

**SCHOOL OF PHYSIOTHERAPY /Department
of Podiatry**

Infection Control: Policy & Procedures 2004

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The guidelines should be considered in association with the State and/or Territory legislative requirements that affect work practices of the health care establishment and /or health care worker. If the recommendations herewith conflict with State or Territory guidelines, the statutory requirements of the state or territory should take precedence.

The intention is to provide you with a best practice guide for infection control procedures whilst on Bentley campus. This guideline may be used as a resource to guide practice, as well as provide a template for clinical audit.

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Understanding the principles of infection control underpins the reason for infection control procedure. The following are a set of guidelines used by the School of Physiotherapy and incorporate procedures necessary for the prevention of transmission of infectious diseases in the health care setting.

Successful infection control is based on good hygiene around a range of practices that arise from underlying hazards and implementing risk management for the hazards. To do this successfully, it is important to recognise:

- Infectious agents
- Work practice that prevents transmission of infection in different settings; and
- Management systems that support effective work practices.

The main principles in preventing transmission of infection are:

- to identify all potential sources of infection; and
- to care for the infected or potentially infected persons in such a manner that transmission of infection is rendered as difficult as possible; further
- to safely dispose of potentially infective and other injurious materials.

ii.

Content

1.	Principles of Infection Control	1-8
	5.1.3 Standard Precautions	
	5.1.4 Additional Precautions	
	5.1.5 Identifying hazards and minimising the risk of infection	
	5.1.6 Duty of care	
	5.1.7 Who is at risk?	
	5.1.8 Spreading infection	
	5.1.9 Other key issues	
	5.1.10 Handling sharps	
	5.1.11 Single use medications, injectables and small surgical tools	
	5.1.12 Antiseptic Policy	
	5.1.13 Disinfectants	
	5.1.14 Skin Disinfectants	
6	Quality management	9
7	Effective work practices and procedures	10-29
	3.1.1 Cleaning & Disinfection of the Environment & Clinical Furniture	
	7.1.3 Cleaning and Disinfection of the Environment	
	7.1.4 Disinfection of Clinical Furniture	
	7.1.5 Disinfection of Footbaths	
	7.1.6 Routine Maintenance	
	7.1.7 Disposal of waste	
7.2	Disinfection of the Skin	
	7.2.3 Hygienic Hand Disinfection	
	7.2.4 Chemical Disinfection of Hands	
	7.2.5 Effective Hand Hygiene	
	7.2.6 Handwashing for Surgical Procedure	
	7.2.7 Pre-operative Disinfection of Patient's Skin	

7.3 Sterilisation and Disinfection Procedures

7.3.3 Surgical Tool Autoclaving

7.3.4 Cycle of Surgical Tools

7.3.5 Ultrasonic Washer

7.3.6 Single-Use Items

7.3.7 Cryotherapy

7.3.8 Chemical Disinfection

7.4 Standard Procedures in Practice

7.4.3 Operator

7.4.4 Personal Protection

7.4.5 Bleeding Points - Patient

7.4.6 Bleeding Points - Operator

7.4.7 Non Touch Technique

7.4.8 Decontamination of Spillage

7.4.9 Handling Foot Orthoses and Removal of Soiled Padding

7.4.10 Disposal of Infectious Waste

7.5 Antiseptic Policy

3.5.1 Selection of Topical Applications

3.5.2 Application of Topical Preparations

3.5.3 Procedure for obtaining a Quality Specimen for Culture

7.6 Procedure for Local Anaesthesia and Nail Surgery

7.6.3 Application of Local Anaesthesia

7.6.4 Procedures for Partial and Total Nail Avulsion

7.7 Protocol for Sharps Injury

8 **Managing infectious diseases in the health care setting** **30-32**

4.1 Infectious Diseases

8.1.3 Viral diseases

8.1.4 Bacterial disease

8.1.5 Antibiotic-resistant bacteria

8.1.6 Creutzfeldt-Jakob disease

8.1.7 Other disease

9 Infection control in specific health care settings 33-34

- 5.1.1 Special operations unit
- 5.1.2 Office Practice
- 5.1.3 Home and Community
- 5.1.4 Long Term Care Establishments

10 Further Reading 35

Appendix I Glossary

1. Principles of Infection Control

An introduction to the basic principles of infection control as foundation for an infection control strategy.

The health care environment presents infectious agents with a portal to infection. Patients may be infected while receiving treatment, practitioners may be infected during the course of their duties and other people may be infected when working or interacting with patients in the health care establishment. By identifying hazards and assessing risk the risk of infection and cross infection may be reduced to a minimum risk. Conventional wisdom suggest there are five element to infection control. These are:

- 5 Applying basic infection control strategies
- 6 Quality management practices
- 7 Effective work practices that prevent transmitting infectious agents.
- 8 Managing specific infectious agents.
- 9 Identifying infection control strategies in specialised settings.

The School of Physiotherapy in accordance with best practice have developed detailed protocols and policies that cover the five elements of successful infection control . Infections can be divided into two types:

Nosocomial infection are Health care associated infections (HAI) - acquired in health care establishments; and

Iatrogenic infections These are infections which occur as a result of health care interventions and may manifest after leaving the health care unit.

In clinical settings the risk of infection (and cross infection) is ever present, precautions must be taken to minimise these risks. Controlling infection is everyone's responsibility.

5.1.1 Standard Precautions

Standard precautions describe a standard operating procedure that apply to the care and treatment of all clients, regardless of their perceived infectious risk. These precautions include aseptic technique, handwashing, and use of personal protection, appropriate reprocessing of instruments and equipment and implementing environmental controls. Standard precautions contain safe systems for handling blood, other body fluids, secretions and excretions (including sweat), non-intact skin and mucous membranes. Standard precautions are recommended for the care and treatment of all patients and form an essential primary strategy for the successful minimisation of infection causing microbes.

A summary of standard precaution work practice for infection control in podiatry/physiotherapy is given in Table 1.1 These are essential because not all infectious patients display signs or symptoms of infection, some may even be asymptomatic carriers, completely unaware of their status. This may not be picked up in a routine history taking and examination and because many infections can only be determined by laboratory tests, the results of which are known after consultation, then standard precautions are required to minimise the risk of transmission of infection from person to person.

