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|  **Procedure in the event of an incident including inoculation** |
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|  |  |  |  |  |

**INDEX OF** **CONTENTS**

Introduction 2

Purpose And Scope 2

Responsibilities 3

References 3

Related documents 3

Defnitions 3

References 3

Definitions 4

Work Practice Controls 7

Accidental Inoculation 9

Post exposure Management 10

Action in the event of an inoculation incident. 10

Post-Exposure Prophylaxis 11

Counselling Provided by Health and Work Centre 11

**Abbreviations**

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| COSHH | Control of substances hazardous to health |
| CQIF | Continuous quality improvement form |
| SOP | Standard operating procedure |
| CAF | Competence assessment form |
| BSL2 | Biological safety level 2 |
| BSL3 | Biological safety level 3 |
| PPE | Personal protective equipment |

# Introduction

## Purpose and Scope

In accordance with national guidance and legislation, your institute is required to record all hazards, adverse events, and near misses whether they are major or minor; affecting one person or many; related to staff; students; contractors or visitors; involving equipment, buildings or property.

your institute and department takes an integrated approach to learning from all incidents in order to improve and assure its work. It recognises that learning can only take place in a non-threatening environment and that fear of disciplinary action may deter staff from reporting an incident.

Every member of staff must have a real sense of ownership and commitment to identifying and minimising risk. This is best achieved through an environment of honesty and openness, where mistakes and untoward incidents are identified quickly and dealt with in a positive and responsive way. Ongoing process of identifying and assessing risks with the objective of improved prevention and control of risks.

The continuous quality improvement process and associated form (CQIF) is an important accessory to the investigation of incidents and monitoring the pursuit of corrective and preventative and control of risks.

**Responsibilities**

your institute and department centre Director is responsible for ensuring the implementation and maintenance of this policy.

Under the Health and safety at work act (1974), and the HSE/EEC regulations, all employees and required to take reasonable care for the health and safety of themselves and of others, who may be affected by their acts or by their omissions. They are also required to co-operate with the employing authority to fulfil the obligations of the act.

**This procedure must be read and understood by all staff in** your institute and department **and should be read in conjunction with the Health and Safety Policy (Insert document number here).**

Each member of your institute and department MUST adhere to good professional practice.

Any incident that involves a member of your institute and department team must be reported to safety services describe how this is reported. This should be performed by the your institute staff member with the assistance of another member of staff if required.

It is the responsibility of any person who becomes aware of a reportable event to immediately discuss it with their supervisor and or the Health & Safety officer or local Health & Safety officer. The Quality Manager should also be informed. These individuals are responsible for ensuring the incident is investigated and actions identified to prevent recurrence and generating a timely and effective means to corrective or preventative measures. Corrective measures are discussed and minuted at the weekly laboratory meeting.

**References**

(available in the Quality Folder)

RiskNET – UCL (https://www.ucl.ac.uk/estates/safetynet)

A step by step guide to COSHH assessment (ISBN 978 0 7176 2785 1)

Advisory Committee on Dangerous Pathogens Protection against blood-borne infections in the workplace: HIV and Hepatitis

Management of Health and Safety at Work Regulations 1999

**Related documents**

Health & Safety policy **Insert document number here**

Storage & removal of waste **Insert document number here**

Procedure for disinfection **Insert document number here**

Procedure in the event of a biological spillage or chemical event **Insert document number here**

Continuous Quality Improvement Form (CQIF) **Insert document number here**

**Definitions**

**Risk assessment** – a method of evaluating the risk in a process/system

**Occupational exposure** – reasonably anticipated skin, eyes, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee’s duties

**COSHH** – control of substances Hazardous to Health

**Incident** – any event or circumstance arising that could have or did lead to unintended or unexpected harm, loss or damage as well as occurrences that have adversely affected the quality of work

**Hazard** – something which has the potential to cause harm

**Harm** – Injury (physical or psychological), disease, disability, or death as a consequence of the event.

**Risk** – The probability or likelihood of the hazard causing harm

**Red category/Significant risk** – incidents where the actual impact of the event is fatality or severe or where the likely potential impact of a near miss would fall within these categories and there is a high likelihood of recurrence.

**Amber category/Moderate risk** – Incidents where actual impact is moderate, or where the likely impact of a near miss is fatal or severe with a low likelihood of recurrence or moderate with a high likelihood of recurrence.

