BLOOD-BORNE DISEASES SURVEILLANCE PROTOCOL FOR ONTARIO HOSPITALS

Developed by the Ontario Hospital Association and
the Ontario Medical Association
Joint Communicable Diseases Surveillance Protocols Committee

Approved by
The OHA and the OMA Board of Directors
The Ministry of Health and Long-Term Care –
The Minister of Health and Long-Term Care

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This protocol was developed jointly by the Ontario Hospital Association and the Ontario Medical Association to meet the requirements of the *Public Hospitals Act 1990,* Revised Statutes of Ontario, Regulation 965. This regulation requires each hospital to have by-laws that establish and provide for the operation of a health surveillance program including a communicable disease surveillance program in respect of all persons carrying on activities in the hospital. The communicable disease program is to include the tests and examinations set out in any applicable communicable disease surveillance protocol. The regulation states that the communicable disease surveillance protocols that hospitals must adopt are those "published jointly by the Ontario Hospital Association (OHA) and the Ontario Medical Association (OMA) and approved by the Minister (of Health and Long-Term Care)."

This Protocol has been reviewed since the previous version; changes have been highlighted in yellow for easy identification. Protocols are reviewed on a regular basis, every two years or as required.

The protocol reflects clinical knowledge, current data and experience, and a desire to ensure maximum cost effectiveness of programs, while protecting health care workers and patients. It is intended as a minimum standard that is practical to apply in most Ontario hospital settings. It does not preclude hospitals from adopting additional strategies that may be indicated by local conditions.

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Rationale for Blood-Borne Diseases Surveillance Protocol

Health care workers (HCWs) who have potential contact with blood and/or body fluids of patients have an occupational risk of acquiring infection with **hepatitis B virus (HBV), hepatitis C virus (HCV) and/or human immunodeficiency virus (HIV**). This protocol is intended to provide guidance about the prevention of HBV through immunization, and the most appropriate follow-up for HCWs exposed to the blood or body fluids of potentially infected individuals. Because HBV, HCV and HIV are spread by similar means, one protocol will apply to all three diseases.

Effective therapies, including antiviral therapies, are available for HBV, HCV and HIV to reduce viral load to low or undetectable levels, improving patient safety and the medical status of the worker.

In developing surveillance policies for blood-borne pathogens, hospitals should include prevention programs to reduce exposure to blood and body fluids, including the use of safety-engineered devices. The Needle Safety Regulation 474/07 made under the Occupational Health and Safety Act came into force September 1, 2008 and mandates the use of safety-engineered needles in Ontario.[1] Analysis of incident reports, HCW education and process improvement are critical to reducing exposures.

Hepatitis B Virus (HBV)

HBV is a bloodborne virus that infects the liver and causes acute and chronic infection. HBV is transmitted through percutaneous or mucosal contact with HBV infected blood and body fluids, primarily through close or sexual contact with an infected person, sharing of injection drug use equipment, and vertical (mother to infant) transmission.[2] In Canada, transmission is predominantly via sexual contact and as a result of injection drug use.[3]

In 2014, the rate of acute hepatitis B infection in Canada was 0.5 cases per 100,000, compared with 1.0 per 100,000 in 2005.[3] In contrast, rates of chronic HBV infection (i.e. chronic HBV carriage) in Canada have remained relatively stable, between 10.9 and 13.6 per 100,000 population, between 2008 and 2014. In 2014, the rate of chronic disease was 12.0 per 100,000.[3]

The Ontario Burden of Infectious Disease Study (ONBOIDS) identified HBV as the fourth most burdensome infectious disease in Ontario, due to its associated morbidity and mortality.[4] In Ontario, an average of 98.4 cases of acute hepatitis B per year (0.72 per 100,000 population per year) was reported between 2012 and 2016; in 2017 the rate was 0.71 per 100,000.[5] About 95 percent of adults will recover within 6 months of becoming infected and as a result will develop lifelong protection against HBV. The remaining 5 percent are unable to clear the virus and will become chronically infected. In 2017, 1,602 new cases of chronic hepatitis B (11.3 new chronic carriers per 100,000 population) were reported in Ontario.[5] Chronic hepatitis B infection is treatable in many

cases.

Occupational transmission of HBV typically occurs through exposure to contaminated sharp instruments (e.g. needle stick injuries), or splash or spray of infectious blood or body fluid to the mucous membranes. After a needle-stick injury from a needle contaminated with HBV, there is a 6-30% chance that an exposed susceptible person will be infected.