5.1.2 Additional Precautions

Additional precautions are required when standard precautions may not be sufficient to prevent transmission of infectious agents eg tuberculosis, measles, Creutzfeld-Jakob disease (CJD). Additional precautions are tailored to the specific infectious agent concerned and may include measures to prevent airborne, droplet or contact transmission and health care associated transmission agents. Additional precautions are applied when the patient is known, or suspected of having an infection that may not be contained by standard precautions alone. This may relate for example to:

- airborne transmission of respiratory secretions eg streptococcal bacteria in a throat infection, pulmonary tuberculosis, chickenpox, measles
- droplet transmission of respiratory secretions eg rubella, influenza;
- where standard precautions are not sufficient eg. CJD

Additional precautions are not required for people living with bloodborne viruses, such as HIV, hepatitis B virus or hepatitis C virus, unless there are complicating infections, such as pulmonary tuberculosis. A summary of additional precautions is summarised in Table 1.2

1.13 Identifying hazards and minimising the risk of infection

In clinical practice the activities and tasks that put patients and practitioners at risk have been well documented. Research to identify infectious agents and their route of infection are constantly under review. Assessment of risk for the transfer of infectious diseases has become a critical part of health care. These combine to provide useful principles & procedures to minimise exposure to sources of infection. The principles form a framework to link identifying specific hazards with critical control points. Implementing the procedures circumvents the transmission of infectious agents. For example ensuring small surgical tools are sterile may include cleaning them before sterilisation, packing the sterilisation unit and validating the steam sterilisation process. These routine procedures form critical control points which in turn offer the opportunity to monitor safe practice. It is important you not just learn these techniques but observe them whilst in the clinical area.

1.1.4 Duty of Care

Employers have a legal and ethical responsibility to provide risk assessment guidelines; a safe working environment; effective workplace instruction and on going education about infection control procedures. All employers need to supply appropriate facilities and equipment, including occupational health services; and health screening programs. An ongoing monitoring and evaluation of infection control procedures is also required.

1.1.5 Who is at risk?

Risk of contracting an infection

Patients may contract infections from themselves (endogenous infection) or from other patients, practitioners, furniture, small surgical tools and equipment or environment (exogenous infection). The levels of risk relate to the health care setting, the type of health care procedures performed and the susceptibility of the patient to the infection.

Risk of transmitting an infection

Patients may transmit infections to other patients, practitioners, small surgical tools and equipment, or the environment. The level of risk relates to the transmissibility of the infectious agent, the availability of a route of transmission, the susceptibility of exposed persons, and the success of applied control measures (standard and additional precautions). The most common source of infection is the patient's own skin flora. Routine practice determines skin antisepsis before treatment can commence.

Practitioners may transmit infections to patients during clinical contact, or to fellow workers, small surgical tools, furniture and equipment, or the environment. The level of risk relates to the procedures undertaken and the efficacy of the aseptic techniques used. Skin antisepsis is a necessary routine precaution.

Small surgical tools, furniture and equipment may transmit infections to patients during clinical procedures. The level of risk relates to the site where the surgical tool is used - tools, which contact sterile tissue, are at the highest risk, and tools which contact only intact skin are at the lowest. Eradication of risk from exogenous sources necessitates domestic cleaning, chemical disinfection and sterilisation procedures for inanimate equipment.

The environment itself may be responsible for infection transmission. The level of risk relates to the susceptibility of the patient/ practitioner, the availability of the route of entry from the environment and the level of contamination of the environment. Fortunately most environmental micro-organisms are non-pathogenic however a small number are which means domestic cleaning and disinfection are essential. Reducing the number of infectious agents in the environment require appropriate management of blood spills, use of aseptic technique and effective maintenance of equipment.

1.16 Spreading infection

The transmission of infection requires three elements:

- A source
- A susceptible host
- Path of transmission

Human hosts may be people with obvious signs and symptoms of infection, people with no signs who are asymptomatic; and those with subclinical symptoms. Other sources include normal endogenous microbial flora of the skin, contaminated work surfaces, medications, equipment and small surgical tools,

People have variable resistance to infection depending on their age, underlying disease, and other factors that may impede their immune system ie-medical treatment. The risk of transmission increases with patients undergoing invasive procedures.

Path of transmission between patients, practitioners, small surgical tools, furniture and equipment and health care environment may take place in any direction.

1.1.7 Other key issues

Practitioners need to be aware of the concepts of aseptic technique, handling sharps, the use of single -use equipment and reprocessing procedures. Restraint in prescribing and adherence to the principles of antiseptic policy is essential to avoid the danger of emerging antibiotic resistance.

1.1.8 Handling sharps

Sharps represent a major cause of incidents involving potential exposure to blood borne diseases. Sharps need to be handled with great care and the operator needs to be mindful of where these are at any time. Safe disposal of sharps is an essential skill. As is the safe handling and operating with sharp surgical tools.

1.1.9 Single use medications, injectables and small surgical tools

Single use equipment should be used wherever this is practical. Small surgical tools must be sterilised . To achieve sterile conditions this means tools are cleaned to remove organic debris, then sterilise by heat .

1.1.10 Antisepetic Policy

To avoid drug resistance practitioner use chemical antiseptics as a first line of asepsis.

1.1.11 Disinfectants

Surface disinfectants are regulated by the Therapeutic Goods Administration under Therapeutic Goods Order No.54 (TG054) as sterilants, instrument grade disinfectants, hospital grade disinfectants and domestic grade disinfectants. Chemical disinfectants act by damaging the structure or impairing the metabolism of infectious agents. The biocidal action varies with chemical structure and the general properties of the group to which it belongs. Critical factors that may affect performance include temperature, contact time, concentration, pH, presence of residual organic and inorganic soils, and numbers and resistance of the bioburden on a surface. It is essential all disinfectants be used in accordance with manufacturer's directions to ensure the product meets its label claim for efficacy in accordance with its requirements of Therapeutic Goods Order No.54 (TGO 54). These products should not be mixed nor used after their 'use by' dates. Used products should be discarded after use.

1.1.12 Skin Disinfectants

Skin disinfectants/antiseptics are regulated by the Therapeutic Goods Administration (TGA). Most products are either registered medicines or listable medicines on the Australian Register of Therapeutic Goods (ARTG). These products should be used according to the manufacturer's directions, which are designed to ensure the product, when used as directed, meets its label claims of efficacy with TGA requirements. Products should not be used after their 'used by' date.

Hygienic handwash/scrub products are formulated to reduce transient bacteria on the hands. Surgical scrubs reduce the level of both transient and resident bacterial flora. Handwashing disinfectants used in the clinical area offer both residual as well as immediate activity.

Handwashing techniques ie hygienic and surgical are described in detail below.

Table 1.1 Standard precautions work practice for infection control in health care settings

Work Practice	Relevant Section
Aseptic technique, including appropriate use of skin disinfectants	
Personal hygiene practices, including handwashing before and after all significant patient contacts.	
Appropriate handling and disposal of sharps and other clinical waste.	
Appropriate reprocessing of reusable equipment and small tools, including appropriate use of disinfectants.	
Environmental controls, including design and maintenance of premises, cleaning and spills management.	
Appropriate provision of support services such as laundry.	