**Yellow/Green/Low Very risk –** Incident of either low consequence or frequency, where investigations are locally managed, trends are monitored and unresolved risks inform the divisional risk registers

**Organisational risk** – any issue that might have an impact on organisational objective

**Near miss** – an event that did not lead an accident but does pose a risk

**Potentially infectious materials –** cerebrospinal fluid, synovial fluid, pleural fluid pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Any unfixed tissue or organ (other than intact skin) from a human (living or dead).

**Equipment** this includes analysers, personal protective such as exhaust protective cabinets, mechanical devices, computers & microscopes for example

**Service contract**; An agreement between UCL and Royal Free Estates or an external company to maintain a piece of equipment on a stated basis to ensure that the item or items are safe, within manufactures limits and are fit for purpose.

**Blood**: Human blood, blood components and products made from human blood

**Blood-borne pathogen:** Any pathogenic micro-organism that is present in human blood and can cause disease in humans; these pathogens include, but are not limited to, hepatitis B virus (HBV), human immunodeficiency virus (HIV) and hepatitis C virus (HCV)

**Contaminated**: Having reasonably anticipated the presence of blood or other potentially infectious materials on an item or surface

**Contaminated sharps**: Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires

**Engineering controls**: Controls such as sharps disposal containers and self-sheathing needles that isolate or remove the hazard of blood-borne pathogens

**Exposure incident**: A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties

**Hand-washing facilities:** A facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines

**Occupational exposure:** Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties

**Other potentially infectious materials:** The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Any unfixed tissue or organ (other than intact skin) from a human (living or dead). HIV-containing cell or tissue cultures, organ cultures, and HIV, HCV or HBV-containing culture medium or other solutions including blood, organs, or other tissues from experimental animals that are infected

**Parenteral**: Piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions

**Personal protective equipment;** Specialised clothing or equipment worn by an employee for protection against hazards; general work clothes such as uniforms, pants, shirts or blouses are not intended to function as protection are not considered to be personal protective equipment

**Regulated waste**

* Liquid or semi-liquid blood or other potentially infectious materials

Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed

* Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling
* Contaminated sharps
* Pathological and microbiological wastes containing blood or other potentially infectious materials
* Standard precautions; An approach to infection control in which all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens
* Work practice controls; Controls that reduce the likelihood of exposure by altering the manner in which a task is performed, for example, prohibiting recapping of needles by a two-handed technique
* Exposure determination (occupational exposure) Laboratory regulations seek to limit employees’ occupational exposure to blood and other potentially infectious materials as the result of performing their job duties. It is not possible to list all situations where exposures could occur. "Good Samaritan" acts such as assisting a co-worker with a nosebleed are not considered occupational exposure. Caution must be used when working in the histology laboratory. One never knows if a surface or item has been contaminated. One cannot be positive that a tissue specimen has been completely fixed. Any incidents of unexpected exposure should be documented and reported in the quality assurance minutes
* Job classification; Exposure risk determinations are performed for all personnel job classifications within pathology where occupational exposure to human blood and other potentially infectious materials such as unfixed tissue specimens occurs. The determination is made without personal protective equipment. Each procedure that requires a risk assessment has its own documentation
* **Notification of exposure**; Employees must report illness or exposure to possible infectious materials immediately to the supervisor and to employee health. Documentation should be maintained in employee’s personnel file
* **Method of compliance;** Universal precautions should be observed to prevent contact with blood and other potentially infectious materials. All body fluids and unfixed tissue from a human (living or dead) should be considered potentially infectious. Environmental services as well as laboratory employees follow universal precautions. All medical waste is treated as infectious and disposed of in with the hospital waste policy and current government regulations

##### Sharps containers Sharps containers must have the ability to be sealed/puncture resistant and leak-proof on the sides and bottom. They should be used to dispose of anything that could puncture or cut the skin such as razor blades, pipettes, needles, cover glasses and glass slides. Sharps containers MUST not be overfilled and should be kept closed. When containers are 2/3rds full (at the indicated line) they should be sealed, labelled with departmental details and removed from the laboratory to the discard area

#  Work Practice Controls

* **Procedural controls**

Procedures that involve the use of sharps objects should be carefully controlled by *Standard Operating Procedures relevant* to the task. This should include appropriate use and disposal of sharps. These procedures should be read and understood by all staff involved in the hazardous process.