HBV is a vaccine-preventable disease and HBV vaccine has been widely available since 1983. The vaccine is safe and effective, and immunization should be initiated at the earliest opportunity for all persons who may have occupational exposure to HBV.

Transmission of HBV from HCWs to patients has been documented.[6-8]

Hepatitis C Virus (HCV)

HCV is a bloodborne virus that causes both acute and chronic infection of the liver. It is transmitted by contact with infected blood. Prior to the introduction of blood donor screening, HCV was most commonly related to the receipt of infected blood or blood products. This source of infection is now extremely rare. The majority of new HCV infections in Canada occurs in illicit drug users as a result of sharing injection or inhalation equipment.
In Canada, reported cases of hepatitis C (both acute and chronic disease) have decreased from 40.2 per 100,000 population in 2005 to 29.3 per 100,000 in 2014.[3] In Ontario, HCV has been associated with the highest burden of any communicable disease.[4] The average annual rate of HCV infection in Ontario between 2012-16 was 31.1 per 100,000 population, and 31.4 per 100,000 in 2017.[5] Seventy five to 85% of infected individuals go on to develop chronic disease,[9] with 5-20% developing cirrhosis,[9] liver failure, hepatocellular carcinoma, requiring liver transplantation, or dying as a result of their disease.
There is no licensed vaccine for HCV, with post-exposure follow-up focusing on early detection and treatment. There are effective drug treatment regimens available.

Occupational exposures primarily occur as a result of a sharps injury; the risk of occupational acquisition after exposure is approximately 1.8%. There are rare case reports of infection related to a mucosal exposure (eye splash).[10]

Transmission of HCV to patients by infected HCWs has also been documented.[11-14]

Human Immunodeficiency Virus (HIV)

HIV is a bloodborne virus with two major sub-types, HIV-1 and HIV-2. HIV-1 is responsible for most HIV infections in North America. HIV attacks the immune system, resulting in a chronic, progressive illness that leaves people vulnerable to opportunistic infections and cancers.

In 2016, 63,110 Canadians were estimated to be living with HIV.[15] Of these, almost half

were men who have sex with men, 32.6% heterosexual individuals, and 14.6% injection drug users. An estimated 2,165 new infections occurred in 2016, an incidence of 6.0 per 100,000 population, compared with 5.5 new infections per 100,000 in 2014.[15] In Ontario in 2017, the incidence of HIV infection was 5.9 per 100,000 population.[5]

After a needlestick injury from a needle contaminated by HIV, there is a 0.3% risk of infection. The risk of infection following mucosal exposure from infectious blood or body fluids is 0.1%.

Several look-back investigations have shown that transmission from an HIV-infected HCW to a patient is extremely unlikely when routine infection control practices are followed. Transmission of HIV from an infected surgeon to a patient and from an infected obstetrician to a patient has been documented.[16-17]

This protocol is only one component of an infection prevention and control program; HCWs must consistently adhere to Routine Practices.

Blood-Borne Diseases Surveillance Protocol for Ontario Hospitals

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I. Purpose

The purpose of this protocol is to provide direction to hospitals to prevent the transmission of blood-borne pathogens to health care workers (HCWs) and patients.

II. Applicability

This protocol applies to **all persons carrying on activities in the hospital** who may have the potential for an occupational exposure to a bloodborne pathogen, including but not limited to employees, physicians, nurses, contract workers, students, post-graduate medical trainees, researchers and volunteers. The term health care worker (HCW) is used in this protocol to describe these individuals. This protocol does not apply to patients or residents of the facility or to visitors.

When training students or hiring contract workers, the hospital must inform the school/supplying agency that the school/agency is responsible for ensuring that their students/contractors are managed according to this protocol.

This protocol is for the use of the Occupational Health Service (OHS) in hospitals. It is expected that OHS collaborate with Infection Prevention and Control (IPAC) and other departments, as appropriate.

III. Pre-placement

Most persons infected with HBV, HCV or HIV can work safely with patients without risk of transmission of the virus, as long as reasonable precautions are taken. No routine screening of persons carrying on activities in the hospital is needed for hepatitis B surface antigen (HBsAg), or antibody to HCV or antibody to HIV.