Table 1.2 Summary of additional precautions work practice for infection control in health care settings

Requirement	Airborn transmission	Droplet transmission	Contact transmission
Gloves	Nil	Nil	For all manual contact with patient, associated devices and immediate environmental surfaces
Impermeable Apron	Nil	Nil	Where clothes contamination is likely
Face Mask	Surgical mask	Surgical mask	Protect face if splash likely
Goggles	When splash is likely	As standard precaution	Protect face if splash likely
Special handling of equipment	As standard precaution	As standard precaution	All equipment in contact with patient
Other	Cover nose and mouth	Nil	Remove & dispose gloves and gown after use.

2. **Quality management**

Administrative arrangements for effective infection control and quality management. This includes reference to ethical and legal considerations that affect quality management.

As part of a duty of care, Curtin University have a legal responsibility to provide a safe work environment and safe system's of work and safe environment for students, staff and patients. Curtin is responsible to protect the privacy and confidentiality of all people in their establishment. To this effect there are governance policies in place.

As part of this commitment to safety, the School of Physiotherapy/Department of Podiatry operates a comprehensive infection control procedure to which this manual specifies performance standards for routine work practices. The policies and procedures contained within are constant with national minimum standards and generally accepted infection control principles, as outlined by professional bodies, national and State/Territory guidelines. As part of the course syllabi, students are furnished with up to date information on infection control policy, procedures, quality assurance and incident monitoring. Prospective students are informed about specific measures, including immunisation that reduces the risk of acquiring infection. The School of Physiotherapy/Department of Podiatry have a Clinical Committee, which meets regularly to resolve current infection control issues that affect-working environment.

3. **Effective work practices and procedures**

Personal and environmental hygiene , support services, equipment and instruments.

The following standards are considered, (at the time of writing), to be the most effective way to minimise cross infection. In light of experience and research, these procedures may change. The infection control policy complies with the University's requirement and is reviewed regularly. The procedures described also follow the Australian Standard 4187-1998 Code of practice for cleaning, disinfecting and sterilising reusable and surgical instruments and equipment, and maintenance of associated environments in health care facilities; and the Infection Control Guidelines for the prevention of transmission of infectious diseases in the health care setting (Version 3) 2002, Commonwealth of Australia: Australian Government Publishing Service.

For further reading you are referred to Infection Control Guidelines for Podiatry published by Podiatrists Registration Board, (West Australia) and Clinical Practice Guidelines 2.6 Infection Control Australiasian Podiatry Council March 2001.

3.1 Cleaning and Disinfection of the Environment & Clinical Furniture

3.1.1 Cleaning and Disinfection of the Environment

Practitioners work in areas where the absence of micro-organism is impossible, therefore every effort should be taken to prevent the transfer of infection. Clinical premises are well lit and ventilated. Floors and work surfaces do need to be kept clean and should be regularly washed with domestic cleaners. Walls and curtains too need to be cleaned when there is visible dirt. Routine domestic management will achieve this in most office practices. Greater precautions are indicated on premises where patients with known infections or potential infections are treated, such as in hospital.

3.1.2 Cleaning and Disinfection of Clinical Furniture

All working surfaces should be cleaned with an alcohol wipe containing 70% alcohol prior to the patient entering the clinic. Sections, which require attention, include: the unit work surfaces, and patient's leg rests. As an added precaution, when treating open wounds, the unit work surface may be covered with disposable paper drape. At the end of the treatment the drape should be folded up with the contaminated waste, sealed in a clear bag and placed in the Medi-Collect box for incineration. Non contaminated waste can be emptied into the domestic waste bins.

Caution should be exercised when cleaning electrical equipment. Under no circumstances must wet surfaces be introduced to electrical equipment e.g. nail drills, and operator's lamp. These surfaces must be cleaned with dry cloth, only. The head of the therapeutic ultrasound machine is very delicate, and great care should be exercised when wiping with alcohol. Under no circumstances must this be attempted when the equipment is connected to the mains supply. Equipment heads require to be disinfected before and after use.

3.1.3 Disinfection of Footbaths

These should be washed, dried and stored inverted (upside down). If used on an infected patient, basins should be washed and prepared with an alcoholic solution of chlorhexidine gluconate BP before being stored. Waste from baths should be carefully disposed of in the domestic sewage, avoiding spillage.

3.1.4 Routine Maintenance

Nail drill, hand pieces require to be disinfected between sessions. Unplug from the mains supply; remove hand piece and place in the disinfecting solution for recommended time. To refit, remove hand piece from container, wipe excess fluids, and attach to nail drill. Nail drill bags must be checked regularly and changed before they become three quarter full. Used bags should be sealed in a poly bag, then placed in the Medi-Collect boxes for incineration. Clinical laundry can be cleaned in an ordinary automatic washing machine, using a prewash followed by a wash at the highest temperature setting, unless known contamination by HBV is present. All electrical equipment should be checked regularly for safety and a record kept of any maintenance required. Any equipment faults should be reported in the logbook and immediately brought to the attention of the technician, or office manager.

3.1.5 Disposal of waste

Environmental management necessitates the separation of contaminated waste from non-contaminated materials. The latter can be disposed off as domestic waste whereas the former needs to be stored separately and incinerated. Two sub-categories of non-contaminated material include sharps and non-sharps. Sharps need to be disposed off in special containers and must never be put into containers for domestic rubbish. Some domestic disposal systems will require degradable materials (ie. paper) to be separated from non degradable (i.e. plastic) .

3.2 Disinfection of the Skin

3.2.1 Hygienic Hand Disinfection

Handwashing is the most important hygiene measure in preventing the spread of infection. Hands should be washed before and after significant contact with any patient, after activities likely to cause contamination and after removing gloves. Scrubbing brushes are not recommended as they abrade the skin and may cause infection. Gloves are not a substitute for handwashing.

3.2.2 Chemical Disinfection of Hands

Mild liquid handwash (with no added substances that may cause irritation or dryness) are used for routine handwashing. Refillable containers are a potential source of contamination as bacteria can multiply within many products. It is an important routine to clean the pump mechanisms on the disposable containers regularly. Washing with waterless alcohol based hand rinse preparations may be an adjunct to traditional handwashing, for example during procedures where multiple washing episodes are required.

3.2.3 Effective Hand Hygiene

Effective handwashing involves the removal or killing of transient flora on the hands is described as hygienic hand disinfection and the killing of resident flora as surgical hand disinfection. Pre-operative disinfection of the operation site also involves the killing of transients and as many residents as possible. Bacteria carried on the hands of the operator are a potential cross infection hazard to susceptible patients. Washing hands with soap or detergent, with or without a disinfectant, is generally effective in removing transient bacteria if performed diligently and

regularly. An alternative method of disinfection is the application of small quantities of 70% alcohol with Chlorhexidine gluconate BP to the hands, which are rubbed to dryness. This method provides a fast and effective alternative to handwashing in situations where there is no visible signs of soiling of hands (and gloves). It is more important to cover all surfaces of the hands thoroughly than to wash for a defined time. All cuts must be covered with a waterproof dressing during clinical work and gloves worn. Hand creams should only be used at the end of the session.

