Region of Waterloo
PUBLIC HEALTH AND
PARAMEDIC SERVICES

Significant Blood Exposure: refer for medical assessment ASAP. 5-day HIV PEP starter kits available at local hospitals if indicated (start within 1-2 hrs, maximum 72 hrs)
Public Health Role: consultation/liaison only
Follow Up: done by primary health care provider or, if HIV PEP is given, by a physician with a special interest in HIV

OCCUPATIONAL BLOOD AND BODILY FLUID EXPOSURE GUIDELINES FOR EMERGENCY SERVICE WORKERS

1. FIRST AID - immediately:

Remove contaminated clothes. Allow wound to bleed freely, wash thoroughly with soap and water. Thoroughly flush mucous membranes with water.

2. ENSURE TETANUS UP TO DATE (preferably as Tdap [Adacel™])

Clean, minor wounds	All other wounds (major, dirty)
Tetanus vaccine if longer than 10 years	Tetanus vaccine if longer than 5 years

- Tdap (i.e., Adacel™) is preferred for adults ≥18 years (if not yet received an adult dose of pertussis) as it includes protection for pertussis (whooping cough), assuming 3 doses of tetanus in the past
- TIg (tetanus immune globulin) - immunization that provides immediate protection, available from hospitals, only needed for persons who have not had at least 3 doses of tetanus vaccine in their life with major or dirty wounds

3. ASSESS IF EXPOSURE OCCURRED (for hepatitis B, hepatitis C and HIV)

An exposure includes the following (if involves blood, tissue or other potentially infectious body fluids, see chart below)**:**

- Percutaneous – e.g. skin puncture or laceration by needle or sharp object
- Mucosal – splash to mucous membranes (e.g. eyes, nose, mouth)
- Cutaneous – contact through **non intact** skin (e.g. blood on open cut or dermatitis)
- Bites where skin is broken – risk to victim for hepatitis B from saliva; risk for hepatitis C and HIV **only if** saliva contains blood from oral lesion or injury; biter is also at risk if the bite drew blood

Not an exposure if: blood/bodily fluid onto intact skin, bites without broken/bleeding skin

Bodily Fluids Potentially Infectious			Bodily Fluids NOT Potentially Infectious Unless Visibly Bloody except: hepatitis B is found in feces, nasopharyngeal washings, saliva & sweat		
blood/plasma	vaginal secretions	amniotic fluid	Feces	sputum	urine
Semen	CSF fluid	peritoneal fluid	nasal secretions	sweat	vomitus
pleural fluid	synovial fluid	pericardial fluid	Saliva	tears	

4. LEVEL OF RISK:

1. Source - highest risk includes known positive - consider viral load/treatment; if status unknown consider risk factors (prevalence rates e.g., HIV 0.2% in Canada)[2]: injection drug user, men who have sex with men, sexual partner of known positive, multiple sexual partners, history of incarceration, tattoo/body piercing, from endemic country, received blood transfusion in Canada before 1986 for HIV, 1990 for hepatitis C and 1970 for hepatitis B
2. Type - higher to lower: hollow-bore needle > solid needle-deep injury > superficial scratch/mucous membrane
3. Volume - more blood = higher risk
4. Time out of body - fresh blood = higher risk than dried blood (survival outside the body: hepatitis B- at least 7 days; hepatitis C- up to 3 weeks; HIV does not live long outside the body)

5. PROBABILITY OF TRANSMISSION FROM A POSITIVE SOURCE

Hepatitis B	Percutaneous	6-30%	1 in 3-16 people exposed (no risk if immune)
	Mucosal*	Occurs	No quantitative data, but multiple cases of transmission reported in literature
Hepatitis C	Percutaneous	1.8%	1 in 55 people exposed
	Mucosal*	Very rare	Extremely low risk
HIV	Percutaneous	0.3%	1 in 300 (99.7% will NOT contract HIV). **Negligible risk if blood dried e.g., discarded needle found in community; PEP generally not indicated.**[6,7,8]
	Mucosal* Cutaneous	0.09% < 0.09%	Extremely low risk, < 1 in 1000 (in other words 99.91% will NOT contract HIV)

* mouth/eye/nose

6. SOURCE TESTING - Most efficient and effective way to obtain source testing is by VOLUNTARY CONSENT

Direct Request

- Exposed person or designate directly requests that the source be tested for blood-borne diseases
- Institutional settings – medical staff or occupational health workers can request on behalf of exposed person
- If the source is not at the hospital and agrees to be tested, refer them for testing at their family physician or urgent care clinic; ensure the source has name and phone number and family doctor of exposed person regarding sharing the results

Process

- Physician orders source testing stat for hepatitis B, hepatitis C, and HIV
- Hepatitis B testing not needed if exposed person is immune (i.e., immunized and positive titre any time in past)
- Source provides consent for hospital or family physician to release results to exposed person (document consent, exposed person's contact information and process for communication of results)
- Physician or designate provides exposed person with results

(Source testing cont'd)

How results are provided to the exposed person

- If source is tested at the hospital, the physician or designate from the hospital will arrange for follow up by an infectious disease physician to inform the exposed person of the results
- If source is tested at their family physician's office, the physician or designate at the office is responsible for informing the exposed person and/or family physician of the results
- Public Health Ontario Lab in Toronto does the testing, but only provides the results to the ordering physician/hospital, not to the local Public Health Department (unless it is positive)