Some professional colleges, e.g. the College of Physicians and Surgeons of Ontario,[18] have specific policies with regard to pre-appointment screening for HBV, HCV and HIV. HCWs who perform exposure-prone procedures (see Glossary) should seek medical evaluation with respect to the potential for transmission of their infection to patients. This risk is dependent on the HCW's

type of practice, the infecting virus(es), and the status of their infection and the potential for antiviral therapy to reduce viral load, thereby reducing risk for patients and improving the HCW's health status.[19]

Transmission of HBV, HCV and HIV from HCWs to patients has been documented. This emphasizes the need for compliance with precautions and primary prevention.

Susceptible HCWs who have the potential for exposure to the blood and/or body fluids of patients must be offered the hepatitis B vaccination. This vaccine must be offered at the expense of the hospital or agency. This should include HCWs who may not be in direct contact with patients or gross blood, but may be at risk for sharps injuries (e.g., laundry, housekeeping, central reprocessing staff).

For students and agency workers, the hospital should ensure that the supplying school or agency accepts responsibility for their immunization.

Refusal of immunization should be documented in the HCW's health record. If a HCW is late receiving the second or third dose of the hepatitis B vaccine series, the next dose should be given as soon as possible; it is not necessary to restart the schedule or repeat doses. Post-vaccination testing for antibody to HBsAg should be performed one month after the vaccine series is complete, to assess immunity. Immunity is present if the titre of antibody to HBsAg (also known as HBsAb) is $\geq$ 10 IU/L.

An HCW who has received three vaccine doses and does not have serologic evidence of immunity (i.e. in whom antibody titre to HBsAg is < 10 IU/L) should receive an additional three-dose vaccine series.[20] Testing for antibody to HBsAg should be repeated one month after completion of the second series; if antibodies to HBsAg remain < 10 IU/L, the HCW is considered a vaccine non-responder.[20]

An HCW whose immunization was remote (e.g. immunized in the public school based program) and in whom there is no previous documentation of immunity should be tested for antibody to HBsAg.[20] If antibodies to HBsAg are < 10 IU/L, the HCW should receive one dose of vaccine and be tested one month later; if antibody titre is still < 10 IU/L, the HCW should receive a second vaccine series of three doses, followed by post-vaccination testing for antibody to HBsAg one month after the repeat vaccine series is complete.[20]

Routine booster doses of vaccine are not recommended for immunocompetent persons with previously documented immunity.[20] In persons with previously demonstrated antibody to HBsAg, immune memory persists even in the absence of detectable antibody. Immunity may wane in immunocompromised persons; periodic testing of these persons should be considered and booster dosing given with re-testing as necessary.[20]

IV. Continuing Surveillance

No routine ongoing serologic screening of any persons carrying on activities in the hospital is needed for HBV, HCV or HIV infection.

HCWs who perform exposure-prone procedures (see Glossary) and who are unimmunized or are non-responders to HBV vaccine should be offered regular (e.g. annual) screening for infection with HBV (i.e., HBsAg and antibody to HB core antigen).[18,21]

Some professional colleges (e.g. CPSO[18]) have specific policies with regard to periodic screening for HBV, HCV and HIV of HCWs licensed by the college if they perform exposure-prone procedures (see Glossary); HCWs must be aware of and follow the requirements of their college.

V. Exposure to Blood-Borne Pathogens

Definition

Exposure requires both an injury (i.e. percutaneous injury from a needle or other sharp object, a splash of blood or other body fluid onto a mucous membrane or non-intact skin, or a human bite that breaks the skin) **and** contact with blood or body fluid capable of transmitting HBV, HCV and/or HIV.

Policies and Procedures

There must be up to date policies and procedures to protect and/or follow-up exposed HCWs; these must be available and easily accessible in OHS and to all exposed HCWs. Although tetanus is not a blood-borne disease, it is included in this protocol because tetanus prophylaxis is part of the first aid for some types of exposures.

Baseline Bloodwork for Exposed HCWs
Baseline testing for HBV (if immunity is not on file), HCV and HIV infection is recommended following HCW exposure. Without this information, any future claim for compensation for occupationally-acquired HBV, HCV or HIV illness could be jeopardized.

There must be a process to effectively provide timely follow-up to exposed HCWs when the OHS is closed or does not formally exist.