The technique of washing the hands is now universal. Start by rubbing palm to palm; right palm over left dorsum, and left palm over right dorsum. Next palm to palm with fingers interlaced; backs of the fingers are interlaced; backs of the fingers to opposite palms of fingers interlocked. Rotational rubbing of the right thumb follows this clasped in the left palm and vice versa. Rotational rubbing, backwards and forwards with clasping fingers of right and in the left palm and vice versa. This technique ensures the complete surface of the hands is exposed to the antiseptic film. The technique is used in both hygienic and surgical hand disinfection.

Intact skin is a natural defence against infection; any breaks or lesions should be covered prior to operating. Hand jewellery should be removed. Repeated handwashing and wearing gloves can cause irritation or sensitivity leading to dermatitis or allergic reactions. This is minimised by use of suitable individual use hand creams.

3.2.4 Handwashing for Surgical Procedure

Preparations currently recommended are: Chlorhexidine gluconate solution BP 4% w/v; foaming detergent solution and Povidone-iodine solution BP 7.5% w/v (Available iodine 0.75%).

These preparations should be used for all handwashes during operating sessions to achieve cumulative effect on the reduction of resident bacteria. The operator is recommended not to change detergents, nor wash hands with soap. This action will nullify the action of the handwash. A wash duration of two minutes without scrubbing is normally sufficient. Repeat skin scrubbing can damage cells and may be associated with an increase in the number of resident flora. Scrubbing is recommended for the first and last wash only. Full details of surgical hand disinfection appears in Table 1.3,

NB: In some people frequent washing may cause skin allergies. In the event of a developing a skin reaction, this should be reported and alternative hand disinfection followed.

3.2.5 Pre-operative Disinfection of Patient's Skin

Detergents for pre-operative disinfection of the patient's skin should be active mainly against the resident flora. The preparation to be used on the operation site must be rapid acting and have a prolonged antibacterial effect. Alcoholic solutions of chlorhexidine gluconate BP are used for this purpose, these must be allowed to dry thoroughly before operating. Where there is ingrained dirt or plaster marks present then applications of aqueous solutions cetrimide BP (in combination with chlorhexidine gluconate) can be used to disinfect. In the event of stubborn plaster marks a suitable solvent should be used e.g. Zoff Adhesive Plaster Remover (Smith & Nephew)

The standard procedure for skin disinfection is:

- Remove all visible dirt and debris from the foot.
- It may be necessary to wash the feet in an antiseptic footbath (46 ° C, 10 minutes).
- Take alcohol skin wipe 70% v/v isopropyl alcohol to the whole foot. Start at the apex of the toes and work towards the heel. Cover both dorsal and plantar surfaces, apex of toes, interdigital spaces and heels.
- With dry cotton wool puff remove the resultant emulsion of dirt and grease from the skin surface.
- Prior to giving an injection, the surrounding skin can be prepared with wipes containing 70% alcohol.

All swabs and debris from skin preparation should be disposed of in clear plastic bags, sealed and placed in the Medi-Collect boxes for incineration.

3.3 Sterilisation and Disinfection Procedures

Sterilising procedures of small surgical tools requires being effective against all known pathogens. To ensure the destruction of bacterial spores

by moist heat, the temperature must be in excess of 100 ° C. All small tools are sterilised by autoclaving, or steam under pressure. Unless the tools are supplied by Central Sterilising Services, autoclaving of surgical tools is the individual responsibility of the practitioner. Here at the department of podiatry, all surgical tools are sterilised and individually packaged. It is important that all students take responsibility to prepare the surgical tools for autoclaving by following a simple set of instructions. Some pieces of equipment may not withstand heat sterilisation or some chemical agents. Under these circumstances unless a proper reprocessing system is available these instruments cannot be used.

Records of sterilisation are kept as a matter of law to comply with Commonwealth and State/Territory legislation. In building 404 this is done by technical staff.

3.3.1 Surgical Tool Autoclaving

The Department of Podiatry provides all surgical tools necessary for patient care, for student use. All surgical tools are individually packaged and sterilised using an autoclave. Steam under pressure (moist heat) sterilisation offers the most efficient and reliable form of sterilisation of small surgical tools. This is the preferred method of sterilisation in office-based practice. The autoclave kills microorganisms by a process of steam under pressure. The latent heat of condensation is transferred to the load within the chamber causing small tools to heat rapidly. Steam under pressure causes proteins to coagulate and inactivates infectious agents. There are several types of steam under pressure sterilisers but the models used in 404 are downward (gravity) displacement benchtop types. These are regulated by the TGA and must comply with Australian Standards. 2182 (1998) *Sterilisers - Steam - Benchtop*. Benchtop sterilisers are suitable for sterilising small quantities of packaged items. Benchtop sterilisers used in 404 have a built in drying cycle.

In the interests of cross infection each surgical tool is sterilised after use and before being used on another patient. A reserve of sterilised instruments is kept, individually wrapped in labelled storage boxes in the clinic. These instruments are clearly marked **STERILE INSTRUMENTS**.

3.3.2 Cycle of Surgical Tools

In a normal course of events students will collect a set of sterilised surgical tools from the storage area and take them to the work unit. At the

end of the clinical treatment all surgical tools should be taken to the instrument cleaning area. All tools require to be cleaned of contamination by scrubbing and/or placing them in the ultrasonic washer. Non sterile, but cleaned surgical tools should be placed in the individually identified storage boxes ready for re-packaging. These instruments are clearly marked **USED INSTRUMENTS**. To clean scissors, which may have adhesive plaster sticking to them, a solvent adhesive remover such as "Zoff" (Smith & Nephew) is provided for this purpose. It is the individual responsibility of each student to complete these exercises competently and consistently. All sharp disposables **MUST** be placed safely to sharp depositories.

The Curtin University technical staff is responsible for the sterilisation process and the release of sterile instruments into the storage boxes in the clinic. During the course of a clinical session students assigned to "technical duties", will be required to assist in re-packaging instruments prior to the sterilisation process.

At the beginning of each session all small surgical tools will be autoclaved and stored in packages **(STERILE)**

During the Session the movement of surgical tools is **(CLEAN)** --to--> **(PATIENT)**--to--> **(DIRTY)**.

At the end of the patient treatment/session all surgical tools need to be accounted for before returning them to the instrument cleaning area. Sharps require to be dis-engaged before depositing safely in the sharp's container.

