Guidance on Working Safely with Human Blood or Plasma

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Introduction

Blood or plasma are used for many activities within St. George's University of London. The following information is provided as guidance to help individuals to work safety while handling with these fluids.

Hazards and Risk Assessments

It is important that the hazards presented by blood or other body fluids have been determined when completing the Control of Substances Hazardous to Health (COSHH) Risk assessment for the project. The COSHH assessment should take into account not only obtaining the blood, but the equipment to be used for the experiments and the process of waste disposal. If possible the use of sharps should be minimised.

Potential for infections by Blood Borne Viruses (BBV)

Human blood or plasma can contain several blood borne viruses e.g.

Hepatitis B	Biohazard group 3*	Hepadnaviridae family
Hepatitis C	Biohazard group 3*	
Hepatitis D	Biohazard group 3*	Hepadnaviridae family
Human Immunodeficiency Virus (HIV) 3*		Lentivirus family

All the above viruses are categorised as biohazard group 3 by the Advisory Committee on Dangerous Pathogens. Work with the above viruses can be conducted in a containment level 2 laboratory rather than a full containment level 3 laboratory provided suitable precautions are observed and the titre of the virus is ***not*** being increased e.g. diagnostic work. All the work must be managed as in a containment level 3 laboratory to minimise the risk of infection to the worker or other individuals. All materials must be double contained when moved from the bench to either equipment or storage. The use of sharps must be minimised and the method of waste disposal must achieve a minimum 10^6 reduction in the number of virions.

If the work involves increasing the number of virus particles, then it ***must*** be undertaken in a containment level laboratory.

Ebola and other haemorrhagic fever causing viruses which are categorised as biohazard group 4 can be transmitted by blood but are not normally regarded as blood borne viruses. Blood suspected of containing Ebola or other haemorrhagic fever viruses ***must not*** be used handled.

Vaccination

Vaccines are available for Hepatitis B. These should be given prior to any work involving blood or plasma. Full protection involves having three injections of hepatitis B at the recommended intervals. Not all individuals will become immune to Hepatitis B despite vaccination. Occupational Health should be contacted prior to starting the project to arrange vaccinations for the project staff. Occupational Health can be contacted on OH.Admin@stgeorges.nhs.uk or called on extension 1661.
Vaccination should never be a replacement for safe working practices.

As of August 2017 the Occupational Health Unit of St. George's Hospital are following the Public Health England recommendations on vaccination against Hepatitis B in response to a shortage of the vaccine.

Obtaining blood or plasma

Blood or plasma may be obtained directly from study subjects, from other departments or institutions and from blood banks. If possible screened material should be obtained and used in experiments.

Blood may be obtained from donors within departments for use as control material. If blood is being obtained from individuals within departments they should be bled in a clean environment outside of the laboratory. Further information can be found in the Blood Taking / Blood use guidance note available on the portal.

Handling

Blood or plasma must be transported in sealed containers. If possible work with blood or plasma should be undertaken in a microbiological safety cabinet. This will contain the liquid should a spill occur.

Centrifugation

Centrifuges use for blood separation must be suitable for the activity. You must contact the Principal Investigator (PI) who owns the equipment prior using it or other senior staff member (Penny Lympany or Ian Connoley) if a multi-user centrifuge is to be used.

Vacutainers, Falcons or universals must be centrifuged in buckets that hold the tubes securely. Centrifuges must not be run at a speed that may cause the tubes to shatter and they must not run

at greater than the maximum recommended speed for a particular rotor. This is usually stamped on the base of the rotor.

Secondary containment must always be used when centrifuging blood or any other body fluid and the rotor buckets must all be securely fitted with lids.

Clean-up / Waste Disposal

All sharps and tubes used in experiments must be disposed of as potentially infectious waste.

- All sharps boxes used for waste disposal must be suitable for autoclaving at 134c.
- All sharps and vacutainers must be disposed of via sharps boxes.
- Never dispose of sharps via autoclave / plastic bags.
- All other material should either be autoclaved or treated with Virkon / Sodium Hypochlorite / bleach and then disposed of via Tiger stripped bags.

Spills of blood and other body fluids

Outside of centrifuges

- Spilt blood must be cleaned using either a biological spill kit or a combination of absorbent material such as Stardust, spill granules or in last resort tissues and a disinfectant e.g. Virkon powder, 10% Sodium Hypochlorite, or 10% bleach.
- It is important to contain the area of the spill.
- All chlorine releasing materials used for dealing with the spill should be disposed of via yellow clinical waste bags.
- Non chlorine releasing materials used for dealing with the spill must be autoclaved prior to disposal.
- The incident should be reported to your line manager / supervisor, the laboratory manager and the SHE office.

Inside centrifuges

- If it is suspected that a tube has broken or shattered, the centrifuge must be stopped and left for 30 minutes to allow aerosols to settle.
- The complete rotor or individually sealed buckets must be transferred to an operating Microbiological Safety Cabinet (MSC).