A. Initial Procedures for All Cases

When an HCW is exposed to blood or body fluids from a known or unknown source, the HCW should:

- allow any wound to bleed freely, then wash it gently but thoroughly with soap and water;
- report to supervisor/manager or delegate and complete an incident report as per hospital protocol; and
- proceed immediately to the OHS (or designated alternate)

When an exposed HCW is assessed, the OHS (or designate) will perform the following procedures:

- thoroughly cleanse and apply an appropriate antiseptic to any wound.
- for a clean minor wound – give Td booster if more than 10 years since last booster dose.
- if the wound was caused by a dirty object or is a deep puncture that cannot be adequately cleansed (i.e., tetanus-prone wound) provide Td booster if more than 5 years since last booster dose.

  N.B. If the individual has not yet received an adult dose of Tdap (tetanus, diphtheria and acellular pertussis), give Tdap in place of Td booster. Adults who have not previously received Tdap vaccine in adulthood should receive one dose of Tdap vaccine, regardless of the interval since the last dose of tetanus or diphtheria toxoid-containing vaccine.
- assess hepatitis B immunity:
  - if the HCW has documented immunity to HBV, counsel HCW to report to the OHS any symptoms of concern such as nausea, abdominal pain or jaundice (see VII. Reporting);
  - if the HCW has begun the hepatitis B vaccine series, continue and complete as originally scheduled; or
  - if the HCW has received no doses of hepatitis B vaccine, give the first dose of the vaccine, and arrange for the second and third doses according to the recommended schedule.
- continue with the procedures in parts B to F, below, as appropriate, and
- emphasize the importance of follow-up blood testing, if indicated, as infection with HBV, HCV or HIV may be asymptomatic.

B. Unknown Source

If the patient source of the blood is not known, the OHS (or designate) must:

- offer the HCW baseline testing for HBV (if evidence of immunity is not on file), and for HCV and HIV; and
- arrange follow-up testing at 6 weeks and 4 months for HIV, and at 3 months and 6 months for HBV and HCV

Notes:

1. *If there is a high probability that the source of the blood is infective for HBV or the source patient status is unknown, follow the recommended action in section D.*
2. *If there is a high probability that the source of the blood is infective for HIV, follow the recommended action in section E.*

C. Known Source

Whenever there is a possibility that an HCW has been exposed to a blood-borne pathogen, the issues of patient confidentiality and HCW rights may conflict. This is an ethical dilemma for which there is no simple solution. The procedure below was developed according to the principles of both practicality and respect for these apparently opposing rights.

Testing the Source Patient for HBV, HCV and HIV

Serologic testing of the source patient for HBV, HCV and HIV is the most reliable method to assess risk of exposure and should be strongly encouraged.

Ascertain whether the exposed HCW is willing to be tested for antibody to HBV, HCV and HIV. This testing should be strongly encouraged.

If the exposed HCW is willing to be tested:

- draw blood from the HCW for baseline testing for antibody to HBV (unless adequate antibody levels are documented on file), HCV, HIV, and alanine transferase (ALT), a liver enzyme.

- have the attending physician or medical designate inform the source patient of the incident and request informed consent for testing. Consent must include the need to reveal the test results to the exposed HCW; the patient must be informed that positive results are reportable to the local Medical Officer of Health. (Refer to facility policies regarding consent when the patient is unconscious or incompetent to consent). With consent, draw blood as soon as possible from the patient and test for HBsAg and antibody to HCV and HIV.

- if the patient does not consent to testing and has clinical or epidemiological risk of HBV, HCV and/or HIV (see Glossary), see parts D, E, and F, below.

- if results of the patient's test(s) is/are positive, follow the procedures in D, E and/or F below.

- if results of the source patient's test(s) are negative, no further follow up is usually required. **However, if the patient is at high clinical or epidemiological risk for HBV, HCV or HIV infection**, ensure that the exposed HCW receives counselling about the possible risk of infection and prevention of transmission of bloodborne pathogens.

If the exposed HCW is not willing to be tested:

- do not test the source patient (when the exposed HCW is not tested, there is no value in testing the patient); and

- counsel the exposed HCW about the risk of becoming infected.

Options under the Mandatory Blood Testing Act, 2006 [22]

In instances where an individual has come into contact with a bodily substance of another person while providing emergency health care services or emergency first aid to that person, or while in the course of his or her duties, if the person belongs to a prescribed class, the individual may have remedies under the Mandatory Blood Testing Act 2006.

Under such circumstances, the individual may apply to a Medical Officer of Health to have a blood sample of another person analyzed. If the respondent does not provide a blood sample voluntarily within two days, the application is referred to the Consent and Capacity Board, which will convene a hearing to determine whether or not a mandatory order should be issued.

