where the exposure is likely to have resulted in a transfer of potentially infectious body fluid. In children this would most commonly occur from blood or semen from a person who is known to be HIV+ or could potentially be HIV+.

Refer to guidelines from the BC Centre for Excellence in HIV/AIDS for detailed information about the recommended antiretroviral medications and dosages for children, or call their Pharmacy at 1-888-511-6222.

9.1.4 Post-exposure HIV antiretroviral therapy in pregnant women

For the post-exposure HIV antiretroviral therapy of pregnant women or women who may be pregnant, consult the BC Centre for Excellence in HIV/AIDS.

9.2 HBV exposure

For any percutaneous, permucosal exposure (including bites), or non-intact skin exposure to a potentially infectious body fluid posing a risk for HBV transmission, determine whether post-exposure immunoprophylaxis is required by testing both the exposed person and the source person for HBsAg, anti-HBs, and anti-HBc.

If the source is unknown or untested (e.g., a needlestick from an abandoned needle in any community setting) offer hepatitis B vaccine (as per Table 5) but not HBIg.

If the exposed person is HBsAg positive, they are already infected with the hepatitis B virus and no post-exposure HBV immunoprophylaxis is required.

If the exposed person is HBsAg and anti-HBc negative, use results of their anti-HBs test to determine requirement for immunoprophylaxis. See Table 5. Refer to the BC Centre for Disease Control Communicable Disease Control Manual - Immunization Program Chapter –Section 7 Biological Products for specific details pertaining to the administration of hepatitis B immune globulin (HBIg) and hepatitis B vaccine: http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap2.htm.

9.3 Table 5: Hepatitis B Post-Exposure Prophylaxis

Vaccination history of exposed person	**Test exposed person for: HBsAg, anti-HBc & anti-HBs**.	**If source is HBsAg positive or tests positive within 48 hrs of exposure ❷**	**If source is unknown/not tested/tests HBsAg negative within 48 hours❷**	**Post-exposure re-testing**
Documented anti-HBs level (≥10 IU/L) on prior testing	Test for all three markers for medical-legal purposes	No action required.	No action required.	No action required.
Unvaccinated or _____ Known non-responder❶ to one Hep B series	Test for all 3 markers _____ Test for all 3 markers	Give Hepatitis B Immune Globulin (HBIg) ❸ and Hepatitis B vaccine series ❹	Give Hep B vaccine series _____ Give 2nd Hep B vaccine series	Re-test for all 3 markers at 6 & 9 months ❺
Received 1 dose of Hep B vaccine, anti-HBs status unknown	Test for all 3 markers	Give HBIg & complete Hep B vaccine series.	Complete Hep B vaccine series.	Re-test for all 3 markers at 6 & 9 months ❺
Received 2 doses of a 3 dose Hep B series, anti-HBs status unknown	Test for all 3 markers. If anti-HBs is <10 IU/L, then →	Give HBIg & 3rd dose of Hep B vaccine. Repeat 3rd dose if given too early in series.	Give 1 dose of Hep B vaccine & retest for anti-HBs in 4 wks; if <10 IU/L repeat series.	Re-test for all 3 markers at 6 & 9 months ❺
	Test for all 3 markers. If anti-HBs is ≥ 10 IU/L, then →	Do not give HBIg. Complete Hep B vaccine series.	Do not give HBIg. Complete Hep B vaccine series.	No re-testing required.
Complete Hep B vaccination (2 or 3 dose series) and anti-HBs status unknown **or** anti-HBs < 10 when tested > 6 months post-series	Test for all 3 markers. If anti-HBs is <10 IU/L, then →	Give HBIg and 1 dose of vaccine.	1 dose Hep B vaccine & retest for anti-HBs in 4wks; if <10 IU/L complete second series.	Re-test for all 3 markers at 6 & 9 months ❺
Known non-responder❶ after two courses of Hep B vaccine	Test for HBsAg & anti-HBc. Do not test for anti-HBs.	Give HBIg only & give another dose of HBIg in 1 mo.	No action required.	Re-test for all 3 markers at 6 & 9 months.

❶ A non-responder to a series of Hepatitis B vaccine is someone who demonstrates an anti-HBs level of < 10 UI/L, when measured 1 to 6 months post-vaccination.

❷ Consensual adult sex with known STW or IDU is not an indication for HBIg, nor is a community acquired needlestick injury: the risk of transmission is low and the number needed to treat to prevent infection is extremely high. HBIg is indicated in the case of sexual assault or if one of the individuals is known to have acute or chronic Hepatitis B infection.

❸ HBIg dose for all clients ≥ 8.3kg is 0.06ml/kg. Give HBIg as soon as possible, preferably within 48 hours of the exposure. For a percutaneous exposure, HBIg may be given up to 7days following the exposure. If the client presents > 7 days following a percutaneous exposure, give Hepatitis B vaccine only. For permucosal or sexual exposures, HBIg may be given up to 14 days following the last exposure. If the client presents > 14 days following a permucosal or sexual exposure, give Hepatitis B vaccine only.