Cleaning the small surgical tools is the most important prerequisite before sterilisation. Once cleaned the small tools may be individually packaged. **(PREPARE TO AUTOCLAVE)**

At the end of the session:

Technicians will autoclave clean surgical tools and return sterilised tools to labelled boxes. **(AUTOCLAVE)**

3.3.3 Ultrasonic Washer

Ultrasonic washers which comply with AS 2773.2 *Ultrasonic cleaners for health care facilities - non portable -benchtop* reduce the handling of

small surgical tools. They do disinfect tools but instead dislodge tiny particles, which cling to the instrument. Contaminated surgical tools must be washed and scrubbed under running water. Then placed in the ultrasonic washer for TWO (2) minutes. These are then dried and placed in the correct used instrument box. During washing the operator must wear gloves, goggles and mask to protect themselves from spillage and droplets.

3.3.4 Single-Use Items

The use of single-use instruments minimises the risk of cross infection. Items such as scalpel blades, injection needles, syringes, pins for neurological sensory testing and blood samples, should be single-use. When single-use item have penetrated the skin or tissue these are disposed immediately after use, or at the end of each procedure, whichever is most appropriate and in accordance with manufacturer's instructions. Under no circumstance should used single-use items be decontaminated for re-use.

3.3.5 Cryotherapy

Care is required not to contaminate the canister of liquid nitrogen. As both viruses and bacteria may survive in liquid nitrogen.

3.3.6 Chemical Disinfection

Chemical solutions are available for the disinfection of nail drill hand pieces. Concentrated solutions of laboratory disinfectants are potentially hazardous and care must be exercised in handling them. Concentrated solutions of sodium hypochlorite i.e. bleach are extremely corrosive and splashes will damage clothing and floor surfaces. Rubber gloves must be worn when handling concentrated solutions. Splashes on the skin or in the eye must be washed off at once with large volumes of water.

3.4 Standard Procedure in Practice

3.4.1 Operator

In both the interests of infection control as well as our patients' general expectations of a health care worker, the following protective clothing is recommended. Clean clinical attire appropriate to meet the general public. Jacket style coats (long or short) worn over a shirt or blouse with tailored collar or lightweight polo shirt, as preferred. Clinical attire should be clean and in good condition.

Hair groomed and if necessary tied back away from the face and site of operation. Avoid fashion headgear e.g. baseball caps. Visible name badges help patients identify individuals and should be worn as a standard. Hands properly manicured with nails short and clean. Minimum hand jewellery. Good personal hygiene and enclosed footwear appropriate to meet and advise the general public as well as offer protection from injury from spillage of hazardous chemicals and/or dropped sharps.

3.4.2 Personal Protection

Operators require to use examination gloves,(AS/NZ 4011) for procedures other than working in a sterile field,; and single use (sterile) surgical gloves (AS/NZS 4179) when appropriate and whenever there is any likelihood of hands coming into contact with blood or tissue fluids. The type of glove must be appropriate to the task. Wearing gloves does not replace handwashing. Gloves may have defects that are not immediately obvious or they may become damaged with use and become a hazard to the operator. All cuts and abrasions on the hands must be kept covered with waterproof dressings, at all times, even when gloves are worn. Gloves should be changed and hands washed after each patient procedure; as soon as they are damaged; during multiple procedures on the same patient if there is a risk of cross-contamination,; before answering telephones or recording patient notes. Hands should be washed after removing gloves. Some people may have or develop a latex allergy. Powder free latex gloves are available

Protective eyewear should be worn during procedures such as drilling the nail; dealing with spillage and preparing surgical tools or anytime where splashing, splattering or spraying of body fluids or hazardous chemicals is likely. Protective eyewear should comply with AS/NZ 1336 *Recommended practices for occupational eye protection* & 1337 (1992) Amendment 1 (1994) *Eye protectors for industrial application*

It is recommended that a well fitting face shield is worn when using the drill, and when an operator has a nose or throat infection. Surgical face

masks (AS 4381) are recommended when participating in surgical procedures. Masks should cover both mouth and nose while worn. Masks should be removed as soon as practicable after they have become moist or visibly soiled.

Inappropriate handling of sharps represents the major cause of incidents involving potential exposure to blood borne infections. Operators must at all times handle sharps with care to minimise injury. The person who has used the sharp remains responsible for its immediate safe disposal into clearly labelled, impermeable containers (Medi-Collect) following use. Particular care should be taken to avoid needle stick injuries. Under no circumstances must they be re-sheathed nor any attempt to retrieve discarded sharps from the sharps container. Puncture proof containers must conform with AS 4031 (1992) and Amendment 1 (1996) *Non reusable containers for the collection of sharp medical items used in health care areas* or AS/NZS 4261 (1994) and Amendment 1 (1997) *Reusable containers for the collection of sharp medical items used in human and animal medical applications*

All staff and students are recommended to undertake a course of injections giving safe and effective protection against Hepatitis B. Health care workers who undertake exposure prone procedures are professionally and ethically obliged to know their infectious status for HIV, HBV and HCV and should seek voluntary testing where appropriate.

3.4.3 Bleeding Points - Patient

Compress the area with direct digital pressure applied through a cotton wool puff for approximately 2-3 minutes. This will normally stop the bleeding and allow a clot to form. In the event that bleeding continues:

- Apply a chemical agent e.g. Ferric Chloride BPC with the aid of a cotton bud on an applicator stick. This will usually stop most bleeding points. In the unusual event of further bleeding a sterile haemostatic dressing can be used to create a clot.
- The area surrounding the bleeding point may be cleaned with saline solution, or in the event of an infected cavity Hydrogen Peroxide Solution BP 10 vols may be used.

- No post operative antiseptic should be applied until the bleeding has stopped. Care is required to dry the area carefully before applying any post operative dressing after the application of hydrogen peroxide.
- With small cuts, a sterile spot dressing should be applied; larger cuts require sterile dressings applied with non touch technique and to avoid
- direct hand contact, gloves should be worn.
- Remove gloves and wash hands with surgical scrub.
- If further contact is anticipated i.e. in the treatment of verrucae, rubber gloves should be worn throughout.

3.4.4 Bleeding Points - Operator

- Place under running water for approximately 60 seconds and wash injured area with soap. Encouraging bleeding by squeezing around the injury is not recommended.
- Compress to stop bleeding and encourage clotting by holding for approximately 2-3 minutes.
- Cover with spot dressing. In the event of a large cut, stitching may be required.

3.4.5 Non Touch Technique

The non touch technique is used when dressing broken skin which requires special care. The term broken skin includes cuts, abrasions and skin conditions such as eczema and dermatitis. At no time during the procedure must the operator's hands come in contact with the patient's skin. Gloves, forceps, sterile spatulas and applicators are used for this purpose. In certain instances only sterile dressing packs can be used e.g. treating infected wounds.

The standard procedure is :

- Roll up coat sleeves to the elbow.
- Remove hand jewellery and wash hands following the standard handwash.

