# WHS G017 (Interim) Infection Control Guidelines

## Overview

Infection control refers to procedures and activities which aim to prevent or minimise the risk of transmission of infectious diseases. Staff and students of the University working in a clinical setting or working in certain laboratories are at risk of occupational exposure to blood borne pathogens including hepatitis B (Hep B), hepatitis C (Hep C) and human immunodeficiency virus (HIV) as well as occupational exposure to a range of microbiological agents.

Successful infection control is critical to maintaining a safe work environment. Identifying hazards, classifying the associated risks and implementing relevant control measures are key steps to successful infection control management.

These guidelines provide a basis for personnel working in areas where there is a risk of infection to develop detailed protocols and systems for infection control that apply to their specific setting, thereby providing assistance in reducing the risk of exposure and the likelihood of transmission of infection.

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## Definitions

**Microbiological agent** for the purpose of this document means a living organism (such as a bacteria, fungi, virus), too small to be seen with the naked eye but visible under a microscope and capable of causing a disease.

## Roles and Responsibilities

**Head(s) of Schools, Disciplines, Units**
All Heads are responsible for ensuring that infection control procedures are implemented within their area of authority. This includes the provision of appropriate facilities and equipment; ensuring that risks are identified, assessed and controlled in consultation with the staff and students affected by the risks; the development of Standard Operating Procedures (SOPs) and the allocation of sufficient time and resources to ensure that procedures are current and effective.

**Supervisors/Lab Managers**
All supervisors/lab managers are responsible for ensuring that infection control procedures are implemented within their area of authority. This includes ensuring that risks are identified, assessed and controlled in consultation with the staff and students affected by the risks; the development, implementation and review of Standard Operating Procedures (SOPs); provision of adequate training and supervision of staff and students taking into account the task and the relevant experience of the staff/students; and the allocation of sufficient time and resources to ensure that procedures are current and effective.

**Staff/Affiliates/Students**
All staff, affiliates and students are responsible for ensuring that they comply with all infection control procedures that are implemented within their area. This includes following Standard Operating Procedures (SOPs), taking actions to avoid, eliminate or minimise hazards and reporting hazards to the relevant supervisor.

## Standard Precautions

The use of “Standard Precautions” is the basic risk minimisation strategy for handling potentially infectious material. Standard Precautions are recommended for the care and treatment of all patients in the clinical environment, regardless of their infectious status, and in the handling of:

* Microbiological agents;
* Blood (including dried blood);
* All other body fluids, secretions, and excretions (excluding sweat), regardless of whether they contain visible blood;
* Non intact skin; and
* Mucous membranes

Standard Precautions are work practices required to achieve a basic level of infection control. They include the use of:

* Good microbiological practices (e.g. aseptic technique, including use of skin disinfectants);
* Good personal hygiene practices (particularly washing and drying hands before and after patient and specimen contact);
* Use of personal protective equipment (which may include the wearing of gloves, gowns, plastic aprons, masks, face-shields and eye protection);
* Waterproof coverings over any break in the skin;
* Appropriate procedures for the handling and disposal of sharps; and
* Appropriate procedures for the handling and disposal of contaminated wastes.

**References:**
Standards Australia
AS/NZS 2243.3:2010 Safety in laboratories Part 3: Microbiological safety and containment.

Department of Health and Ageing
Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting, January 2004

## Exposure to blood or other body fluids

The following guidance relates to exposures involving fluids containing visible blood, or other potentially infectious fluids (such as urine, saliva, semen, microbiological agents) or tissue.

Immediate action following exposure:

* Wash the exposure site with soap and water;
* If eyes are contaminated then rinse them, while they are open, gently but thoroughly with water or normal saline;
* If blood or body fluids get in the mouth, spit them out and then rinse the mouth with water several times;
* If clothing is contaminated remove clothing;
* Inform an appropriate person to ensure that assistance can be provided;
* If the exposure involves a needle stick injury or exposure (such as splashes) to the eye or mouth proceed without delay to the University Health Service or nearest large hospital casualty department for risk assessment and treatment. N.B. Where prophylaxis is required it must be commenced as soon as possible following exposure, preferably within 1-2 hours.