❹ Hepatitis B vaccine schedule is 0, 1 and 6 months for post-exposure prophylaxis.

❺ A second series of Hepatitis B vaccine should be offered to non-responders

Note: This table does not apply to post-exposure management of immunocompromised persons. This group requires consultation with a physician specializing in infectious diseases.

If necessary due to time since exposure, HBIg and one dose of hepatitis B vaccine should be given in the hospital Emergency Department. Any subsequent doses of vaccine should be given by the public health unit or family physician.

If the exposure occurred in an occupational setting and the employer offers a hepatitis B immunization program, the employer should provide the remaining doses of vaccine.

A person partially immunized in the past requires only the number of doses needed to complete the recommended series, regardless of the time elapsed since the previous dose.

Provincially funded hepatitis B vaccine can be given, if indicated, for exposures occurring through consensual adult sex or sharing injection drug equipment.

If the initial tests for HBsAg, anti-HBs, and anti-HBc are negative, the exposed person is not immune. Test for HBsAg, anti-HBs, and anti-HBc at 6 and 9 months post-exposure in order to determine whether acute infection has occurred, or whether the exposed person developed vaccine immunity.

If the current exposure is assessed as a low risk for transmission of HBV, but either the exposed or the source person is identified to have risk factors for either HBV or another exposure, offer hepatitis B vaccine to both persons.

9.4 HCV exposure

At the present time, no post-exposure treatment is recommended for HCV. However, the anti-HCV status of the exposed person should be determined at the time of the exposure to assess whether the person has been infected with HCV in the past.

If the initial anti-HCV test is negative, the exposed person should be tested for seroconversion at 9 months post-exposure. If seroconversion occurs, the client should be evaluated for possible treatment. Early treatment following seroconversion may be beneficial.

If the source is HCV+ or in a high risk group, test the exposed person for HCV infection by HCV PCR test at three weeks post-exposure. If PCR+, a second HCV PCR test is needed to confirm the result. If the exposed person is confirmed HCV PCR+, active infection is present and there is no need to test for anti-HCV.

9.5 Tetanus prophylaxis

Tetanus immunoprophylaxis is administered according to the type and degree of injury of the exposed person, where applicable, and NOT because tetanus is bloodborne. A percutaneous injury which occurs in the outdoor environment presents a low (theoretical) risk of contamination with *C. tetani* spores which are usually found in dirt. Consider every blood and body fluid exposure as an opportunity to update incomplete or overdue tetanus immunization. Refer to Table 6, which specifies the indications for tetanus immunoprophylaxis.

Table 6: Tetanus Prophylaxis in Wound Management

History of Tetanus Immunization	Clean, minor wounds		All other wounds ❶	
	Tetanus Toxoid-Containing Vaccine ❷	TIg	Tetanus Toxoid-Containing Vaccine ❷	TIg
Uncertain or < 3 doses	Yes	No	Yes	Yes
Primary immunization complete ❸❹	Yes ❺	No	Yes ❻	No ❼

❶ Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; tearing away of body parts or structures; and wounds resulting from missiles, crushing, burns and frostbite.
❷May have been given as Td, Tdap, or Td/IPV. Monovalent tetanus toxoid is not available in Canada.
❸For additional information on the primary immunization schedule, refer to the Td, Tdap, or Td/IPV vaccine pages.
❹Wound management for children < 7 years of age would be based on specific spacing and doses required as per Pentacel™ and Quadracel™ vaccine pages.
❺Yes, unless there is documentation of a booster within the last 10 years.
❻Yes, unless there is documentation of a booster within the last 5 years.
❼No, unless individuals are known to have a significant humoral immune deficiency state (e.g. HIV, agammaglobulinemia), since immune response to tetanus toxoid may be sub-optimal.
Note: Tetanus-diphtheria (Td) vaccine and Tetanus Immune Globulin (TIg) should be administered using separate syringes and different sites. If a contraindication exists for a tetanus toxoid-containing vaccine, TIg would be given where tetanus immunization is required.

10.0 BLOOD AND BODY FLUID EXPOSURE COUNSELLING GUIDELINES

Initial counselling should be done in the Emergency Department or other health facility where post-exposure management is provided. More detailed counselling should be done by the follow-up physician. If the exposed person is started on a starter kit, counsel the exposed person using the BC Centre for Excellence in HIV/AIDS counselling guidelines regarding anti-retroviral therapy: http://cfenet.ubc.ca/webuploads/files/07_1121_AEGuidelines.pdf

The following are the major points that should be covered during initial counselling.

