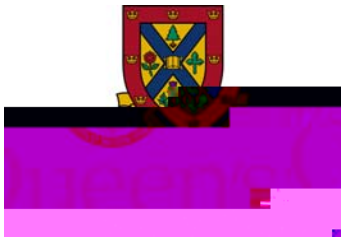


Date Issued: September 2011	**Page No.:** 1 of 12	**Document No.:** SOP-Biosafety-08
Revision: 2.0	**Subject:** **Human Tissue, Blood or Other Body Fluid**	

1. **Purpose:**

   To outline the health risks associated with the use of human tissue, blood, or other bodily fluids in research laboratories, the methods to prevent infection and the response to incidents with these materials that can potentially transmit infection. The infectious agents of primary concern are the bloodborne pathogens (BBP), Human Immunodeficiency Virus (HIV, the virus that causes AIDS) and Hepatitis viruses B and C. However, any infectious agent of disease present in the material can be transmitted by improper handling or accidental exposure to infected material. Blood is the body fluid of highest risk and the main subject of this SOP. However all body fluids and tissues should be handled as if they have the potential to transmit disease.

   Following an incident, prompt first aid and medical treatment is important because it can prevent infection by some of the viruses for which there is no cure once an infection is established (e.g. drug therapy within two hours of the incident can prevent HIV infection).

   Potentially serious infection of a wound resulting in Tetanus (lockjaw) can be prevented by proper cleaning and up-to-date immunization (or tetanus booster or anti-tetanus immunoglobulin may be required).

   If this is an emergency, see the last three pages for an action flow chart and maps.

2. **Applicable Legislation, Standards, Guidelines**:

   Ontario Occupational Health and Safety Act

   Public Health Agency of Canada Laboratory Biosafety Guidelines

   Canadian Immunization Guide 2002 6th Edition. National Advisory Committee on Immunization, Minister of Health. Population and Public Health Branch. http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php

   Preventing transmission of bloodborne pathogens in the health care and public service sector setting. Public Health Agency of Canada. http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/97vol23/23s3/23s3b_e.html

3. **Definitions**

   bloodborne pathogens (BBP) : micro-organisms in blood and certain body fluids that cause disease in humans; the viruses of most concern are HIV, Hepatitis B and Hepatitis C

AIDS : acquired immune deficiency syndrome, caused by infection with HIV

HIV : Human immunodeficiency virus that causes the disease Acquired Immune Deficiency Syndrome (AIDS). HIV attacks the immune system, resulting in a chronic, progressive illness and leaving infected people vulnerable to opportunistic infections and cancers. The median time from infection to AIDS diagnosis now exceeds 10 years. **AIDS is a chronic, potentially fatal disease that requires complex and ongoing medical management.**

Hepatitis B Virus : A bloodborne virus (HBV) that causes liver inflammation (hepatitis); severity ranges from unapparent cases to fatal acute hepatic necrosis, or becomes a chronic infection; low short term case fatality rate in hospitalized patients; long term case fatality rate is 2-3% due to cancer or cirrhosis of the liver; 95% of adult infections are self limited; note prolonged survival of the virus outside the host**. HBV it is most frequently occurring bloodborne pathogen and historically has been the most frequent laboratory-associated infection. There is no cure for disease from HBV**.

Hepatitis C Virus : A bloodborne virus (HCV) severity ranges from unapparent cases in approximately 90% of infections, to rare fulminating, fatal cases. Up to 90 per cent of infected persons carry HCV indefinitely. Over the long term, they are at risk of such illnesses as profound fatigue, cirrhosis, and liver cancer. - chronic liver disease with fluctuating or persistently elevated liver enzymes is common, occurring after 50%-80% of HCV infections in adults;8( )]TE8 Tc-.000 i 86 i 86 .1(l30eprof0ng, 6 i fatality rate i

Tetanus (lockjaw) : Infection by *Clostridium tetani* bacterial spores introduced into the body through a wound contaminated with soil, street dust or feces, or injected street drugs; also through lacerations, burns and trivial wounds; *C. tetani* produces a potent neurotoxin; painful muscular contractions, primarily of neck muscles, secondarily of trunk muscles; abdominal rigidity, generalized spasms; **30-90% case fatality rate**.

Universal Precautions : A set of steps to protect yourself from infectious agents in blood and body fluids

4. Disease Risks:

Bloodborne pathogens are micro-organisms that may be present in human blood and other body fluids and tissues. **The micro-organisms of most concern are the viruses HIV, Hepatitis B and Hepatitis C.** Incidents that involve breaks in the skin can allow these viruses to enter the body and cause and infection.