Subsequent action following exposure:

* Decontaminate the area with sodium hypochlorite. An equal volume of 5000-10000 p.p.m. (0.5-1%) available chlorine is required for the inactivation of HIV and hepatitis viruses in blood or serum. The hypochlorite must be freshly prepared as the effective strength of chorine solutions decreases on storage.
Report the incident using the online incident reporting system (to be reported within 24hours of the incident occurring).
* In the case of needle stick injuries or exposures to the eye or mouth every effort should be made to ascertain the HIV, HBV and HCV status of the source.
* Refer to [NSW Health Policy Directive PD2005\_311: HIV, Hepatitis B and Hepatitis C - Management of Health Care Workers Potentially Exposed](http://www.health.nsw.gov.au/policies/PD/2005/pdf/PD2005_311.pdf) for further detailed information.

References
NSW Health Policy Directive PD2005\_311: HIV, Hepatitis B and Hepatitis C - Management of Health Care Workers Potentially Exposed

## Handling and disposal of sharps

Sharps can be defined as items which have sharp points or cutting edges capable of causing injury to, or piercing human skin, when handled. Hypodermic needles, Pasteur pipettes, scalpel blades, plastic items with torn or serrated edges and broken glass all fit this definition.

All sharps have the potential to cause injury through cuts or puncture wounds. In addition, many sharps are contaminated with blood or body fluids, microbiological agents, toxic chemicals or radioactive substances, posing a risk of infection or illness if they penetrate the skin. It is therefore essential to follow safe procedures when using and disposing of sharps in order to protect staff and students from sharps injuries.

Sharps are a major cause of incidents involving potential exposure to blood borne diseases. When handling blood and bodily fluids the use of sharps should be eliminated or minimised. Where possible, alternatives should be considered including needleless intravenous systems, use of blunt needles for drawing up of solutions from ampoules, or retractable needle and syringe systems. Sharps should not be handled if feeling fatigued (e.g. late in the day).

Sharp instruments must not be passed by hand between people. If transfer is required, specific puncture-resistant sharps trays should be used for the transfer of all sharp items.

**Disposal of Sharps**
To prevent needle stick injury, needles must not be re-sheathed. Needles must not be bent or broken by hand. Sharps must be placed into a sharps container as soon as possible after use. The person who has used the sharp is responsible for its immediate safe disposal following its use. This must be at the point of use. The sharps container should be within arm’s length.

Sharps containers need to be rigid, impervious containers which are discarded when full. Sharps containers should conform to Australian Standard AS 40311 (or to AS/NZS 42612 if local arrangements have been made for reprocessing in accordance with AS/NZS 44783).

When full, sharps containers holding contaminated sharps SHALL NOT be placed into the general rubbish stream. Sharps containing microbial material or pathogens, should be sealed and placed into the large 240L Clinical (pathological) waste bins (yellow bins).

References
Standards Australia
AS4031-1992 Non-reusable containers for the collection of sharp medical items used in health care areas
AS/NZS 4261:1994 Reusable containers for the collection of sharp items used in human and animal medical applications
AS/NZS 4478:1997 Guide to the reprocessing of reusable containers for the collection of sharp items used in human and animal clinical/medical applications
Department of Health and Ageing, Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting, January 2004

## Occupational-Related Vaccinations

Vaccinations are required for all staff/students who have contact with clients and those working in laboratories and any facilities where they could come into contact with human blood, body substances or infectious materials.

Persons working with infectious cultures in a laboratory setting, or with Risk Group 2 and Risk Group 3 microorganisms may require additional vaccinations. AS/NZS 2243.3:2010 provides details of vaccinations required for those handling particular microorganisms. Refer to the footnotes of the relevant microorganism in Tables 3.1, 3.4, 3.5, 3.7.

Staff members and students are expected to maintain their own screening and vaccination records and have them available for inspection. It is the supervisor’s responsibility and duty of care to ensure that all staff and students have received the required vaccinations (and provided evidence of protection) depending on the type of work to be undertaken.

Staff and students must not be permitted to undertake work with clients or to perform tasks that may involve contact with blood, body substances or infectious materials until they have provided appropriate vaccination records.

Workplace and academic supervisors have the responsibility to ensure all practicable measures are taken to ensure those at risk of being exposed to a vaccine-preventable disease are protected.  The risk of infectious disease transmission can be minimised by the following means:

* Completing a risk assessment
* Seeking advice from the School, Department or Centre in which you are working
* Seeking advice from your own medical practitioner or, for work-related travel, a specialist travel clinic
* Appropriate immunisation prior to being exposed to situations associated with a risk of disease transmission.