10.1 Risk of transmission to the exposed person

The risk of infection after exposure to infected blood or body fluid varies by bloodborne pathogen. The risk of transmission is as follows:

- HIV infected blood or body fluids (percutaneous exposure): ~ 0.3% (3 in 1000)
- HIV (following mucocutaneous exposure): ~ 0.1% (1 in 1000).
- HBV (percutaneous): 30% if HBeAg reactive; 5 – 10 % if HBeAg non-reactive
- HCV (percutaneous): up to 7%, depending on the viral load.

If the source is not known to be HIV positive, the risk of transmission drops dramatically and frequently the risk of prophylaxis exceeds the risk of infection.

Evidence shows that antiretroviral therapy can reduce the risk of transmission of HIV by 86%.

The risk will vary somewhat depending on the body site of the exposure, the type of exposure, and the source. In the instance of HIV transmission through percutaneous injury, increased risk is associated with the following factors: greater depth of the injury, greater volume of blood injected, visible blood on the device and/or the device previously in a source's artery or vein, and larger gauge of needle (larger bore needles present greater risk because of the larger volume of blood exposure). Exposures from sources with a high viral load of HIV, HBV, or HCV (i.e. seroconversion in the acute phase of these viral infections, or in late stage AIDS) are also associated with a greater risk of transmission.

The risks and benefits of post-exposure immunoprophylaxis or treatment should be discussed and appropriate measures recommended to the exposed person.

10.2 Testing

In recommending initial testing of the exposed person, it is important they understand that it is baseline testing and that additional follow-up testing is required to determine whether transmission took place as a result of the exposure. Baseline serologic testing is important for comparison with follow-up testing post exposure in order to document whether seroconversion to HIV, HBV or HCV has occurred. This is particularly important for occupational exposures which may involve Workers' Compensation or for exposures which may lead to civil or criminal proceedings. The exposed person should be encouraged to undergo initial testing for their baseline HIV, HBV, and HCV status immediately.

If a woman of childbearing age is exposed, consider pregnancy testing when warranted.

10.3 Follow-up of exposed person

Encourage the exposed person to follow-up with their family physician or other designated physician as it is extremely important to discuss the results of baseline testing and to arrange for subsequent testing. It is also necessary to complete the hepatitis B vaccine series and/or a month of antiretroviral therapy, if indicated. If antiretrovirals are started, it is essential that the exposed person follow-up with a physician as soon as possible: the antiretroviral starter kits contain only a five day supply of medication.

10.4 Follow-up of source person

Encourage the source person to follow-up with their family physician should any of their test results be positive.

If the source person is HBV negative, recommend hepatitis B vaccine for the event of any future exposures.

10.5 Reducing transmission to others

Exposed persons will be anxious and upset when initially assessed. They may not remember all the information provided in initial counselling. It is therefore important that there is repeated and more detailed counselling.

Physicians inexperienced in counselling of this nature should contact their local health unit or STD/HIV clinic and enquire about counselling resources. Information pamphlets or BC Health Files may be helpful in providing information that the exposed person can review at home:
http://www.healthlinkbc.ca/healthfiles/index.stm

If it was a significant exposure and the exposed person requires follow-up testing beyond the baseline testing, the exposed person should be told that it is not possible to determine for at least 6 months whether infection has occurred. If infection has occurred, the exposed person then is capable of transmitting infection to others. While waiting for 6 month follow-up testing to determine if seroconversion to exposed antigens has occurred, the exposed person should be advised to take the following precautions to prevent potential transmission of pathogens to others:

- Abstain from sexual intercourse (vaginal, oral or rectal) or use a latex condom with a water-based lubricant for all acts of sexual intercourse.
- Do not donate blood, plasma, organs, breast milk, tissue or sperm.
- Do not share toothbrushes, dental floss, razors, needles or other implements that may be contaminated with blood/body fluids.
- Cover open cuts/lesions until healed.
- Put articles with blood on them (e.g. bandages, tampons, pads, tissues, dental floss) in a separate plastic bag before disposing into household garbage. Dispose of bloody sharp items (razors, needles, etc) into a hard-sided container, taped shut. Dispose in regular garbage; do not place in container for recycling.
- To clean up blood spills, wet surfaces with 1 part bleach to 9 parts water and leave sitting for 10 minutes before wiping off.
- Avoid sharing needles, drug snorting equipment, etc.
- Defer a planned pregnancy; but if you become pregnant, consult Oak Tree Clinic at BC Women's Hospital.

10.5.1 Considerations pertaining to breast feeding

HIV:
The transmission of HIV through breastfeeding is highest for women who seroconvert while breastfeeding. Therefore, if the source is HIV positive, breastfeeding is not recommended. **Breastfeeding is also contraindicated if the mother is receiving antiretroviral medication.** If the HIV status of the source is unknown, breastfeeding should be temporarily discontinued. During this time, the mother may pump and freeze breast milk while awaiting source test results. If a source person has baseline HIV-negative test results and has no recent high risk behaviour, then breastfeeding can be resumed and the frozen milk used. If a source person has baseline HIV-negative test results but has ongoing or recent high risk behaviour, then further laboratory follow-up of the source will be required to determine if the source may have been infectious at the time of exposure. Breastfeeding can be resumed and the frozen milk used once results of this further testing indicate that the source was not infectious at the time of exposure.