The Ministry of Community Safety and Correctional Services has further information regarding the application process, including template application forms, on their website at https://www.mcscs.jus.gov.on.ca/english/MandatoryBloodTesting.html

D. Hepatitis B Infected Source

When testing indicates the source patient is positive for HBsAg, management of the HCW is dependent on the HCW's immune/immunization status, as below.[20]

- if the HCW has had documented immunity to HBV at any time, no further action is required.

- if the HCW is a non-responder to two courses of hepatitis B vaccine, administer hepatitis B immune globulin (HBIG) and repeat HBIG in one month.

- if the HCW is a non-responder to one course of hepatitis B vaccine, administer HBIG and initiate the second course of vaccine (3 doses).

- if the HCW has received 3 doses of vaccine but immune response is unknown, test for antibody to HBsAg:

    - if antibody to HBsAg is ≥10IU/L, the HCW is immune and no action is required
    - if the HCW is not immune, i.e. antibody to HBsAg is < 10 IU/L, give HBIG and 1 dose of vaccine; test for antibody to HBsAg at 6 months (testing at 6 months will allow antibodies from HBIG to wane)[20]
    - if result is unknown at 48 hours, give 1 dose of vaccine; when result known, if antibody to HBsAg is ≥10 IU/L the HCW is immune; if inadequate immunity, give HBIG and test for antibody to HBsAg at 6 months.

- if the HCW has received 2 doses of vaccine, test for antibody to HBsAg and give one dose of vaccine. If antibody to HBsAg is <10 IU/L or unknown at 48 hours, give HBIG and test for antibody to HBsAg at 6 months. If antibody to HBsAg is ≥10 IU/L the HCW is immune.

- if the HCW has received no vaccine or one dose of vaccine, test for antibody to HBsAg, give HBIG and either begin or complete the vaccine series as scheduled. Test for antibody to HBsAg one month after vaccine series is completed.

Note: When indicated, give HBIG as soon after the incident as possible. It is believed to be somewhat effective up to 7 days after exposure; however, efficacy decreases substantially when it is given >48 hours after exposure.[20]

Because of the necessity for timely action, a small stock of vaccine and one or two vials of HBIG should be kept for emergencies. Arrange to obtain HBIG from Canadian Blood Services.

If seroconversion occurs during the follow-up period after a documented exposure to HBV, refer HCW for medical assessment.

E. HIV-Infected Source

If an HCW has been exposed to the blood or body fluids from a patient with HIV infection:

- counsel the HCW about the risk of becoming infected

- factors associated with HIV transmission include a deep injury, device visibly contaminated with the source patient's blood, procedures involving a needle placed directly in a vein or artery, and terminal HIV illness in the source patient.[23] These exposures involve a larger volume of blood and/or a higher titre of HIV

- encourage the HCW to permit baseline testing for HIV antibody status as soon as possible after exposure, within 1 week of the incident; and

- OHS should follow the exposed HCW with screening for HIV antibody at 6 weeks and 4 months.

Post-exposure prophylaxis (PEP) for HIV:

Note that drug regimens change over time. Consultation with an infectious disease specialist should occur ideally within 24 hours.[24]

In its current guidelines issued in June 2016, WHO recommends PEP use for occupational exposures.[24] These recommendations provide simpler regimens, enabling easier prescribing, better adherence and increased completion rates of PEP to prevent HIV in HCWs who have been accidentally exposed to HIV.

If the decision is made to give prophylaxis, it must be started as soon as possible, preferably within one hour, although can be given up to 72 hours post-exposure as the interval after which there is no benefit from PEP is undefined. Hospitals should establish a system and protocol providing availability of counselling and post-exposure therapy at all times.

PEP regimens should contain 3 (or more) antiretroviral drugs. A currently recommended PEP regimen includes raltegravir 400 mg PO twice daily and Truvada® (tenofovir DR 300mg and emtricitabine 200 mg) once daily for 28 days.

The potential benefits and risks of PEP should be discussed with the exposed HCW; if the HCW is pregnant, the discussion should also include potential benefits and risks for the fetus. Referral to an infectious diseases physician with expertise in HIV treatment is advised for exposed pregnant or breastfeeding HCWs or if anti-retroviral drug resistance in the source patient’s virus is known or suspected.

If the exposed HCW is positive for HIV antibody during baseline testing, give appropriate counselling, encourage medical referral and follow the policies of your facility.