It is recommended that all staff and students, and particularly healthcare staff and students, receive the standard vaccines as per the National Immunisation Program Schedule (Australian Government, Department of Health 2016) as appropriate, these include the following, although some are age dependent:

* Hepatitis B
* Diphtheria
* Tetanus
* Acellular pertussis (whooping cough)
* Haemophilus influenza type b
* Inactivated poliomyelitis (polio)
* Pneumococcal conjugate
* Rotavirus
* Meningococcal C
* Measles
* Mumps
* Rubella
* Varicella

Additional vaccinations may be required for persons in the following occupations or student courses:

* Healthcare workers or students involved with direct patient care
* Workers or students working in remote indigenous communities
* Childcare students or workers caring for pre-school age children
* Laboratory workers or students exposed to human blood, body fluids or tissue
* Laboratory workers or students working with transmissible human or zoonotic pathogens
* Workers or students frequently exposed to waste water or sewerage
* Workers or students frequently in contact with animals, animal blood, tissues, products or animal waste
* Workers or students in contact specifically with bats or flying-foxes
* First Aid Officers.

Staff and students in the above categories should refer to the following list of occupational vaccination recommendations.

***Hepatitis A***

Vaccination should be considered for health care workers who work in rural and remote indigenous communities or who work in health units where the unit provides for substantial populations of indigenous children; pediatric wards, intensive care units or emergency departments.

Vaccination should also be considered for childcare workers, carers of the intellectually disabled and for those who may be exposed to sewage at work, such as plumbers.

To avoid unnecessary vaccination, it is recommended that the following groups be screened for pre-existing natural immunity to hepatitis A:

* those born before 1950,
* those who spent their early childhood in endemic areas, and
* those with an unexplained previous episode of hepatitis or jaundice. (N.B. Such a previous episode cannot be assumed to be hepatitis A.)

***Hepatitis B***

For healthcare workers, hepatitis B vaccination and/or proof of immunity or a Statement of Susceptibility may be required prior to commencing a course and/or clinical placements.

***Influenza***

Annual vaccination with influenza vaccine in autumn is recommended for all health care workers to protect both the health care worker, and the patients in contact with the health care worker.

***Japanese Encephalitis***

Vaccination is needed for laboratory staff and those who will be living or working on the outer islands of the Torres Strait for a cumulative total of 30 days or more during the wet season (December to May). Those visiting the outer islands in the dry season (June to November) do not require vaccination. Those visiting only the inner islands, including Thursday Island, do not require vaccination.

Travelers intending to visit high risk areas such as rural parts of Papua New Guinea and Asia should consult with a travel medicine specialist for further advice.

***Rabies and Lyssavirus***

Staff and students who handle Australian bats, Australian Bat Lyssavirus (ABL) in a laboratory, or who work with animals in areas where rabies is endemic should have pre-exposure rabies vaccination and rapid post exposure treatment after a bite, scratch, or needle stick injury from a bat or possibly infected animal.

***Mycobacterium Tuberculosis (TB)***

At the start of employment or study program all healthcare workers, healthcare students, embalmers and workers involved in conducting autopsies should be screened for previous infection or immunisation and most will need a screening skin mantoux (Tuberculin) test.

The BCG is no longer routinely recommended to mantoux-negative healthcare workers. It is however still recommended for certain high risk employment groups e.g. embalmers, post-mortem staff, people working in infectious disease units dealing with TB etc. For further information, refer to Table C.21 of the Australian Guidelines for the Prevention and control of Infection in Healthcare 2010 (reference 1 below).

***Q-Fever***

Protection against Q-fever transmission is recommended for persons working with cattle, sheep, goats, some feral animals or for those who frequently work in areas where these animals are kept. This also includes persons who are frequently exposed to products, materials or waste from these animals. Protection from Q-fever transmission is also recommended for persons working in a laboratory setting with the organism *Coxiella burnetii*. Q-fever screening must be undertaken prior to Q-fever vaccination. Screening includes a serum antibody test and skin testing. Screening identifies those who should not be vaccinated to avoid side effects. Vaccination must be preceded by a negative blood and skin test performed by a specifically trained doctor.

***References***

*Australian Guidelines for the Prevention and Control of Infection in Healthcare* (2010) National Health and Medical Research Council ([NHMRC](https://ppl.app.uq.edu.au/glossary/term/64))

<http://www.nhmrc.gov.au/guidelines/publications/cd33>

<http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/cd33_infection_control_healthcare.pdf>

[NHMRC](https://ppl.app.uq.edu.au/glossary/term/64). The Australian Immunisation Handbook, 10th Edition. Canberra: National Health and Medical Research Council, 2013.