Source refuses & significant exposure: Emergency Service Workers – option to submit application under the Mandatory Blood Testing Act via the Ontario Ministry of Heath https://www.ontario.ca/page/mandatory-blood-testing (within 30 days)

7. POST EXPOSURE BLOODWORK TESTING OF EXPOSED PERSON (can be arranged by primary health care provider)

	Baseline (pre-existing infection; Hep B immunity)	6 weeks	3 months	4 months	6 months
Hepatitis B*	HBsAg (infection) & Anti-HBs (titre) if unvaccinated or titre unknown	Titres 1-6 months after last dose of vaccine series (if HBIg was also given, wait 6 months to allow HBIg antibodies to wane) HBsAg and Anti-HBc at 3 and 6 months only if not immune			
Hepatitis C	Anti-HCV, ALT	HCV RNA (PCR) (if high risk)	Anti-HCV ALT 95-99% sensitivity		Anti-HCV ALT 95-99%sensitivity
HIV	HIV Ag/Ab combo screen If PEP: ALT, AST, CBC, platelets, BUN, creatinine, bHCG (females)	HIV Ag/Ab >99% sensitivity if not on PEP**		HIV Ag/Ab *** >99.5% sensitivity	

*If exposed person has had a positive titre ever (and is not immunocompromised), they are considered protected against hepatitis B for life so no testing for hepatitis B is required . Titre levels decrease in most people over time, but a positive result at any time in the past indicates lifelong protection due to immune memory.
** PEP may delay HIV antibody response, consider >99% sensitive 6 weeks after completing PEP
*** 4 months adequate if 4th generation combination HIV Ag/Ab test is used (Public Health Ontario Lab uses), test again at 12 months if exposed person becomes infected with hepatitis C after exposure to a source who is co-infected with HIV and hepatitis C

8. PEP REGIMEN (Post Exposure Prophylaxis)

a) Hepatitis B Immunization - Refer to Canadian Immunization Guide for details

Immunization and Titre results (blood test to check immunity)	Risk	Action
Immunized, titre positive anytime in the past	No risk	No action
Immunized, no titre ever done*	May be at risk	Titre ASAP (<48 hours for results), if OK no action, if non-immune: High risk exposure – HBIg and vaccine, blood test for titre in 6 months If titre unknown >48 hrs-1 vaccine boost, follow above once titre known Low risk exposure – 1 dose vaccine, blood test for titre in 1 month
Unimmunized	At risk	High risk exposure - HBIg and vaccine series Low risk exposure – hepatitis B vaccine series Blood test for titre 1 month after vaccine series completed
Non-responder (negative titre when tested 1-6 months after vaccine series completed) **	At risk	High risk exposure: had 1 complete series - HBIg and 2nd vaccine series (blood test 1 month after vaccine series completed); had 2 complete series - HBIg x 2 doses one month apart Low risk exposure – 2nd vaccine series (if already completed, no action)

* If vaccine series was years ago and titre never done, a titre done now may be negative because antibodies may have declined (as they do in most people) but could still be protected due to immune memory. To determine if protected, give 1 vaccine dose and check titre 1 month later (6 months if HBIg also given), if positive considered immune for life (as long as not immunocompromised)
**Defined as a non-responder if titre done within 1-6 months after completion of vaccine series.
**50-70% of non-responders will respond to a second vaccine series
HBIg: immunization that provides immediate temporary protection, used in addition to hepatitis B vaccine, only in high risk exposures, physicians can order it from hospital blood banks
Hepatitis B vaccine: provides protection even after exposure, follow up vaccine series and titre done with family physician
School hepatitis B vaccine program, Ontario: grade 7, began 1994 - 3 dose series, then in 2000 - 2 dose series, equally effective, 99% at 11-15 yrs

b) Hepatitis C

- No medication or immunization indicated
- If infection occurs some people clear the virus on their own ≤ 6 months, studies suggest early treatment is beneficial

c) HIV - Updated CDC/US Public Health Service Guidelines, Management of Occupational Exposures to HIV, August 2013

- Only a 3 drug PEP regimen recommended for ALL exposures if:
  - meets criteria for exposure **and** source is HIV positive or there is a reasonable suspicion for HIV infection (see sections 3 and 4 to determine if exposure is significant)
  - PEP **not** justified for exposures that pose a negligible risk for transmission (e.g., discarded needle, bites)
- Current PEP regimen (see below) better tolerated than previous regimens
- Expert opinion recommended if exposed person pregnant/breastfeeding, source HIV+ with anti-retroviral resistance or PEP is delayed >72 hours (efficacy unknown but can consider up to 1 week if extremely high risk)

Preferred HIV 3-drug PEP Regimen:
Waterloo Region Hospitals - 5 day starter kits

Isentress™ (Raltegravir) 400 mg PO twice daily x 28 days
Plus
Truvada™ 1 PO daily x 28 days
(Tenofovir DF [TDF] 300mg + emtricitabine [FTC] 200mg)

Follow up is done by physician with a special interest in HIV to monitor drug tolerance, reassess need for PEP within 3-5 days