If seroconversion occurs during the follow-up period after a documented exposure to HIV, refer for medical assessment and follow-up.

Note:

If the exposure involved blood or body fluids of a patient who has clinical or epidemiological risk for HIV infection and who refuses to allow testing of his/her blood, offer the exposed HCW a follow-up program similar to that outlined above.

HCWs who become infected with HCV after an exposure to a source patient co-infected with HIV and HCV should be followed for HIV seroconversion for an extended period of time, i.e., for 12 months.[25]

F. Hepatitis C Infected Source

There is no prophylaxis currently available for an HCW exposed to the blood of a patient with HCV infection. Available data do **not** support the use of immune globulin or antiviral agents in this situation, and they should not be given.

Counsel the exposed HCW about the risk of becoming infected.

Counsel the exposed HCW to report any signs of hepatitis-like illness (see Glossary).

HCWs exposed to HCV should be tested as soon as possible after exposure for antibody to HCV and, if negative, again 3 and 6 months later. Testing baseline liver enzymes (i.e. ALT) should also be performed and repeated at 3 and 6 months.

If the exposed HCW is positive for antibody to HCV, refer for medical assessment and follow-up.

If seroconversion occurs during the follow-up period, refer for medical assessment and follow-up.

HCWs who become infected with HCV after an exposure to a source patient co-infected with HIV and HCV should be followed for HIV seroconversion for an extended period of time, i.e., for 12 months.[25]

VI. Asymptomatic Carriers of Blood-Borne Pathogens

The recommendation that most infected HCWs may continue to carry on activities in the hospital is based on current Canadian practice and consensus recommendations. HCWs engaged in invasive procedures should be assessed on a case-by-case basis. Evidence of transmission of infection would be cause for investigation and possible work restrictions.

HCWs who perform “exposure-prone” procedures (see Glossary) have an ethical obligation to know their serologic status for HBV, HCV and HIV and to seek guidance from their professional regulatory body or, for those with no regulatory body, the local Medical Officer of Health or the OHS with respect to the potential for transmission of their infection to their patients. Some professional colleges have specific policies with regard to blood-borne pathogen infected HCWs licensed by the college; HCWs must be aware of and follow the requirements of their college.

Disclosure of an infected HCW’s status to patients is not required.[19, 21]

Exposure of a Patient to an HCW’s Blood

If a patient is exposed to an HCW’s blood the patient must be notified, counseled and offered the appropriate post-exposure regimen, if indicated. The HCW has an ethical obligation to be tested for HBV, HCV and HIV at the time of the exposure. The confidentiality of the HCW must be maintained; disclosure of the identity of the HCW to the patient is not necessary.[19, 21] Depending on the clinical status of the HCW and results of the HCW testing, appropriate management and follow-up should be provided for the exposed patient.

VII. Reporting

Reporting Exposures

If a contract worker or student suffers possible exposure to a blood-borne disease in the hospital, the OHS must notify the supplying agency/school that:

- the person has been exposed; and
- the agency/school must follow up the case. If required, the Medical Officer of Health will provide advice

If a contract worker or student suffers possible exposure to a blood-borne disease in the hospital and has no supplying agency, the OHS must inform the worker of the need for follow-up. If required, the Medical Officer of Health will provide advice.

Reporting Illness After Exposure

The OHS must inform all exposed persons of the symptoms of blood-borne diseases and advise them to report these, if they should occur, to the OHS (see Glossary). Whenever such symptoms are reported, the person must be referred to his/her personal physician for medical investigation and treatment.

Suspect or confirmed HBV and HCV, and laboratory-confirmed HIV (as per Ontario Regulation 135/18 and Sections 26 and 27 (2) of the Health Protection and Promotion Act) must be reported as soon as possible to the local Medical Officer of Health.

In accordance with the Occupational Health and Safety Act and its regulations, an employer must provide written notice within 4 days of being advised that a worker has an occupational illness, including an occupationally-acquired infection, and/or a Workplace Safety and Insurance Board (WSIB) claim has been filed by or on behalf of the worker with respect to an occupational illness, including an occupational infection, to the:

- Ministry of Labour,
- Joint Health and Safety Committee (or health and safety representative), and
- trade union, if any.

The employer must report an occupational BBP exposure to the WSIB and to the Ministry of Labour if PEP is given.