* **Risk assessment**

Risk assessment is essential to control hazards and the prevention of accidents or incidents.

As part of this all practices that involve the use of sharp objects (needles, scalpels, blades etc) should be risk assessed. The department will always seek to eliminate the hazard or replace it with a safer alternative whenever possible.

The hazard of a biological or chemical material is the set of inherent properties of the material, which give it the potential to cause harm. Assessing risk involves examining the extent of the likelihood of a material causing harm, in the actual circumstances of the work.

**Good laboratory practice.**

All procedures involving blood or other potentially infectious materials should be performed in such a manner as to minimise splashing, spraying, spattering, and generation of droplets of these substances to the operator as well as those in the vicinity.

**Training**

The your department Centre Director or the person delegated will educate employees in laboratory hazards and responsible health and safety work practices.Employees, students and visitors will be trained to recognise laboratory hazards. The means to this is by induction into your institute and department during orientation, which includes instructions on laboratory health and safety issues and management as well as providing a copy of the Health and Safety Policy to read.

New employees, students and visitors receive initial training during orientation. For specific procedures, a designated person will train employees and provide written procedure descriptions. Understanding of these procedures will be verified by a competence assessment which will include all safety features.

Health and Safety training is also provided as part of your institute’s online training.

Biological and General Safety training for all laboratory staff is mandatory and is provided by your institute and department. This training includes:

* Staff induction
* Reading of risk assessments, policies and standard operating procedures (SOPs)
* Routes of infection
* Hazard groups and containment levels
* Laboratory acquired infections
* Effective disinfection
* Good clinical laboratory practice
* Good clinical practice
* Microbiology Safety Cabinets
* Accidents and Incidents
* Procedures covered by competency assessment forms (CAFs)

Documentation of all training is retained in your department Staff and Student/Visitor Training Folders

##### Hand washing

Wash hands immediately after any exposure to blood or other potentially infectious materials, immediately after removing gloves, and before leaving the laboratory.

* **Eye protection**

The use of eye protection is **mandatory** for all procedures that may give rise to an infectious aerosol. All staff understand the duty of care upon them to use appropriate personal protective equipment (PPE) always.

* **Eyewash stations**

The department provides an eyewash station in each of the laboratories. These should always be used as per the labelled instructions to wash the affected eye in a splash incident.

* **First aid personnel**

The department has appointed first aid personnel who are known to all staff and are trained to respond appropriately to incidents of personal injury. A list of the first aiders is given in every room.

The risk assessment process is essential to the control of hazards and the prevention of accidents or incidents.

Sharps or needle-stick injuries and splashes to the eyes in laboratory are almost completely preventable by improving workplace practices, but when they do occur the consequences for the individual can be serious, regardless of the outcome in terms of infection. Post-exposure management includes first aid, serological testing and counselling in all cases. Immunoprophylaxis and antiviral medications are used in some cases. Advice and guidance should always be sought from the Health and Work Centre or out of hours via the help line. **Needlestick hotline Number: provide phone number.** Alternatively, the individual may report to the accident and emergency department at hospital.

A sharps or needle-stick injury can be a devastating event and although the risk of contracting a blood-borne pathogen is low, the psychological trauma that follows the injury can be disabling. However, where the risk is significant, the immediate administration of post-exposure prophylaxis may reduce the chance of seroconversion to some pathogens. The provision of counselling can mitigate the psychological consequences of the accident.

**Splashes to the eye should be considered as equivalent in risk and warrant the same response as a needle-stick injury.**

**This procedure must be read and understood by all staff of the department and should be read in conjunction with the Health & Safety Policy Insert document number here.**

**Accidental Inoculation**

**Risks of Transmission**

The major blood-borne pathogens of concern are human immunodeficiency virus (HIV), hepatitis C virus (HCV) and hepatitis B (HBV).

Estimating the probability of transmission following a sharps/needle-stick injury is difficult as there are many factors, which contribute to the risk. These include the type of injury and the viral load of the material. Hollow-bore needles with visible traces of fresh blood carry the highest risk. The risk of acquiring infection is in this order HBV>HCV>HIV. Inoculation of a microbial culture (not viral) during a laboratory manipulation is normally low risk depending on the hazard group and appropriate advice obtained at that time.