- Clean and prepare the work surface.
- Face mask, disposable gloves and plastic aprons (if required) should be worn. Repeat standard hand wash.
- Remove dressings carefully with forceps and place in clear disposable bag. A temporary dry sterile dressing is placed over the area. Now repeat
- the standard handwash*.
- Use the sterile pack of sodium chloride solution BP to wash out the wound.
- Swabs, cover gauze and medications should be applied by applicators, forceps and dressing scissors only. No direct contact should be made
- between the operator's hands and the skin of the patient.
- Dispose of all contaminated material in sealed bags and place them in the Medi-Collect box.
- Repeat standard handwash.
- An acceptable alternative would be to spray visibly clean hands with an alcoholic agent e.g. 0.5% Chlorhexidine Gluconate in 70% Alcohol (DeltaWest)

3.4.6 Decontamination of Spillage

In the management of blood or body spills the standard precautions apply, including the use of personal protective equipment as applicable. Spills should be cleaned up before the area is cleaned. In the event of spillage of body fluids, i.e. blood or vomit on the floor or work surfaces, ensure all contact surfaces are decontaminated. The fluid spill should be contained by the direct application of dry absorbent paper towels. Soak the area with sodium hypochlorite 15 = 10,000 ppm. Glove and goggles must be worn if there is a danger of splashing when removing infectious waste. Follow the standard procedures for disposal of infectious waste.

3.4.7 Handling Foot Orthoses and Removal of Soiled Padding

Micro-organisms are carried in body fluids and care should be taken to wear gloves when handling footgear. Always wear gloves and when necessary disinfect glove surfaces with Chlorhexidine gluconate BP in 70% alcohol. Discard gloves after use and wash hands.

3.4.8 Disposal of Infectious Waste

Management of clinical and related waste requires to conform to State regulations, Australian Standard AS/NZS 3816 (1998) *Management of clinical and related waste* and NHMRC National Guidelines for Waste Management in the Health Care Industry (NHMRC 1999). Waste is segregated at the point of generation using colour coded and labelled containers as per AS/NZS 3816:1998. Operators are recommended to wear gloves when handling clinical waste bags and containers.

Clinical waste is placed in yellow containers bearing the international black biohazard symbol and clearly marked "clinical waste". This would include the following liquids, tissues or equipment .

Fluids: Blood, exudate and tissue fluids, vomit and urine.

Solids: Debrided tissue from ulcers or other necrotic sites.

Skin & nails or other lesions excised for cosmetic or podiatric indications.

Dressings: Soiled or used wound dressings.

All of the above items should be discarded into the Medi-Collect boxes. These containers are disposed of, by the collection agent, in accordance with State Government requirements.

The standard procedure is:

- All soiled material must be sealed in clear plastic bags.
- Sealed bags must be placed directly in the Medi-Collect boxes for collection and incineration.
- Paper towels and other non contaminated waste can be disposed of with domestic waste.

- Broken glass should be collected safely and placed directly in the Medi-Collect sharps container.
- Single use equipment should be placed in the sharp's container. Needles should be disposed of unsheathed and under no circumstances should an attempt be made to retrieve any item from the sharp's container.

Sharps such as contaminated single-use equipment ie blades, syringes, injection needles, sharp/blunt testers are placed in puncture proof containers which conform with AS 4031 (1992) and Amendment 1 (1996) *Non reusable containers for the collection of sharp medical items used in health care areas*; or AS/NZS 4261 (1994) and Amendment 1 (1997) *Reusable containers for the collection of sharp medical items used in human and animal medical applications*. These containers are disposed of, by the collection agent, in accordance with State Government requirements.

Non contaminated and non sharps are deposited into the domestic waste.

A summary of waste containment and disposal is given in Table 1.4.

3.5 Antiseptic Policy

Unless otherwise specified by a medical practitioner or microbiological laboratory report, all topical antiseptics should have wide anti-microbial activity, be fast acting and encourage phagocytosis but with low toxicity. In the event of infected lesion(s) not responding to local antiseptics or

healing agents, the patient should be referred to a medical practitioner for antibiotic therapy.

3.5.1 Selection of Topical Applications

In the specific care of ulcers, the range of products available is wide and patient management will be determined by the presenting state of the lesion; the available preparations; and the judgement of the clinician. A complete justification for the choice of management, however, will be given to each student involved in the care program. The current policy of the School of Physiotherapy is to use generic antiseptics and healing agents. These may not be the preparatory brands and students are referred to specific pharmacy data sheets for further information. All pharmaceuticals are used in conjunction with manufacturer's recommendation and date of use. The shelf life of most sealed medication is 14 days after the air tight container has been removed.

3.5.2 Application of Topical Preparations

- Preparations from a tube and tub like containers, i.e. creams and ointments, should be applied to the skin with a spatula. This prevents direct contact with the contents of the container
- Solutions and paints require to be applied to the skin with the aid of cotton wool applicators and gallipot container.
- Sterile dressings need to be applied with non-touch techniques, using forceps and scissors.
- The contents of aerosol dispensers should be applied approximately 15 cm from directed site.

3.5.3 Procedure for obtaining a Quality Specimen for Culture*

The standard procedure is :

- Hygienic handwash followed by the application of protective gloves.

- Use the appropriate container(s) for each specimen.
- Do not disinfect the skin or nails surface area.
- Take a representative specimen from the site. In the case of nail, sample clippings should be removed from the distal end of the nail; skin samples should be taken from the periphery; samples of discharge should be taken from the centre of most drainage.
- Close specimen containers tightly to prevent spillage and contamination.
- Label the container with the patient's name and other data. Note the type of specimen, anatomic location, provisional diagnosis, date and time collected.
- Send the specimen to the laboratory immediately to prevent organism destruction or overgrowth.
- Be sure to record the procedure , date and time in the patient data base.

*In the event of patient request for specimen culture.

3.6 Procedure for Local Anaesthesia and Nail Surgery

3.6.1 Application of Local Anaesthesia

The method of obtaining successful analgesia of the hallux will vary with personal preference, however, the following procedure is considered standard safe practice:

Pre Injection Technique

- Prepare tray, i.e., syringe, ampoules (not straight from the fridge, but at room temperature) and swabs.
- Prepare surrounding skin with 70% alcohol swab.
- Assemble needle and syringe adjusting gauge and plunger.
- Break ampoule and draw up.

Injection Technique

- Choose site for injection, i.e. half way along the proximal phalanx of the great toe on either side of the extensor tendon. Stretch skin and insert needle.
- Raise an epidermal bleb by inserting the needle at an angle of 45° and just below the skin. Apply the needle until the bevel disappears beneath the skin, then inject gently raising a small white bleb.
- Redirect the needle to an angle of 90° and pierce through the fascia. Once skin's resistance is overcome,
- aspirate the syringe to ensure the contents of the syringe do not penetrate a blood vessel.
- Inject approximately 0.5ml of analgesic solution. Fast injections can be painful, so inject the first 0.5ml slowly.