In addition, breaks in the skin can permit entry of other micro-organisms, in particular the **bacteria that causes tetanus,** so a tetanus booster or anti-tetanus immunoglobulin may be required. Details about the diseases that these agents cause are presented in the definitions section above. The relative risks of various types of exposures are described below (section 5).

The potential for additional pathogenic micro-organisms should be considered as part of a risk assessment for particular tissues and donor populations. For example, the intestines contain large numbers of bacteria and also may contain viruses, some of which may be pathogenic (eg. Hepatitis A). The cervix can be infected by human papilloma virus (HPV). Universal precautions should be used and immunizations that are advisable should be identified and provided to personnel (in addition to Hepatitis B).

Note that only certain established human cell lines grown under certain conditions are capable of supporting the growth of the common bloodborne viruses in culture. Thus these viruses are not a general risk for those working with human cell lines. However individuals should know whether the cell lines that they are using are infected with any of the bloodborne pathogens or other human pathogens. Take appropriate precautions and seek medical attention promptly if exposed, informing the doctor about the risk.

5. Exposure Types and Risks:

The risk of infection is related, in part, to the probability that the source material contains the infectious agent and also to the type of exposure that occurs. **It is important that you know as much as possible about the biological material that you are working with, and that you convey this information to medical personnel to assist them in decision making about**

are only moderately susceptible to 70% ethanol. A general purpose virucidal disinfectant cleaner such as PerCept/Virox may be used on stainless steel surfaces where bleach needs to be avoided. Ensure wet contact time following manufacturers recommendations; for 1% sodium hypochlorite (freshly diluted 10% bleach) wet contact for 30 seconds for cleaning; 5 minutes for disinfection; 30 minutes to decontaminate spills).

e) appropriate disposal of material in contact with blood or body fluids
f) appropriate clean-up of spills – using freshly diluted 10% bleach or other general disinfectant with activity against bloodborne pathogens; disinfect after bulk of blood removed to reduce the ov744 51e0.0005 Tc-.0cn:

common virus in Canada or in most research laboratories, immunization against HVA is only recommended for Queen's staff whose duties bring them into contact with material potentially contaminated by human feces or animals that have not been screened for Hepatitis A. The duration of protection after 2 doses of vaccine is unknown, but predicted to be greater than 20 years.

c) Tetanus - can be prevented by immunization. Normally a tetanus immunization booster is given every 10 years as part of your personal physician's care. In the case of an injury, if it is more than 10 years since your last booster then one should be administered by KGH-Emergency or by Walsh-OHS.

6.3 Post-exposure prevention:

a) HIV - there is no cure or immunization for HIV infection but **infection can be prevented by taking antiviral drug therapy soon after an exposure incident, preferably within 2 hours** (called prophylactic antiviral therapy because it is intended to prevent infection, not to cure infection; also called post exposure prophylaxis (PEP for short)).

b) Hepatitis B – if not immune or if antibody titres low, infection can be prevented by immunoglobulin treatment within 48 hours of exposure.

c) Hepatitis A - prophylactic immunoglobulin if known infected individual is contacted

d) Tetanus - if more than 10 years since last booster immunization then should get a booster when wounded and/or Tetanus Immune Globulin

7. **Exposed person action –** *note that this action is summarized in a flow chart on the third last page of this SOP, a map to KGH-Emergency on the second last page, and is a map to Walsh-OHS on the last page of this SOP; these should be posted in the laboratory*

a) Immediately following the exposure:

a. **Percutaneous injury or contact with non-intact skin**: allow the puncture, cut or abrasion to bleed freely, and wash well with soap under running water for 5 minutes. (Use an antiseptic if available)

b. **Contact with mucous membranes (eyes, nose, mouth):** flush thoroughly with water for 10 to 15 minutes.

b) Notify supervisor (or safety officer if supervisor is not available) who will initiate an Employee

c) **If wounded and your tetanus booster was not within the last 10 years then call Walsh-OHS to arrange a booster and other follow-up or consult with your family physician.** Wounds that are large and/or have environmental contamination should be carefully cleaned and may require a booster the same day if more than 10 years since your last booster.

d) **Consider the infectious potential of the source material and the nature of the contact.**