HCV:
If a breast feeding mother is exposed to an anti-HCV+ source or a source at high risk for HCV, she should pump and freeze breast milk until the results are available for the HCV PCR test done 3 weeks post-exposure. If the PCR is negative, she may resume breast feeding and use the frozen milk. If the PCR is positive, she should consult her physician to discuss the risks and benefits of breast feeding and should be evaluated for possible treatment. Early treatment following seroconversion may be beneficial.

HBV:
If a breastfeeding mother is exposed to a HBV positive source **or** an unknown source immunize both the mother and her infant against hepatitis B, using both hepatitis B vaccine and HBIg (depending on the infant's age and history of HBV immunization). The mother can then continue to breast-feed.

In addition to these basic guidelines for counselling, exposed persons who are started on antiretroviral therapy should be provided with information contained in the starter kit provided by the BC Centre for Excellence in HIV/AIDS regarding scheduling and potential side effects of antiretroviral medications.

If the exposed person is a healthcare worker, they may continue to practice provided they:

- Comply with the recommended follow-up testing
- Receive counselling from their worksite Occupational Health, Infection Control, or Public Health Unit on Standard or Routine Precautions
- Double glove if performing exposure-prone procedures in the 6 months post-exposure
- Seek immediate medical assessment if they experience symptoms of infection with HIV, HBV, or HCV during the year after the exposure
- Cease practice pending assessment from the appropriate professional governing body (e.g. College of Physicians and Surgeons of BC, College of Registered Nurses of BC, College of Dental Surgeons of BC) if they undergo seroconversion for any virus during follow-up testing.

The appropriate governing body will only consider restrictions or modifications in practice if the exposed health care worker becomes infected. Restrictions are not necessary following exposure alone.

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APPENDIX A: HUMAN IMMUNODEFICIENCY VIRUS (HIV) OCCUPATIONAL EXPOSURE: FACT SHEET FOR HEALTH CARE AND EMERGENCY SERVICE PROVIDERS

Each year there are a number of occupational exposures to human immunodeficiency virus (HIV) in BC. In Canada, there has been only one definite occupational transmission and two probable transmissions reported since 1985.[1] Despite the relatively low risk of infection, these events are associated with stress and anxiety for the exposed person.

This fact sheet provides answers to common questions that health care and emergency service providers have about HIV after an occupational exposure. It supplements the BC Centre for Disease Control (BCCDC) Blood and Body Fluid (BBF) exposure management guidelines[2] and the BC Centre for Excellence in HIV/AIDS (BCCFE) guidelines[3] for the management of exposure to blood and body fluids in relation to HIV. These two sets of guidelines outline the specific risks for transmission after exposure to blood or body fluids; assessment of the source person for a blood borne pathogen, if feasible; and the recommended management and follow up of the exposed person.

First refer to the BCCDC BBF guideline when a potential exposure has occurred with a blood borne pathogen available at:
http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap1.htm

Also, the BCCFE has additional followup guidelines specific to HIV available at: http://www.cfenet.ubc.ca/content.php?id=86

If you think that you have been exposed, you should immediately have a risk assessment performed by a qualified health professional. A common location where this is available is your local occupational health or emergency department. The BCCDC BBF guideline details that prompt assessment (preferably within two hours of exposure) is particularly important to ensure that, if required, HIV and/or Hepatitis B virus prophylaxis is initiated as soon as possible.

What is HIV and how can it affect me?

HIV infects your T-helper cells, which are an integral part of your immune system. It is primarily transmitted by direct blood to blood contact as well as by semen, vaginal fluids and breast milk. Shortly after infection, most people either do not experience symptoms or may have some vague symptoms commonly described as “flu-like.” HIV infection in an individual always results in a chronic infection. Over a period of 8 to 12 years, all untreated HIV positive individuals will sustain severe damage to their immune system.

This damage leads to the immune system becoming compromised and the development of acquired immunodeficiency syndrome (AIDS), which results in life threatening opportunistic infections.

I think I have been exposed to HIV, what are the chances that I have been infected?

It is estimated that the risk of HIV transmission as a result of a needle-stick from an HIV positive source is approximately 0.3%. Exposures as a result of a mucous membrane splash are estimated to have a risk of approximately 0.1% if the source is know to be HIV positive.[2] For example, the risk is increased if the exposure occurs via a large hollow bore needle, if there was visible blood on the device that caused the injury, if the source has terminal AIDS, and/or if the needle was used in an artery or vein of the source patient.[1] Whether or not an exposure is deemed to be **significant** (i.e. there is a possible risk of contracting HIV) depends on all three of the following factors: infectiousness of the source, the type of body fluid, and the type of exposure.