<http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home>

The NSW Health Policy Directive for [Occupational Assessment, Screening & Vaccination Against Specified Infectious Diseases PD2011\_005](http://www.health.nsw.gov.au/policies/pd/2011/pdf/PD2011_005.pdf) describes the requirements for employers, staff and other clinical personnel in relation to occupational assessment, screening and assessment against specified infectious diseases.

AS/NZS 2243.3:2010 Safety in laboratories Part 3: Microbiological safety and containment
The NSW Health Policy Directive for Occupational Assessment, Screening & Vaccination Against Specified Infectious Diseases PD2011\_005

**Decontamination and Disposal**

**Disposal of contaminated items**

The use of disposable equipment should be considered wherever it is impossible to ensure decontamination and sterilisation.

Local safe work instructions should include:

* Clarification of responsibility to ensure an item is safe before it is moved from the site where it has been used.
* Detailed instructions regarding safety devices for removal of scalpel blades.
* Detailed procedures regarding disposal of needles, scalpel blades and syringes in rigid-walled puncture resistant containers.
* Detailed procedures for re-using glassware and safe disposal of discarded glassware.
* Procedures for management of linen (both laundering and disposal as infectious waste).

**Disinfection and management of spills**

Local safe work instructions for disinfection should be very specific to the tasks and items used and the following should be reinforced:

* Disinfection and cleaning up after work with human blood and animal body fluids should be conscientiously performed.
* Spills should be cleaned up immediately using similar techniques.
* Gloves must be worn.
* Use tongs to pick up broken glass.
* Remove the blood or body fluid with absorbent material.
* Using a detergent solution, clean the site thoroughly.
* Wipe down the site with disposable towels soaked in a disinfectant solution containing 500 mg/litre (500 parts per million) of available chlorine.
* Dispose of all contaminated waste material into leak-proof bags.
* If the site is porous or cannot be adequately cleaned prior to disinfection then a solution containing at least 5000-10000 (ppm) or 0.5-1% of available chlorine should be used.
* Commercial laundry bleach (approx 5% available chlorine) is suitable and is diluted with tap water 1:10 to obtain 5000 ppm.
* Hypochlorite solutions must be prepared daily.

Chemicals effective against HBV are effective against HCV and HIV. Sodium hypochlorite is recommended as a safe and effective agent for surface disinfection. Some unpainted metals are corroded by sodium hypochlorite and a phenolic or iodophor disinfectant may be substituted. In each case the manufacturer’s instructions for the use of the disinfectant should be followed. It is not recommended that glutaraldehyde be used as surface disinfectant due to its toxicity.

**Instrument decontamination, repair and transport**

Instruments and equipment should be used in such a manner that minimises surface contamination or the production of droplets.

In the event of minor spillage occurring surfaces and equipment should be decontaminated as soon as practicable.

In the event of major spillage occurring, staff and students should vacate the area prior to clean up and signage should be applied to relevant areas (e.g. instructing users not to enter a contaminated area or use contaminated equipment). Signage should indicate the relevant date and time of the spill.

For any spill that generates an aerosol such as a centrifuge spill or spill from height, personnel should vacate the area and the aerosol should be allowed to settle for 30 minutes before proceeding with disinfecting equipment.

In the event of a breakage or leakage within a centrifuge, as with spills, gloves must be worn and the centrifuge decontaminated, remembering to disinfect the outside of all unbroken vials.

Equipment surfaces exposed to potential contamination should be disinfected daily. If necessary the equipment manufacturer’s advice should be sought regarding compatibility of disinfectants with surfaces or functions. All instruments and equipment that require service or repair must be cleaned free of blood and disinfected before leaving the laboratory.

Local safe work instructions must take into the need for transport and repair of instruments used in areas in which blood and body fluids are handled or stored.

**Local safe work procedures**

Local safe work procedures should take into account the following recommendations for laboratory design and layout:

* Laboratory space and placement of equipment should not create a crowded working environment nor inhibit cleaning.
* Laboratory surfaces and floors should be made of impervious material to allow for effective cleaning.
* Facilities for hand washing with elbow or foot operated taps should be provided in each work area.
* Eyewash stations should be available in each work area.
* Biohazard containers for the safe disposal of contaminated materials and sharps should be provided in adequate numbers in appropriate places in each work area.
* Laboratory doors and specimen storage areas should be marked as containing a biohazard.
* Offices and study areas should be separated from laboratory work areas.
* Restriction of laboratory access should be enforced as appropriate.