VIII. Evaluation

Ongoing evaluation of the surveillance program is essential to ensure effectiveness. Incident reports from exposures to blood or body fluids should be analyzed with respect to time, place and person, and the summary data reported to the hospital Infection Prevention and Control Committee and Joint Health and Safety Committee. Analysis should be directed towards in-service education and process improvement to reduce or eliminate exposures.

IX. Glossary

Body Fluid

Any body fluid containing visible blood and all body fluids with the capability of transmitting HBV, HCV and/or HIV, i.e. seminal fluid, vaginal secretions, cerebral spinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid and tissues.

Exposure-prone procedure

Procedures during which transmission of HBV, HCV or HIV from a HCW to a patient is most likely to occur, including the following:[18]

i. digital palpation of a needle tip in a body cavity or the simultaneous presence of the HCW's fingers and a needle or other sharp instrument or object in a blind or highly confined anatomic site, e.g., during major abdominal, cardiothoracic, vaginal and/or orthopaedic operations; or

ii. repair of major traumatic injuries; or

iii. manipulation, cutting or removal of any oral or perioral tissue, including tooth structures, during which blood from a HCW has the potential to expose the patient's open tissue to a bloodborne pathogen.

Patients at high risk for HIV infection

- men who have sex with men;
- persons who inject drugs using shared needles;
- persons who have had a blood transfusion or received blood products or organs between 1978 and 1985;
- persons who come from areas of the world in which HIV is endemic. (Refer to your local Medical Officer of Health for current information regarding which countries are considered endemic);
- persons who have had a sexual partner from any of the above groups; and
- infants born to HIV-infected women.

Hepatitis B Immunity

The equivalent of ≥ 10 international units (IU) of antibody to HBsAg per litre when tested by the radioimmunoassay (RIA) method.

Sharps

Needles, syringes, blades, lancets, clinical glass and any other clinical items that may be contaminated with blood or body fluids and could cause a cut, puncture or abrasion.

Symptoms of Hepatitis B and Hepatitis C Infection

Fatigue, loss of appetite, abdominal discomfort, jaundice, change in colour of urine and stool, rash, sore joints; occurring within 6 weeks to 6 months after the exposure.

Symptoms of Early HIV Infection

Flu-like symptoms occurring within weeks of exposure; unexplained weight loss, chronic diarrhea, swollen lymph nodes, fever, fatigue or opportunistic infections.

References

1. Occupational Health and Safety Act. Ontario Regulation 474/04. Needle Safety. 2010. http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_070474_e.htm. Accessed November 4, 2018.

2. Heymann DL (ed.). Hepatitis, viral. II: hepatitis B. In: Control of Communicable Diseases Manual, 20th ed. American Public Health Association, 2015: Washington DC. pp. 257-64.

3. Public Health Agency of Canada. *Report on Hepatitis B and C in Canada: 2014*. Centre for Communicable Diseases and Infection Control, Infectious Disease Prevention and Control Branch, Public Health Agency of Canada; 2017. Online at: https://www.canada.ca/en/services/health/publications/diseases-conditions/report-hepatitis-b-c-canada-2014.html#a2.2. Accessed October 25, 2018.

4. Kwong JC, Crowcroft NS, Campitelli MA, et al. Ontario Burden of Infectious Disease Study Advisory Group; Ontario Burden of Infectious Disease Study (ONBOIDS): An OAHPP/ICES Report. Toronto: Ontario Agency for Health Protection and Promotion, Institute for Clinical Evaluative Sciences; 2010. https://www.publichealthontario.ca/en/eRepository/ONBoID_ICES_Report_ma18.pdf. Accessed November 4, 2018.

5. Public Health Ontario. Surveillance Report: Monthly Infectious Diseases Surveillance Report (February 2018). https://www.publichealthontario.ca/en/DataAndAnalytics/Documents/PHO_Monthly_Infectious_Diseases_Surveillance_Report_-_February_2018.pdf. Accessed October 25, 2018.

6. Enfield KB, Sharapov U, Hall KK, et al. Transmission of hepatitis B virus from an orthopedic surgeon with a high viral load. Clin Infect Dis 2013;56:218-24.

7. Spijkerman IJB, van Doorn L- J, Janssen MHW, et al. Transmission of hepatitis B virus from a surgeon to his patients during high-risk and low-risk surgical procedures during 4 years. Infect Control Hosp Epidemiol 2002;23:306-12. DOI: 10.1086/502056

8. Harpaz R, Von Seidlein L, Averhoff FM, et al. Transmission of hepatitis B virus to multiple patients from a surgeon without evidence of inadequate infection control. N Engl J Med 1996;334:549-54. DOI: 10.1056/NEJM199602293340901.