1. A blood and body fluid exposure is considered to pose a **significant** risk for transmitting HIV if the source is from a high-risk group. That is, a man who has sex with men, a person with a history of injection drug use, persons who received multiple blood transfusions prior to November 1985, or the sex partner of someone who is HIV positive.

2. Only particular body fluids pose a **significant** risk for HIV transmission. Not all body fluids transmit HIV. The types of body fluids that are known to transmit HIV include: blood, semen, vaginal fluids, breast milk, pleural, amniotic, pericardial, peritoneal, synovial, cerebrospinal and exudative fluids.

3. Finally, to be considered significant[3] , the type of exposure has to be percutaneous, permucosal, on non intact skin, or be prolonged exposure of blood or body fluids on intact skin. For definitions of these terms please refer to definitions section in the BBF guidlines.

Where do I get tested for HIV and why?

It is important to immediatly have a risk assessment by a qualified health professional, usually located at your occupational health or local emergency department to document the exposure and to obtain baseline blood samples for HIV (and other blood borne pathogens as applicable). The initial baseline assessment and blood tests are important to guide follow-up.

What are the tests for HIV and when will I need to have them completed?
All persons with a blood and body fluid exposure should have a baseline anti-HIV test. For those persons with a significant exposure, follow-up anti-HIV testing should take place three and six weeks, and six months and nine months post-exposure.

When will I know for sure whether I have been infected or not?
If transmission has occurred, most people will have a sero-conversion (i.e. have a positive anti-HIV result) within three months of exposure. However, if post-exposure prophylaxis (PEP) is administered, antibody response may be delayed and it may take up to 9 months to confirm HIV infection with testing.

If I have a significant exposure, can I have prophylactic treatment?
Yes, there is post-exposure prophylaxis (PEP) for HIV for persons who have had a significant occupational exposure. It is estimated that PEP reduces the risk of HIV transmission by 86%.[2] If you have been determined to have a significant exposure, it may be appropriate for you to take a 28-day course of anti-retroviral medication. It is recommended that you start the medication as soon as possible after a significant exposure, preferably within 2 hours, because use after 36 hours may not prevent HIV transmission. However, it is possible that PEP after 36 hours may favourably alter the subsequent disease in the exposed person and therefore there is no absolute cut-off time for the initiation of therapy in higher risk exposures. The BCCFE can be phoned at the number at the end of the document if there is uncertainty around initiating PEP.

How do I protect other people while I am waiting for my status to be confirmed through testing?
Please refer to the BBF's comprehensive list of recommendations to protect others while awaiting test results.

For any further questions about PEP or guidelines for accidental exposure to HIV contact the BC Centre for Excellence in HIV/AIDS at 1-888-511-6222

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APPENDIX B: HEPATITIS B (HBV) OCCUPATIONAL EXPOSURE: FACT SHEET FOR HEALTH CARE AND EMERGENCY SERVICE PROVIDERS

Introduction

Each year there are a number of occupational exposures to hepatitis B virus (HBV) in BC. Due to the success of HBV immunization programs in this province, there were less than 40 acute cases reported of HBV in 2007. Occupational exposures are believed to account for less than 1% of these infections. Regardless of these small numbers, occupational exposures to HBV and other blood borne pathogens can cause the exposed person a great deal of stress and anxiety.

This fact sheet provides answers to common questions that health care and emergency service providers often have about HBV after an occupational exposure. It supplements the BC Centre for Disease Control (BCCDC) guideline for the management of exposure to blood and body fluids (BBF).

What is hepatitis B and how can it affect me?

Hepatitis B virus infects the liver and is primarily spread by direct contact with infectious blood or body fluids, especially sexual fluids. About 90% of adults who become infected with HBV completely recover from the infection after approximately 6 months. During this time of acute infection people can either be symptom free or get sick with signs and symptoms such as jaundice (i.e., skin and eyes turn yellow), pale stools, dark urine, fatigue, and loss of appetite. About 8% to 10 % of adults who acquire HBV remain chronically infected (i.e., they do not clear the virus on their own). Many individuals who are chronically infected remain symptom free for years or decades. However, the ongoing liver inflammation associated with chronic HBV can put one at increased risk for complications such as cirrhosis (i.e., severe liver scarring that can impede normal liver function) and/or liver cancer.

Fortunately, there is a vaccine that provides protection (i.e., immunity) against HBV. The vaccine is highly recommended as it is 95% effective in preventing HBV infection and its chronic consequences and is available at no cost to all health care and emergency personnel. The majority of younger British Columbians are now immune to HBV due to the universal Grade 6 immunization program that has been in effect since 1992 and the universal infant vaccine program since 2001. If you have not received the vaccine and are susceptible to infection, talk to your health care provider about getting vaccinated.