**Containment of aerosols**

* Local safe work procedures should be specific about control of aerosols.
* Define the tasks required to always be undertaken in laminar flow cabinet.
* Define the tasks to be undertaken in Biological Safety cabinets.
* As a minimum, Class I or Class II biological safety cabinets should be used for any procedures likely to produce aerosols of blood, bodily fluids or their products (e.g. sonication, agitation, blending, procedures producing foam, froth, spray and aerosols as well as the decanting of large volumes of fluids in open containers).
* Define the maintenance and testing procedures for Biological Safety cabinets and all ventilation systems to ensure that they are operating to specification. Ensure they are tested and serviced at intervals of not more than one year.
* If a Biological safety cabinet is not working, "DO NOT USE" warning signage must be displayed.
* Centrifuge tubes should be sealed closed or sealed rotors should be used for spinning of any potentially contaminated material. Operators should ensure the rotor has completely stopped turning before opening the lid.

**Transport of specimens**

The Transport of Dangerous Goods Class 6.2 Infectious Substances are regulated by the following, depending on the mode of transport:

* International Air Transport Association (IATA) Dangerous Goods regulations.
* Australia Post Dangerous and Prohibited Goods and Packaging Post Guide.
* Australian Code for the Transport of Dangerous Goods by Road and Rail.

These regulations require mandatory training for:

* packaging to IATA standards (i.e. to send biological material on either domestic or international flights).
* packaging and transport for land transport of biological material. An important issue is the lack of insurance cover if such material is transported in a private vehicle.

If you are transporting biological material, which is either infectious or diagnostic, please contact whs@une.edu.au.

**Protective Clothing**

The following are important points which should, as appropriate, be incorporated in local safe work instructions and on-site training.

***Gloves***

* Always wear when likely to be in contact with the specimen or contaminated surfaces or material.
* Always wear if there is any open skin lesion or dermatitis as these conditions increase the risk of infection.
* Select disposable gloves that fit well and are easily replaced.
* Damaged gloves must be replaced immediately.
* Remove gloves after task completion (e.g. before handling telephones, performing office work and leaving the laboratory).
* If a telephone is contaminated wipe thoroughly with 80% alcohol.
* Gloves must be worn when working in a biological safety cabinet in PC2 certified facilities.

**Face and eye protection**

* Facial protection such as safety glasses, P2 mask or face shield must be worn if there is a risk of splashing or spraying of blood or body fluids.
* Eye protection should be worn when transferring blood or bodily fluids. A full-face shield provides the greatest degree of protection.
* Contact lenses will not protect the eyes from exposure and may absorb chemicals or biologicals.

**Gowns and laboratory coats**

* Back opening or wrap around gowns should be worn in laboratories in preference to wearing a laboratory coat.
* Gowns should be worn in laboratories at all times and removed or discarded on leaving the laboratory.
* Disposable gowns should be used when working with infectious pathogens, high risk biologicals or cytotoxic materials.
* Ensure gowns have a closed, completely covered front.
* Gowns should be discarded appropriately when soiled or contaminated.

**Footwear**

* Closed shoes must be worn in the clinical and laboratory environment which cover the foot entirely from toe to heel to base of ankle.
* High heels are not appropriate in the clinical and laboratory environment.

**Personal Hygiene**

The following are important points which should, as appropriate, be included in local safe work instructions and on-site training.

***Hand washing***

Attention to hand washing is an essential part of good practice:

* Hands should be washed thoroughly with soap and water immediately if contaminated with blood or other body fluids or if gloves have been torn or punctured.
* All wounds should be covered with waterproof dressings.
* Hands should be washed at completion of the workday or session.
* Elbow or foot operated taps should be available.

***Hand care***

* The use of moisturising cream is recommended where frequent hand washing is required.
* Antimicrobial hand gels are available with moisturisers and these can reduce the drying effects of frequent hand washing.
* Nails should be kept trimmed and clean.

***Avoiding contact***

Staff must avoid inadvertent contact with their skin or mucosal surface (e.g. eyes, mouth):

* Mouth pipetting is prohibited.
* Cosmetics must not be applied in the laboratory and long hair should be tied back.
* Food and drink must not be kept in nor consumed in the laboratory.

***Skin injury***

* All skin problems such as cuts, abrasions, exudations and exudative rashes should be covered by a waterproof dressing applied prior to entering the laboratory.