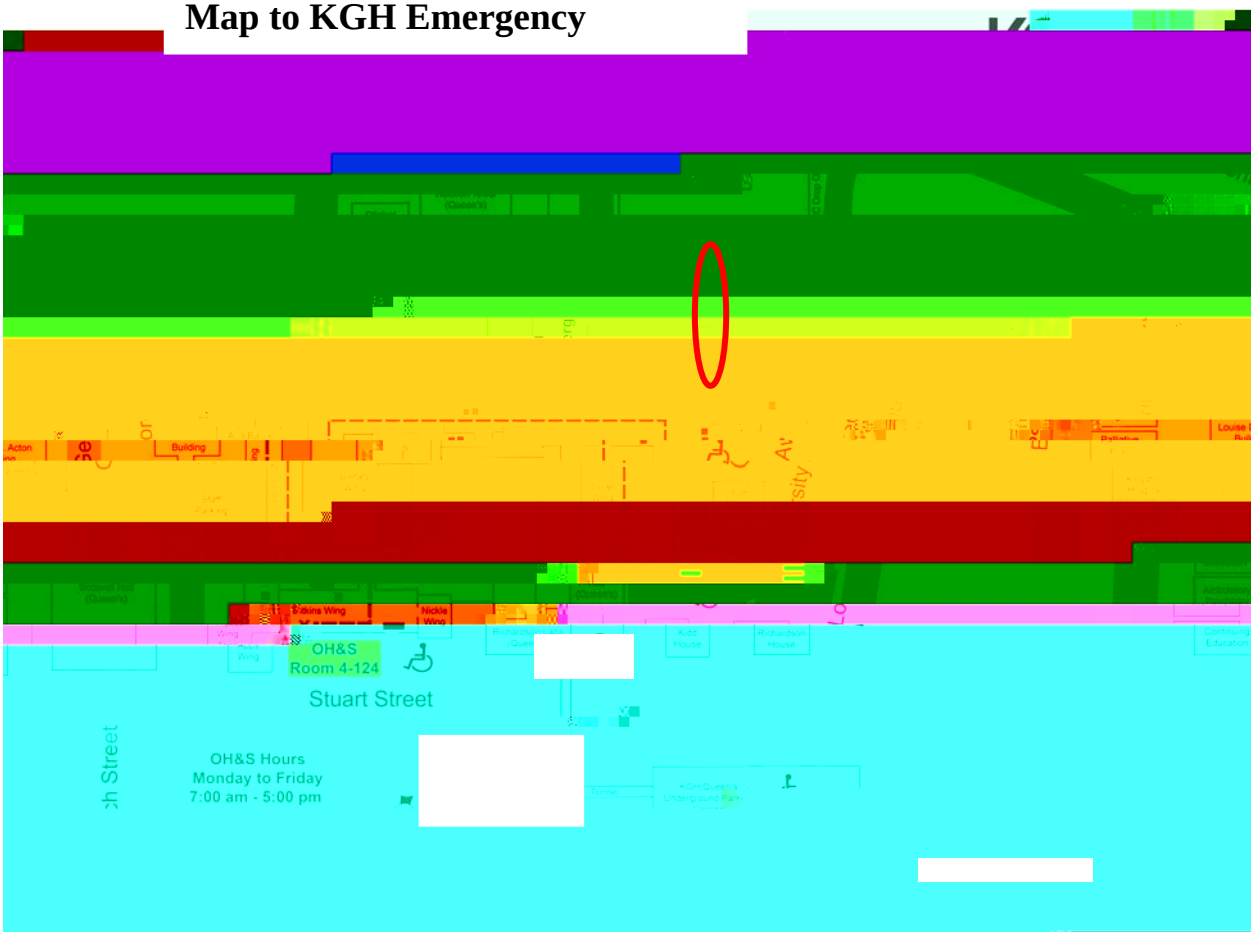
   a. If you have had contact with material that is **from a source screened negative for HIV,**

b) Assess the nature of the injury/exposure, identify the source individual or material, and initiate the Employee Incident Report which should be sent to Queen's Department of Environmental Health and Safety within 24 hours.
c) Facilitate testing of source individual or material, and communicate with medical personnel as required.
d) Assess the incident for measures that may have prevented the exposure. Note these on the Employee Incident Report and take follow-up action to prevent a similar incident in the future eg. change practice, modify environment, education. Queen's Department of Environmental Health and Safety will follow-up with the exposed person.

Information and Enquires:
Queen's University Biosafety Officer (ext. 77077, Shelagh.Mirski@queensu.ca)

Revision History:
1.0 April 2010: Initial Release
2.0 September 2011: Change information re Occupational Health provider

Map to KGH Emergency



Walsh and Associates Occupational Health Services

For urgent matters call the Belleville office at 613-966-4114. Otherwise, to make an appointment, call the Kingston office at 613-546-4646. Messages will be monitored daily on weekdays and your call returned.

Map to Walsh and Associates Occupational Health Services Clinic
120 Clarence Street
Kingston, ON