What should I do if I think I have been exposed?

Go immediately have a risk assessment performed and receive appropriate counseling by a qualified health professional. This can be done at your local occupational health unit or emergency department. Prompt assessment is particularly important to ensure that, if required, the Human Immunodeficiency Virus (HIV) and/or the Hepatitis B Virus prophylaxis (treatment to prevent infection) are initiated as soon as possible

I think I have been exposed to HBV what are the chances that I have been infected?

The risk of getting HBV infection after contact with infected blood or body fluids depends on if you have been previously vaccinated, type of exposure and amount of HBV in the blood or body fluid involved in the risk event. For example, a hollow bore needle with infected blood piercing the skin poses a far greater risk than infected blood splashing on skin.

Receiving the HBV vaccine and/or immune globulin (HBIg) as soon as possible after the exposure, ideally within 48hrs, (i.e., post exposure prophylaxis) can prevent HBV infection in most cases. If post-exposure prophylaxis is given, at the opportune time or if you have been successfully vaccinated in the past, the risk of HBV infection after percutaneous exposure (i.e., needle stick) from an HBV-positive source is virtually 0%. If post exposure prophylaxis is not received and/or there is no history of successful vaccination, the risk of getting HBV increases to between 5-30%.

Where do I get tested for HBV and why?

It is important to promptly have a risk assessment by a qualified health professional usually located at your occupational health or local emergency department. This initial assessment is important to determine:

1. Your suseptability to infection
2. The risk of infection due to your exposure and
3. The appropriate post exposure prophylaxsis, if required

What are the tests for HBV that I will have right away and what do they mean?

There are several tests used in the detection and management of HBV. The three blood tests that will be performed after an exposure are:

- Hepatitis B surface antigen (HBsAg)
  - Determines if you are infected (acute or chronic infection)
- Antibody to HBsAg (Anti-HBs)
  - Determines if you have immunity to HBV either through a past cleared infection or hepatitis B vaccination
- Antibody to core antigen (Anti-HBc)
  - Determines if you have been previously infected with HBV (not present after HBV immunization)

Follow up testing is recommended which includes all three HBV serologic markers at 6 and 9 months after the exposure. It is important to note that these are not the only tests for HBV. There are other tests that may be performed that are used for patient monitoring and treatment.

How do I know if I am protected against HBV through vaccination

Hepatitis B vaccines induce the production of antibodies to hepatitis B surface antigen (anti-HBs), which confers protection to HBV. A result that is greater than or equal to 10 international units per litre (IU/L) indicates protective levels. Anti-HBs remains detectable for approximately 10-15 years. After this time it can decline and fall below 10 IU/L but after a natural exposure or a booster dose the levels will dramatically rise and you will be protected.

If you are in a occupation where you have high risk ongoing exposure to HBV, you can discuss with your occupational health department or health care provider having post-vaccination anti-HBs testing to determine if a result greater than 10 IU/L has occurred.

Can I have post exposure prophylactic treatment for HBV?

Yes, there is prophylactic treatment (i.e., immunization either through vaccination and/or hepatitis B immunoglobulin to prevent infection) for HBV. Whether one receives HBV vaccine or immunoglobulin depends on a number of factors that includes the HBV status of the source, your vaccine history and your previous response to the vaccine. Section 9.3 Table 5: Hepatitis B Post-Exposure Prophylaxis summarises immunization and testing schedules.

If I have become newly infected what do I do?

If post exposure prophylaxsis is not successful in preventing transmission or post exposure prophylaxis was not recieved and acute HBV infection occurs, there is a 95% probabability that you will clear the virus from your blood within about 6 months. During this time you are infectious to others who may come in direct contact with your blood or body fluid so it is important to follow the recommended precautions outlined in the BBF guideline to reduce the risk of exposing others. It is also important to see a health care provider during this time to be monitored for either HBV clearance or chronic HBV infection.

How will I know if I am chronically infected with HBV?

If the HBsAg test remains positive for 6 months after infection you are considered chronically infected and it is unlikely that your immune system will clear the virus.

Can I receive treatment for HBV if I am chronically infected?

Yes, treatment for chronic HBV is an option. The treatments for HBV can suppress the infection but not cure it. There are drugs that interfere with viral replication or improve the immune system's response to the infection. The goal of these treatments is to reduce the risk of serious complications such as cirrhosis and liver cancer. There are several new therapies in development, which are expected to improve the management of HBV in the future. A discussion with a health care provider specializing in viral hepatitis is necessary to inform you of the various therapeutic options.

APPENDIX C: HEPATITIS C (HCV) OCCUPATIONAL EXPOSURE: FACT SHEET FOR HEALTH CARE AND EMERGENCY SERVICE PROVIDERS

Introduction

Each year there are a number of occupational exposures to hepatitis C virus (HCV) in BC[1]. However, they account for <1% of new HCV infections [2]. Nevertheless, for the exposed person these events can cause stress and anxiety.