- The rotor or buckets should sit for at least 30 minutes to allow any droplets / aerosols to settle. The rotor or buckets can then be opened and the contents transferred with care into a sharps bin.
- Absorbent material should be poured over the fragments to prevent the fragments sliding on the blood.
- The bowl or bucket should be cleaned initially with a rotor compatible cleaning agent e.g. 70% ethanol
- Virkon and Sodium Hypochlorite can strip the surface of centrifuge buckets and rotors and their use should be checked with the lab manager before using them for the final clean. The incident must be reported to your line manager or supervisor, the laboratory manager and the SHE office.

Accidents causing penetrating injuries

Sterile / uncontaminated needles

- Place the needle into a sharps bin to prevent further injury.
- Encourage the wound to bleed for 30 seconds and then wash the wound with soap and water.
- Depending on the size of the puncture, the wound should be covered with a plaster.
- Help should be summoned from a first aider (x0909).
- An accident report should be completed as soon as possible.
- Complete an accident form as soon as possible.

*Post-accident procedure involving screened blood known **not** to contain any infectious agents*

- Encourage bleeding, but do not scrub the wound: this may increase tissue damage and inflammatory reaction which is known to increase the risk of infection.
- Wash any wound or contaminated skin with soap and clean warm water. Cover with a sterile dressing.
- A first aider should be summoned on 0909.
- If blood is splashed into the eye or mouth: stop & wash-out by gargling or irrigating immediately with tap water or saline.
- The Occupational Health unit should be contacted immediately on 1661 / 1662 / 1663 and informed of the accident and asked for advice.
- If the incident occurs outside of Occupational Health's working hours (Unit 1 08.30 - 16.00 Unit 2 09.00 – 16.00) , the person should be accompanied to the Accident and

Emergency Unit in St. James Wing and the explain to the Triage nurse the type of accident and the nature materials that were being handled.

- After treatment has been received, notify Professor Philip Butcher (5721) and either the SHE Manager Anne Harris (5166) or the SHE advisor Colin Sandiford (0637) as soon as possible.
- Complete an accident form as soon as possible.

*Post-accident procedure involving **unscreened** blood*

- Encourage bleeding, but do not scrub the wound: this may increase tissue damage and inflammatory reaction which is known to increase the risk of infection.
- Wash any wound or contaminated skin with soap and clean warm water. Cover with a sterile dressing.
- A first aider should be summoned on 0909.
- If blood is splashed into the eye or mouth: stop & wash-out by gargling or irrigating immediately with tap water or saline.
- The Occupational Health unit should be contacted immediately on 1661 / 1662 / 1663 and informed of the accident.
- If the incident occurs outside of Occupational Health's working hours (Unit 1 08.30 - 16.00 Unit 2 09.00 – 16.00) , the person should be accompanied to the Accident and Emergency Unit in St. James Wing and explain to the Triage nurse the type of accident and the nature materials that were being handled.
- After treatment has been received, notify Professor Philip Butcher (5721) and either the SHE Manager Anne Harris (5166) or the SHE advisor Colin Sandiford (0637) as soon as possible.
- Complete an accident form as soon as possible.

*Post-accident Procedure involving blood or plasma **known** to contain HIV or Hepatitis Virus*

- Encourage bleeding, but do not scrub the wound: this may increase tissue damage and inflammatory reaction which is known to increase the risk of infection.
- Wash any wound or contaminated skin with soap and clean warm water. Cover with a sterile dressing. Do not use strong chemicals such as bleach.
- A first aider should be summoned on 0909.
- If blood is splashed into the eye or mouth: stop & wash-out by gargling or irrigating immediately with tap water or saline.

- The Occupational Health unit should be contacted immediately on 1661 / 1662 / 1663 and informed of the accident. State that Occupational Health has previously confirmed that they offer Post-exposure prophylaxis (PEP). PEP should be taken as soon as possible, ideally within one hour but is effective up to 72 hour period post-exposure.
- If the incident occurs outside of Occupational Health's working hours (Unit 1 08.30 - 16.00 Unit 2 09.00 – 16.00) the person should be accompanied to the Accident and Emergency Unit in St. James Wing and explain to the Triage nurse the type of accident and the nature materials that were being handled and Post-exposure prophylaxis requested.
- After treatment has been received, notify Professor Philip Butcher (5721) and either the SHE Manager Anne Harris (5166) or the SHE advisor Colin Sandiford (0637) as soon as possible.
- Complete an accident form as soon as possible.

Occupational Health

Occupational Health can be contacted directly on extension 1661 / 1662 / 1663. Unit 1 of Occupational health is open 08.30 – 16.00 and Unit 2 09.00 – 16.00. Both units are located above the Rob Lowe sports centre on the Perimeter Road to the west of Jenner Wing.

The SHE Office can contact Occupational Health on behalf of individuals if required.

References

1. http://www.hse.gov.uk/pubns/misc208.pdf
2. http://www.hse.gov.uk/pubns/indg342.pdf
3. http://www.nhs.uk/Conditions/vaccinations/Pages/hepatitis-b-vaccine.aspx