- Move the needle further into the toe injecting a small quantity of solution as you proceed. Once you have reached the plantar nerve root area, aspirate the syringe for the second time. Once confirmed you are in no danger of injecting into the blood stream deposit another 0.5ml at this site.
- Withdraw the needle slowly from the toe, gently squeezing the remaining contents of the vials into the tissues.
- Repeat the same procedure on the other side of the great toe*.
- To avoid bruising apply direct compression to the injection site. To help spread the anaesthetic, gently massage the surrounding area with the help of an alcohol swab to prevent direct skin contact. Allow between 15-20 minutes for the anaesthetic to become effective.
- Another option is to redirect the needle towards the proximal aspect of the eponychium and infiltrate, injecting a small quantity of anaesthetic.
- The recommended amount of 1% Xylocaine Plain (ASTRA) to be injected would be 5mls in the Hallux and between 2-3 mls in lesser toes.

3.6.2 Procedures for Partial and Total Nail Avulsion

Select set of sterilised small surgical tools, dressing trays and drapes in accordance with the requirements displayed in the operating room. Ensure backup small tools are also available. Make all necessary preparations well in advance of session.

At the time of the procedure

- Prepare room for procedure and disinfect all work surfaces using 70% alcohol. Apply local anaesthesia.

Following Anaesthesia

- The foot is disinfected with Povidone iodine BP 1% surgical scrub, then dries with sterile dressing towel.
- The masked operator meantime completes surgical handwash with Chlorhexidine gluconate BP 4% in 70% alcohol and gloves up.
- Procedures are carried out according to aseptic protocol.

At the conclusion of the procedure

All disposable dressings and contaminated waste must be placed in a sealed plastic bag and placed in the Medi-collect box. All sharps, including glass vials must be placed in the Medi-collect sharps box. Re-usable drapes and linen are placed in the laundry bag provided, all instruments are cleaned by scrubbing and immersed in lubricant solution before heat sterilisation. In the event of blood spillage this should be washed away with 0.5% sodium hypochlorite solution and wiped up with paper towels.

3.7 Protocol for Sharps Injury

These guidelines apply to any injury involving penetration of the skin by a blood contaminated sharp object. They also apply to an incident where

there is contact of blood or body fluid with the eyes, mouth or broken skin.

- Wash the area thoroughly in running water or, if an eye, with the eye wash bottle.
- Report the incident immediately to your clinical supervisor or, in the case of a staff member, to the Head of Department. Any such incidents will be reported to the Safety and Risk Manager, Human Resources, by the Head of School/Department. This will be done on the appropriate form within the required lodgement time.
- It is recommended the source or donor be identified. If the source or donor is identified as being from a high risk group or the source cannot be identified, it is recommended that the injured person contact the University Medical Service or a medical practitioner of their choice, within one hour of the injury.
- The donor, should be asked if they would be prepared to submit to a blood test if the injured person's medical practitioner requests such a test. A consent form should be signed to allow the donor's name and telephone number to be given to a named medical practitioner or to the University Health Service.

4. Managing infectious diseases in the health care setting

The major risk factors with recommendation for suitable management procedures for patients.

In the School of Physiotherapy the strategy for infection control is based on the use of standard precautions, as a minimal level of control, supplemented by additional precautions where standard precautions may be considered insufficient to prevent infection. Additional precautions are based on three specific routes of disease transmission (airborne, droplet and contact). Infection control practices for specific diseases take into account their mode of transmission. Each practitioner must make them self aware of these conditions and appropriate infection control procedures. Table 1.5 outlines examples of diseases requiring additional precautions, by mode of transmission, Not all diseases have been included and the list relates only to those which present a high risk of transmission in the clinical area situated in Building 404, Bentley campus.

Table 1.5 Examples of diseases requiring additional precautions, by mode of transmission.

Mode of transmission	Example of Disease
Airborne transmission	Tuberculosis
Droplet transmission	Group A streptococcal infections
Contact transmission (direct or indirect contact with dry skin or contaminated surfaces)	Resistant bacteria (MRSA*) Highly contagious skin infections/infestations Viral hepatitis (A, B & C) Human immunodeficiency virus (HIV) infection/acquired immunodeficiency syndrome (AIDS)

* MRSA methicillin -resistant staphylococcus aureus,

A summary of precautions for preventing transmission of infectious diseases is given in Table 1.6 This is not intended to be exhaustive but rather to cater for the more likely events in the on campus clinics. Due care and attention to Infection Control Policies is required whilst on clinical placement.

4.1 Infectious Diseases

4.1.1 Viral diseases

In all instances of viral diseases, standard precautions and procedures are recommended. In immunocompromised patients additional precautions are required.

4.1.2 Bacterial diseases

The most common bacterial disease to cause concern is staphylococcal and streptococcal infections as well as tuberculosis. These are widespread within the community and not specific to the clinic population.

Susceptibility to bacterial infection varies with age and health status. In all instances of bacterial disease, standard precautions and work practices are required. However in specific circumstances, additional precautions and work practices are needed.

4.1.3 Antibiotic-resistant bacteria

The most important antibiotic-resistant bacteria are methicillin -resistant *Staphylococcus aureus* (MRSA) (most prevalent); *Enterococcus faecium* and *Enterococcus faecalis* (VRE); multiresistant gram negative bacteria; and multidrug-resistant tuberculosis. These bacteria are amplified by the use of broad-spectrum antibiotics and are more common in hospitals than in the wider community. Additional precautions are recommended for all patients colonised or infected with MRSA and VRE. There is no universally agreed standard for infection control of multi resistant organisms.

4.1.4 Creutzfeldt-Jakob disease

CJD is an infectious disease, which is caused by an agent relatively resistant to inactivation and therefore requires special additional precautions. At the time of preparing this report CJD has not been reported in Australia and hence the special additional precaution remain out with the remit of this report. The reader is referred to relevant literature for further information.

4.1.5 Other disease

The most significant other disease of concern in a health care setting are scabies (caused by infestation with the mite *Sarcoptes scabiei*) and pediculosis (headlice or *Pediculus humanus capitis*) These are readily transmitted through human contact. Additional precautions should be observed when dealing with patients with scabies and head lice.

For complete details please refer to this file

http://www.health.gov.au/pubhlth/strateg/communic/review/icg_pdf/part4.pdf

Infection Control Guidelines for the prevention of transmission of infectious diseases in the health care setting (Version 3) 2002
Commonwealth of Australia: Australian Government Publishing Service
Part 4 Infectious disease in the health care setting.

5. Infection control in specific health care settings

The major risk factors and management procedures for specialised health care settings. These include special operations units, office practice, home and community, and residential aged care.