This fact sheet provides answers to common questions that health care and emergency service providers often have about HCV after an occupational exposure. It supplements the BC Centre for Disease Control (BCCDC) guideline for the management of exposure to blood and body fluids (BBF).

What is HCV and how can it affect me?

HCV infects the liver and is transmitted by direct blood-to-blood contact. Most people who are infected do not experience symptoms. Approximately 25% (range 15%-45%) of acutely infected people will clear the virus on their own, usually within 3 months after infection. Most people 75% (range 55%-85%), remain chronically infected unless they receive antiviral therapy which can result in virological clearance in about 45 - 80% of individuals, depending on their HCV genotype. Without therapy 15% to 25 % of those chronically infected will develop progressive liver disease, over multiple decades. Unfortunately there is no vaccine to prevent transmission.

What should I do if I think I have been exposed?

Go immediately and have a risk assessment performed by a qualified health professional. This can be done at your local occupational health or emergency department. The BCCDC BBF guideline details that prompt assessment is particularly important to ensure that, if required, Human Immunodeficiency Virus and/or Hepatitis B Virus prophylaxis (treatment/vaccine to prevent infection) is initiated as soon as possible. Assessment for HCV is not as urgent because there no evidence to support post-exposure prophylaxis. However, as outlined below chronic infection with HCV may be prevented or cured with antiviral therapy.

I think I have been exposed to HCV what are the chances that I have been infected?

The risk of getting HCV infection after contact with infected blood or body fluids depends on the type of exposure and the amount of HCV in the blood or body fluid involved in the contact. For example, a hollow bore needle with infected blood piercing the skin poses a far greater risk than infected blood splashing on skin. The average incidence of anti-HCV infection after percutaneous exposure from an HCV-positive source is about 1.8% (range: 0%--7%) [8].

Where do I get tested for HCV and why?

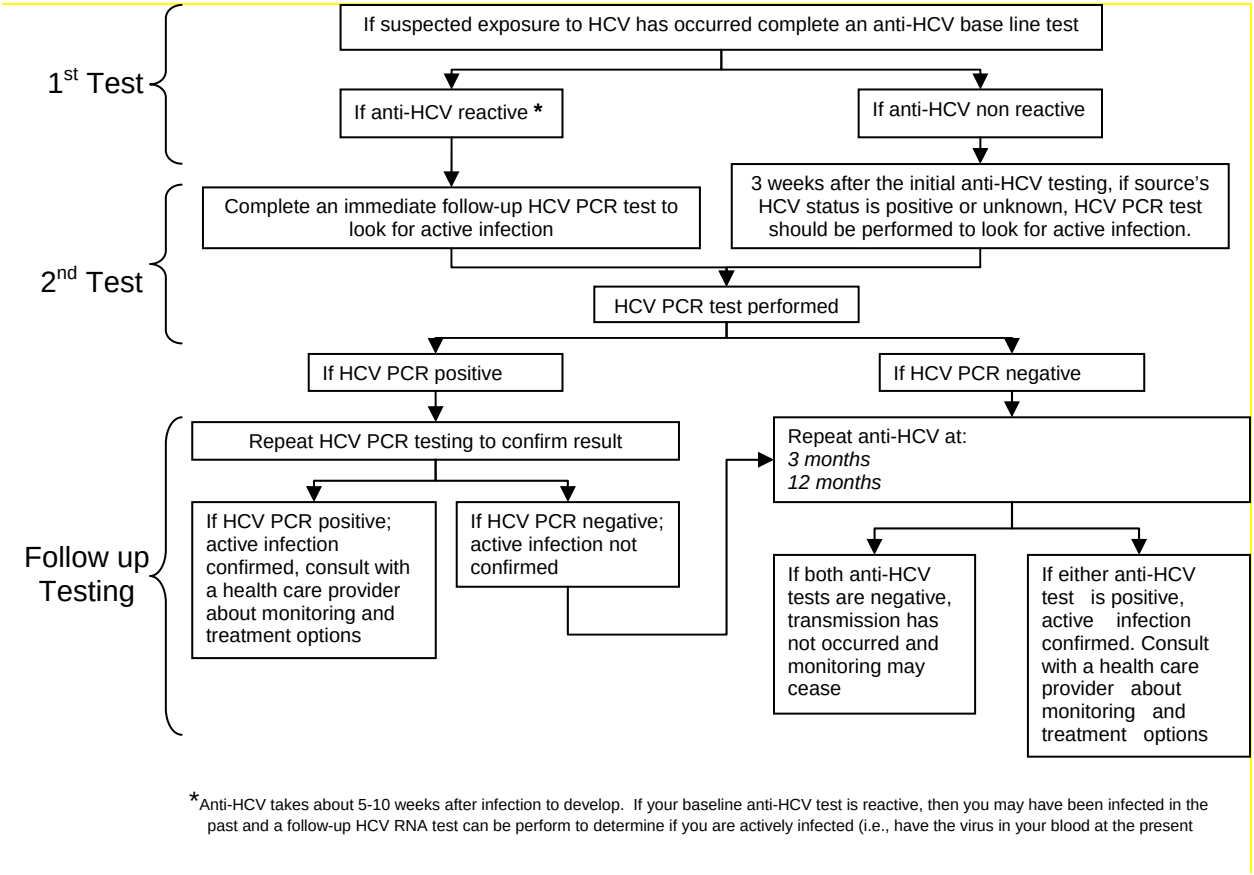
It is important to promptly have a risk assessment by a qualified health professional usually located at your occupational health or local emergency department to document the exposure and to obtain baseline blood samples for HCV (and other blood borne pathogens as applicable). The initial baseline assessment and blood tests are important to guide follow up.

