



The University of Hong Kong

SAFETY MATTERS

Handling Clinical Samples

All clinical materials are potentially infectious and bloods in particular present a significant challenge. In the last six months there have been three incidents in the University involving blood samples. Two occurrences entailed splashes in the eye and the third an accidental needlestick injury.

High risk viruses such as Human Immunodeficiency Virus (HIV), Hepatitis B virus (HBV) and Hepatitis C Virus (HCV) are not the only agents that may be present in clinical samples such as blood. Other blood borne viruses such as HTLV1 and parvovirus B19 as well as various bacterial agents may also be present. In 2012 around 1% of new Hong Kong blood donors were Hepatitis B virus surface antigen positive. Consequently departments should ensure all those that handle clinical materials are vaccinated against HBV and have sufficient antibody levels to protect in the event of exposure.

While the seropositivity rates in donated blood samples of other viruses are much lower e.g. 0.1% for Hepatitis C virus the serious nature of the associated disease warrants stringent infection control measures. This includes risk assessment for different samples taking into account the procedures being carried out and their source, using the appropriate personal protective equipment and training for all involved in handling the samples.

Risk Assessment

The importance of a thorough risk assessment cannot be stressed too highly. Different clinical materials may present altered infection risks, for example lung tissue or sputum samples have increased risks for infection with *M. tuberculosis* depending on the source of the sample. Some procedures such as those that might produce aerosols or involve sharps also increase infection risks. It is particularly important to minimise the use of needles/sharps and departments should regularly review all procedures to eliminate their use where possible. Please see guidance on handling clinical samples on the Safety Office website at: - <http://www.safety.hku.hk/homepage/pdf/PIS.pdf>

Personal Protective Equipment

Hong Kong Health Authority guidelines indicate that standard precautions for handling clinical samples include wearing basic personal protective equipment (PPE) such as disposable gloves, solid front or wrap around gowns with cuffed sleeves and a surgical mask. Additionally in other countries it is standard to use eye protection where there is a risk of splashes. For example the US OSHA standard on "Bloodborne Pathogens" states that masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated. The UK safety regulators publication INDG 342 (<http://www.hse.gov.uk/pubns/indg342.pdf>) states that "eyes and mouth should be protected by using a visor/goggles/safety spectacles and a mask where splashing is possible"

Departments should review their procedures and consider providing eye protection for those that handle clinical samples.

Training

In some countries annual refresher training is required for those handling clinical specimens. This underlines the seriousness with which the procedures involved are viewed. It is clearly important for newcomers to be trained effectively when they start but it is also important to maintain and develop an individual's proficiency. Departments should review their arrangements for training on a regular basis to ensure that all those that handle clinical specimens are competent to do so.

Standard precautions for handling clinical samples

(adapted from the UK Advisory Committee on Dangerous Pathogens "Protection against blood-borne infections in the workplace: HIV and hepatitis" ISBN 0-11-321953-9 and INDG 342)

Protocols for the safe conduct of work should be agreed and adhered to strictly;

Each procedure should be conducted in a designated area of the laboratory with sufficient space for working safely;

A microbiological safety cabinet or other form of primary containment should be used when infected material may be dispersed by, for example, tissue homogenization, vigorous mixing etc.;

The designated working area should be kept clear of any unnecessary equipment;

Access of unauthorized persons to the working area should be prevented to ensure that the person carrying out the work is free from the risk of disturbance or accidental physical contact with others;

Protect the eyes and mouth by using a visor/goggles/safety spectacles and a mask where splashing is possible:

Cover all breaks in exposed skin by using waterproof dressings and suitable gloves;

When possible avoid use of, or exposure to, sharps such as needles, glass, metal etc. or if unavoidable take care in handling and disposal;

Consider the use of devices incorporating safety features, such as safer needle devices and blunt-ended scissors;

Control contamination of surfaces by containment and using appropriate decontamination procedures e.g. the bench surface and any equipment used should be decontaminated immediately on completion of a session of work;

Dispose of potentially contaminated waste safely.