5.1.1 Special operations units

Health care establishments, which cater for surgical procedures, will have specific protocols for operating room procedures, including specific requirements for surgical handwashing routines and handling sharps. Whilst these will follow the principles of universal precautions, the detail may vary from one establishment to another. Prior to attending outside placement the onus is upon each student to familiarise themselves with infection control procedures in the unit they attend. These are readily available from the establishment but are not contained within this document. The principle of sterile surgical technique is contained within the Infection Control in Surgery published by the Royal Australian College of Surgeons (RACS 1998)

5.1.2 Office Practice

The general principles of infection control that apply to large health care settings also apply to office practices, including surgical procedures. Each individual practice should develop a manual of protocols to be carried out during all procedures. Again these will vary from one office to another. Most practitioners will adhere to the recommendations of their professional associations eg Podiatry Association Infection Control Principles and Procedures (Australian Podiatry Manual Infection Control (October 1999) 2: 6 Melbourne: Australasian Podiatry Council 2001). Sterilisation by steam under pressure is the preferred method of sterilisation in office practice and the manufacturer's instructions should be followed. Small surgical tools must be cleaned before sterilising. Students and employees of the university should be provided with facilities and equipment necessary to ensure compliance with current infection control guidelines.

5.1.3 Home and Community

Health care workers should carry personal protective equipment, including waterproof gowns, gloves, masks and goggles, to protect them from hazards they may encounter in informal health settings. Hygienic handwashing before and after contact with community based clients is recommended. Where these facilities are not available single use towlettes (with detergent) may be used before an alcoholic handrub. Hands should be washed with skin disinfectant and running water at the first opportunity. Any work case and all items contained within should be cleaned regularly. Soiled items must be removed. All waste generated in informal health care settings must be disposed of according to the State /Territory regulations.

5.1.4 Long Term Care Establishments

Infections in long term care establishments (LTCE) may be community acquired health care associated or endemic. Residents are both susceptible to, and a potential source of, infection. Each establishment will have an infection control program co-ordinated by a designated infection control practitioner. It is important when on placement to check with this person that the appropriate infection control procedures are being undertaken.

6. Further Reading

Australian Infection Control Association

< <http://www.aica.org.au/> >

Australian National Council for AIDS, Hepatitis C and Related Diseases (ANCAHARD) Bulletin No 16: Needlestick and Blood Accidents

Australian Podiatry Manual Infection Control (October 1999) 2: 6
Melbourne: Australian Podiatry Council 2001

Infection Control Guidelines for the prevention of transmission of infectious diseases in the health care setting (Version 3) 2002
Commonwealth of Australia: Australian Government Publishing Service.
<http://www.health.gov.au/pubhlth/strateg/communic/review/> Department of Health and Ageing

Infection control literature review Victorian Government Health Information

< <http://infectioncontrol.health.vic.gov.au/infcon/index.html> >

McDermott JC 2002 Chapter 16 Principles of infection control In Lorimer D, French G, O'Donnell M & Burrow JG (eds) Neal's disorders of the foot Edinburgh: Churchill Livingstone 511-528.

NMAP: The UK's gateway to high quality Internet resources in Nursing, Midwifery, and Allied Health
<http://nmap.ac.uk/browse/rcn/detail/4410.html>

NSW Health IC related policies Infection Control Policy April 2002

<http://www.health.nsw.gov.au/fcsd/rmc/cib/circulars/2002/cir2002-45.pdf>

Infection Control audit tool

<http://www.health.nsw.gov.au/fcsd/rmc/cib/information-bulletins/2000/ib2000-6.pdf>

Workplace infection risks Chartered Society of Physiotherapy, UK .

File downloaded from :

<http://admin.csp.org.uk/admin2/uploads/-38c9a362-ed71ce5fa5--7fa5/IRHSBRIEF9-WORKPLACEINFECTIONRISK.rtf>

Infection Control Queensland Health (2001)

<http://www.health.qld.gov.au/infectioncontrol/documents/pdf/Elements%20of%20IC.pdf>

APPENDIX 1 Glossary

Additional precautions special measures recommended when patients are known, or suspected to be, infected or colonised with disease agents that cause infections in health care settings and may not be contained by standard precautions, alone.

Antiseptic a substance recommended by its manufacturer for dermal application or application to mucous membrane of a person to deactivate microorganisms, or to prevent the growth of microorganisms to a level that may cause clinical infection.

Antiseptic technique the absence of infectious agents that may cause disease. Aseptic technique refers to practices which reduce the number of infectious agents; prevent or reduce the likelihood of transmission of infectious agents from one person or place to another; or render and maintain objects and areas as free as possible from infectious agents.

Body fluids, which pose a risk of blood borne virus transmission:

- Blood, serum, plasma and all biological fluids visibly contaminated with blood;
- Laboratory specimens that contain concentrated virus;
- Pleural, amniotic, pericardial, peritoneal, synovial and cerebrospinal fluids; and
- Uterine/vaginal secretions or semen

Clean technique practises which reduce the numbers of infectious agents and routing procedures. These include: personal hygiene, handwash - domestic and surgical; use of barriers to reduce transmission of infectious agents eg paper towels; reprocessing small surgical tools and equipment between patients; and use of environmental controls such as domestic cleaning to reduce transmission of infectious agents.

Hazard this is defined as an agent (biological, chemical or physical) that has a potential to cause harm to people or the environment. This may be an infectious agent or a mechanism that allows transmission of an infectious agent.

Hepatitis B virus (HBV) a recognised occupational hazard for health care workers who are exposed to blood or body fluids. In source patients who are positive for HBV surface antigens (HbsAg), transmission rates are much higher than for HIV (about 6-30%), particularly if the source is also HBV e antigen (HbeAg) positive.

Hepatitis C virus (HCV) now considered to be the most common cause of viral hepatitis among health care workers. When a source patient is positive for anti-HCV, transmission rates are higher than for HIV. The risk of transmission is relatively low (about 3-10%) in comparison to HBV.

Human immunodeficiency virus (HIV) - prospective studies of health care workers occupationally exposed to human immunodeficiency virus have estimated that the average risk of HIV transmission after an exposure to HIV infected blood was 0.3% (3 in a 1000) and after mucous membrane exposure was 0.09% (9 in 10,000). Although there have been cases of HIV infection reported after skin exposure to HIV infected blood, the average risk of HIV transmission after this exposure was extremely low, and no health care worker enrolled in the prospective study have seroconverted after isolated skin exposures.

Iatrogenic infections are infections, which occur as a result of health care interventions and may manifest after leaving the health care unit.

Nosocomial infection These are Health care associated infections (HAI) - acquired in health care establishments.

Standard precautions work practices required to achieve basic level of infection control and are recommended for the treatment of all patients.

Sterile technique techniques designed to render and maintain objects and areas free from microorganisms as possible. When working on invasive procedures everything within a defined area must be clean and sterile.

Sterilants are liquid chemical agents used to sterilise medical devices unable to be heat sterilised.

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<http://www.health.gov.au/pubhlth/strateg/communic/review/> Department of Health and Ageing