

UNIVERSITY OF OTTAWA
OFFICE OF THE CHIEF RISK OFFICER (OCRO)

MEASURES TO MINIMIZE EXPOSURE TO BLOODBORNE
PATHOGENS AND POST-EXPOSURE PROPHYLAXIS

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PURPOSE

The purpose of this document is to minimize the risks of infection and illness for employees who are at increased risk of being exposed to bloodborne pathogens during the course of their work. This is also meant to provide an integrated approach in providing the appropriate medical follow-up for employees who have been exposed to bloodborne pathogens.

It is not to be used as a guideline to assess the degree of risk following an exposure. Employees who have had an exposure are advised to promptly seek medical attention.

Definition of Bloodborne Pathogens

Bloodborne pathogens are agents that have the potential to cause illness in individuals who are exposed to them. Health Canada has advised that the pathogens of greatest concern in the workplace are the hepatitis B virus (HBV), the hepatitis C virus (HCV) and the Human Immunodeficiency Virus (HIV).

Hepatitis B is caused by a potentially fatal virus that destroys liver cells and may permanently damage the liver. It can be transmitted not only by percutaneous exposures, but also by mucous membrane exposures. The incubation period for hepatitis B is 30 to 180 days (WHO). Of the healthy adults infected with hepatitis B, 10% become chronic carriers and chronic carriers may develop life-threatening cirrhosis and an increased susceptibility to liver cancer. Immunization is a very effective method of preventing hepatitis B.

Hepatitis C is a virus that was previously known as Non-A Non-B hepatitis. The interval between exposure and seroconversion is approximately 8 to 11 weeks. It is considered an occupational risk for those who have or repeated percutaneous exposures to blood or blood products. At least 70% of people infected with the virus will become chronically infected (WHO). An increased risk of liver cancer does exist, especially in individuals who develop cirrhosis. To date no vaccine exists for hepatitis C, but therapy with pan-genotypic direct-acting antivirals (DAAs) may be considered for individuals who are infected.

Human Immunodeficiency Virus is a retrovirus that causes Acquired Immunodeficiency Syndrome (AIDS). Latency in HIV infection can last up to 10 or 15 years. It is difficult to become infected with HIV through a needle stick injury or other exposure to blood or other body fluids. The risk depends on the amount of virus to which one is exposed and the titre of HIV viral RNA which is highest at the time of seroconversion and in late symptomatic and advanced disease. There is no vaccine for HIV, but drugs are available for use. To be effective, the drugs must be started as soon as possible.

The types of body fluids capable of transmitting HIV, HBV, and HCV from an infected individual include:

- blood, serum, plasma and all biologic fluids visibly contaminated with blood
- laboratory specimens, samples or cultures that contain concentrated HIV, HBV, HCV
- organ and tissue transplants
- pleural, amniotic, pericardial, peritoneal, synovial and cerebrospinal fluids
- vaginal secretions or semen
- saliva (for HCV, HBV, and HIV if a bite is contaminated with blood and for HBV if a bite is not contaminated with blood). Feces, nasal secretions, sputum, tears, urine, and vomitus are not implicated in the transmission of HIV, HBV and HCV unless visibly contaminated with blood.

Occupational Groups At Increased Risk

Although this document applies to all employees at the University of Ottawa (uOttawa), there are some occupational groups who are at greater risk of being exposed to potentially infectious materials.

Supervisors should identify in writing the tasks and procedures where occupational exposure to blood and blood products may occur, even if personal protective equipment and clothing are provided. Supervisors should consult with medical professionals in assessing the level of risk employees are being exposed to as needed.

Employees working in the following areas at uOttawa are considered to be at greater risk of being exposed to bloodborne pathogens:

- personnel working in medical research labs,
- Protection Services officers,
- emergency response team members,
- staff working in medical settings that provide patient care,
- prosectors,
- housekeeping staff,
- plumbers, electricians
- staff who during the course of their work are routinely required to provide first aid.

New employees working in the above areas, who have not received the safety training specific to their occupations are considered to be at even greater of being exposed to infectious materials and of being injured on the job.

Students in the Faculties of Medicine and Health Sciences who are placed in training agencies such as hospital and medical clinics to obtain work skills and experience are also considered to be at increased risk of being exposed to bloodborne pathogens.

Prevention

Immunization

Vaccination if available is strongly recommended to all employees in the high risk groups.

Risk Reduction Programs

An analysis of the components of the work to be done is recommended in order to determine what procedures and activities put employees at greatest risk of having an exposure. Whenever possible, alternate processes should be put in place to eliminate the risk of exposure.

Training

Training specific to the level of risk encountered in the occupational setting is strongly recommended. Employees should be advised what activities put them at greater risk of having an exposure and they should be encouraged to work safely at all times. They must also be instructed to use the engineering controls and the personal protective equipment made available to them. Employees working in medical research laboratories should receive Biosafety training. Contact the Biosafety group (bio.safety@uottawa.ca) for more information. The overall practical training should also stress the importance of using Universal Precautions when handling infectious materials.

Reporting

The importance of reporting every exposure sustained in the workplace should be stressed. Employees must always be advised to seek medical advice following an exposure.