9. Heymann DL (ed.). Hepatitis, viral. II: hepatitis C. In: Control of Communicable Diseases Manual, 20th ed. American Public Health Association, 2015: Washington DC. pp. 264-8.

10. Hosoglu S, Celen MK, Akalin S, Geyik MF, Soyoral Y, Kara IH. Transmission of hepatitis C by blood splash into conjunctiva in a nurse. Am J Infect Control 2003; 31: 502–4.

11. Ross SR, Viazov S, Thormählen M, et al. Risk of hepatitis C virus transmission from an infected gynecologist to patients: results of a 7-year retrospective investigation. Arch Intern Med 2002;162:805-10. DOI: 10.1001/archinte.162.7.805.

12. Cody SH, Nainan OV, Garfein, RS, et al. Hepatitis C virus transmission from an anesthesiologist to a patient. Arch Intern Med 2002;162:345-50. DOI: 0.1001/archinte.162.3.345.

13. Ross SR, Viazov S, Gross T et al. Transmission of hepatitis C virus from a patient to an anesthesiology assistant to five patients. N Engl J Med 2000;343:1851-4. DOI: 10.1056/NEJM200012213432505.

14. Esteban JI, Gómez J, Martell M, et al. Transmission of hepatitis C virus by a cardiac surgeon. N Engl J Med 1996;334:555-61. DOI: 10.1056/NEJM199602293340902.

15. Public Health Agency of Canada. Summary: Estimates of HIV Incidence, Prevalence and Canada's progress on meeting the 90-90-90 HIV targets. 2016. Public Health Agency of Canada, Ottawa; July 2018. https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/summary-estimates-hiv-incidence-prevalence-canadas-progress-90-90-90/pub-eng.pdf. Accessed October 25, 2018.

16. Dorozynski A. French patient contracts AIDS from surgeon. BMJ 1997;314:250.

17. Mallolas J, Arnedo M, Pumarola T, et al. Transmission of HIV-1 from an obstetrician to a patient during a Caesarian section. AIDS. 2006;20:285-7

18. College of Physicians and Surgeons of Ontario. Policy Statement #3-12 on Blood Borne Pathogens. College of Physician and Surgeons of Ontario, Toronto. 2015. https://www.cpso.on.ca/Policies-Publications/Policy/Blood-Borne-Viruses. Accessed November 4, 2018.

19. Henderson, DK, Dembry, L, Fishman, NO, et al. Society for Healthcare Epidemiology of America guideline for management of healthcare workers who are infected with hepatitis B virus, hepatitis C virus, and / or human immunodeficiency virus. Infect Control Hosp Epidemiol 2010:31:203-32. DOI: 10.1086/650298203-232.

20. Canadian Immunization Guide:Part 4 - Active Vaccines. Hepatitis B vaccine. https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-7-hepatitis-b-vaccine.html#a52 Accessed November 4, 2018.

21. Laboratory Centre for Disease Control, Health Canada. Proceedings of the consensus on infected health care workers: risk for transmission of blood-borne pathogens. Can Comm Dis Rep 1998;24S4. http://publications.gc.ca/collections/collection_2016/aspc-phac/HP3-1-24-S4-eng.pdf Accessed October 26, 2018.

22. Mandatory Blood Testing Act, 2006. SO 2006, Chapter 26. O Reg 449/07. http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_06m26_e.htm. Accessed November 4, 2018.

23. Centers for Disease Control and Prevention. Case-control study of HIV seroconversion in health care workers after percutaneous exposure to HIV-infected blood, France, United Kingdom and US, January 1988 - August 1994. Morb Mort Wkly Rep 1995;44:929-33.

24. WHO. Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection: Recommendations for a Public Health Approach. 2nd edition. Geneva: 2016. http://www.who.int/hiv/pub/arv/arv-2016/en/ . Accessed November 4, 2018.

25. Kuhar DT, Henderson DK, Struble KA et al. Updated US Public Health Service guidelines for the management of occupational exposures to human immunodeficiency virus and recommendations for postexposure prophylaxis. Infect Control Hosp Epidemiol 2013;34:875-92. DOI: 10.1086/672271. Erratum in Infect Control Hosp Epidemiol 2013;34:1238.