**Reducing the risk of Transmission**

Although they carry the lowest risk of transmission, exposures to skin and mucosal surfaces can be virtually eliminated by using eye protection and gloves in any circumstances where contact with bodily fluids is possible.

In your department it is **mandatory** that protective eyewear is worn during any procedure that may give rise to an infectious or otherwise hazardous aerosol outside of a safety cabinet. **All staff must comply with this local regulation.**

**Sharps are not allowed in the biological safety level (BSL)3 laboratories.** In the BSL2 laboratories safe disposal of sharps is the most important means of reducing needle-stick injuries. Sharps containers should comply with European standards and should have a wide neck to avoid the need to push objects into the container and must never be overfilled; they should be sealable and correctly labelled.

**Never recap needles.**

**Post-exposure management**

Following exposure to a potentially infected fluid, simple first aid measures are required. The wound or mucous membrane should be flushed with water. There is no evidence that expressing the fluid from the wound reduces the risk of transmission. The use of bleach or the injection of antiseptics or disinfectants is not recommended.

A quick risk assessment should be made. Common sense has a role here and often the risk of infection can be estimated. However, the most important determinant of subsequent action is the type of exposure, rather than the source. If a source is from a patient and the status of the material is unknown then serological testing should be immediately undertaken after obtaining informed consent.

Issues relating the so-called window-period, where viral replication is present but antibodies have not appeared, may cause concern. This concern can be dismissed in most cases where the history excludes behaviour, which may have put the patient at risk of infection in the preceding months.

For medico-legal reasons, the injured staff member should also have baseline serological testing.

Unscreened samples can be tested.

# Action in the event of an inoculation incident

**First Aid measures**

**In the event of sustaining an accident resulting in a wound:**

* Immediately wash the wound liberally with soap and water but without scrubbing. Do not use hibiscrub or detergent.
* Gently encourage free bleeding of puncture wounds but do not suck the wound.
* Dry the area and apply a waterproof dressing.
* Do not use antiseptics and skin washes - there is no evidence of their efficacy, and their effect on local defences is unknown.

**In the event of contaminating skin, conjunctivae or mucous membranes:**

* Immediately irrigate the area copiously with water.
* In the case of eye contamination, irrigate both before and after removing any contact lenses.
* In the event of a serious injury requiring medical attention:
* Attend the Accident and Emergency Department

**Contact the Needlestick hotline Number: provide a phone number. Alternatively, the individual may report to A&E (do so if the incident occurs out-of-hours).**

**All staff should know what action to take in the event of an accident.**

First aid will likely be required and where there is potential exposure to infectious material it is important to seek medical advice on any additional measures that may be necessary. All injuries that carry a risk of work-related infection should be notified promptly to the Health and Safety Officer and Occupational Health.

A full incident form should completed describe how to report an incident and link to paper or electronic form. The source of any infection risk (specimen, sample, material etc.) should be clearly identified and retained.

All accidents and incidents (including inoculation) that do occur should subsequently be reviewed by the individual(s) involved in conjunction with their immediate supervisor. The cause of the accident or incident should be established and it should be possible to identify what should be done to prevent any recurrence. Accidents and incidents should also be monitored and reviewed to identify any improvements that are necessary. A continuous Quality Improvement Form (CQIF) should be completed. However, care must be undertaken to protect the confidentiality of individuals involved in particular accidents. Any remedial action identified must be implemented and any lessons learnt should be communicated widely at the next CCM Wednesday meeting. Records indicating occupational incidents will be kept by UCL Occupational Health.

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# Post-Exposure Prophylaxis

Post-exposure prophylaxis may be administered but this will be decided by the health care professionals who oversee affected individual.

# Counselling Provided by Health and Work Centre

The knowledge that the risk of transmission of HIV from a significant needle-stick injury is 0.3% only partially comforts the injured person. Many people have varying degrees of anxiety until the serological follow-up is completed. While the majority of individuals will cope with this natural anxiety, a small number will require more intensive support. This may involve informal discussions, formal counselling or psychiatric intervention. It is important to make the arrangements for follow-up flexible and to allow ready access to help. While most attention is usually focused on the injured person, the source patient also requires counselling and support during this process.