What are the tests for HCV and when will I need to have them completed?

There are two tests used in HCV testing:

1. **Anti-HCV test** – this test detects your immune system's antibody response to HCV and can determine if you have been infected in the past, but it does **not** confirm an active infection (i.e., have virus in your blood at the present time).
2. **Qualitative HCV PCR test** – Qualitative HCV RNA polymerase chain reaction identifies the presence or absence of HCV RNA in EDTA Plasma and is used for diagnosis of active infection (HCV RNA is present in blood). Please collect blood in EDTA plasma instead of serum because HCV RNA is stable for 4-5 days in plasma. Please note that quantitative HCV PCR quantifies the amount of HCV RNA in the blood, this test is more expensive and is used only for treatment monitoring. HCV PCR throughout these BBF guidelines refers to qualitative HCV PCR testing.

Testing schedule for a person exposed to HCV:



*Anti-HCV takes about 5-10 weeks after infection to develop. If your baseline anti-HCV test is reactive, then you may have been infected in the past and a follow-up HCV RNA test can be perform to determine if you are actively infected (i.e., have the virus in your blood at the present

What is the fastest way to find out if I have been newly infected?

The fastest way to find out if you have been infected is to have an HCV PCR test completed 3 weeks after the exposure. This test detects HCV RNA (i.e., the virus) in the blood. Because of a small (0.1%-1.0%) chance that a positive test result is not accurate the first time, initial positive tests should be repeated on a fresh blood sample.

How will I know if I am chronically infected with HCV?

If the HCV RNA test remains positive (i.e., the virus is detectable in your blood) for 4 - 6 months after infection you are considered chronically infected and it is unlikely that your immune system will clear the virus on it's own (spontaneous clearance).

Can I have prophylactic treatment for HCV if I have been exposed?

At present there is no evidence that HCV infection can be prevented by taking medication immediately after exposure (prophylactic treatment). This is because the risk of occupational HCV transmission is very low (approximately 2%), the treatment is difficult to tolerate and 25% of infected people will clear the infection on their own. In addition, if you become infected, early treatment can prevent chronic infection in about 80%-98% of cases and chronic infections are increasingly curable with anti-viral treatment.

Once it is confirmed that I have been newly infected what should I do?

Have a discussion with a health care provider specializing in viral hepatitis. This is beneficial to determine whether you should monitor for spontaneous clearance or get early treatment. Options for early treatment include high dose interferon monotherapy or a combination of pegylated interferon alpha and ribavirin [4,9,10,11,12,13,14,15]. Early treatment can be very successful in preventing chronic infection; success rates have ranged from 80% to 98%.

Can I receive treatment for HCV if I am chronically infected?

Yes, treatment for chronic HCV infection is an option and overall about 55% of people who complete treatment with pegylated interferon and ribavirin therapy are virologically cured of their infection. The HCV treatment duration and the probability of a viral clearance are affected by the viral genotype. Approximately 45% of genotype 1, 4, 5 and 6 infected people are cured after 48 weeks of treatment and about 75%-80% of those chronically infected with genotypes 2 & 3 are cured after 24 weeks of treatment [16]. A discussion with a health care provider specializing in viral hepatitis is necessary to inform you of the various therapeutic options.

Are there any new therapies for HCV forthcoming?

Yes there are several new therapies in development, which are expected to be better tolerated and increase the curability of HCV in the future.

Some suggestions on places to go for specialized viral hepatitis care

Northern Health Authority
Viral Hepatitis Clinic
Ph. (250) 565-7387

Interior Health Authority
Liver Info and Treatment Clinic
Toll free: 1-866-847-4372

Vancouver Island Health Authority
North Island Liver Service
Toll free: 1-877-215-7005

Fraser Health Authority
Fraser Hepatitis Services
Toll free: 1-800-308-3318

Vancouver Coastal Health Authority
VGH Gastroenterology Clinic
Ph. (604) 875-4111

or check with your employer or family physician for other options

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