Surveillance System

Reports should be completed after every exposure or injury. When reports are completed a surveillance system can be implemented. The causes of the accident can be identified and the level of risk established. Corrective measures can then be initiated.

Pregnant employees who work in high risk areas should be especially familiar with and strictly adhere to precautions to minimize the risk of transmission. **They may request to be assigned to modified duties for the duration of the pregnancy.**

Universal Precautions

Universal blood and body fluid precautions, as recommended by Health Canada.

These precautions must always be used when handling blood or body fluids and especially when the infection status of the source of blood or body fluids is not known.

1. Employees should routinely use the appropriate **protective equipment and engineering controls** to prevent skin and mucous membrane exposure when contact with blood or other body fluids is anticipated.

Gloves should be worn for handling blood and body fluids, and handling items or surfaces soiled with blood or body fluids. Avoid touching items that are not contaminated when gloves are being worn.

Masks, eye protection, faces shields should be worn during procedures that are likely to generate droplets of blood or body fluids.

Lab coats or gowns should be worn during procedures that are likely to generate splashes of blood or body fluids. Contaminated clothing should be removed immediately after the procedure is completed.

2. **Handwashing is the most important procedure for preventing the transmission of bloodborne pathogens.** Hands should be washed with soap and water (and with an antiseptic if possible) immediately after touching blood, body fluids, secretions, excretions and contaminated items. Hands should be washed immediately after the gloves are removed and before leaving a work area.

3. **Mucous membranes** (eyes, mouth , nose) should be rinsed with copious amounts of saline solution or water if splashed with blood or body fluids.

4. **Caution** should be used when handling contaminated needles, scalpel blades and equipment. To prevent needle stick injuries, needles should not be recapped, purposely bent or broken or manipulated unnecessarily. After use, needles and syringes should be placed in puncture resistant biohazardous containers.

5. Employees who have **contact dermatitis or exudative lesions** should refrain from procedures that will involve handling blood or body fluid.

First Aid

First aid measures initiated immediately after the injury can minimize the exposure to bloodborne pathogens.

The steps should be as follows:

- Remove contaminated clothing or gloves.
- Force bleed if possible (needle stick injuries) and allow immediate bleeding of cuts.
- Wash the affected area with soap (antiseptic if available) and water.
- If the eyes, nose or mouth are involved, flush them with large amounts of water or normal saline.

The wound should be covered with a bandaid or dressing after first aid has been given.

Reporting Exposures

The exposure must be reported to the supervisor or a designated person without delay. This should be followed by submitting an online accident, incident, occupational illness or near miss form. Exposure follow up will be conducted by Human Resources: Health and Wellness sector.

Depending on the exposure it may need to be reported to Public Health Agency of Canada, this assessment is completed by the Biosafety Risk Specialist.

The injured person should not postpone seeking medical attention if the supervisor is not available and should immediately go to the emergency room.

Details of the accident should be documented as compensation for an occupational infection may depend on test results from the employee/student and the source. The physician will determine if the risk is significant, the type of medical follow up required and if prophylaxis is needed.

Post-Exposure Assessment, Prophylaxis and Management

The post-exposure assessment will be performed by the attending physician. Both the employee and the source should be tested for all three pathogens immediately after the incident as compensation for an occupational infection may depend on documented test results.

An exposure will be considered significant when there is a possibility that a bloodborne pathogen may have entered the body by way of a percutaneous injury, a bite that breaks the skin, by a cut, or by the body fluid coming into contact with non-intact skin such as chapped or abraded skin or by a splash into the eyes, nose or mouth.

Post-Exposure Chemoprophylaxis

Following an occupational exposure to HIV, the treating physician may either recommend, offer, or not offer chemoprophylaxis depending on the circumstances of the exposure and the characteristics of the source. These exposures are defined as follows:

- percutaneous, mucous membrane, or non-intact skin exposure to concentrated virus in a research lab
- percutaneous exposures to potentially infectious blood or body fluids, which involve deep injury, injection of source patient's blood or body fluid, a needle placed directly in source patient's blood vessel, or source patient with high viral titre (as in acute retro viral illness or terminal HIV disease) (2).

If post-exposure chemoprophylaxis is to be implemented it should be started as soon as possible after the exposure, preferably within hours.

Post-Exposure Immunoprophylaxis for Hepatitis B

The recommended treatment for possible exposure to hepatitis B will be determined by a physician according to vaccination and antibody status of the employee.

It might be recommended that the blood work be repeated 6 weeks and 12 weeks after the exposure.

Reporting to the Workplace Safety and Insurance Board

The information provided on the Online Accident, Incident, Occupational Illness or Near miss form will be used by the Health and Wellness sector to complete the form required to advise the Workplace Safety and Insurance Board of the exposure.

Accidents or exposures for which employees must seek medical attention or absences from work as a result of the exposure must be reported to the Workplace Safety and Insurance Board within 3 days of the employer learning of the incident.

Confidentiality

Confidentiality surrounding the employee's infection status shall be protected. Documentation will be kept in the employee's occupational health file and will not be released without the employee's expressed written permission.

References

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