Guideline

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Infection Control Guidelines for Oral Health Care Settings

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Summary Addresses specific issues for infection control in an oral health care setting.

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Infection Control Guidelines For Oral Health Care Settings

NSW Health Department Infection Control Policy, Circular 2002/45 sets out broad principles of infection control for public health care settings. The Infection Control Guidelines for Oral Health Care Settings address specific issues for infection control in an oral health care setting. The purpose of these Guidelines is to provide oral health care settings with minimum infection control standards for maintenance of a safe and healthy environment for staff and patients. The Guidelines are intended as a framework within which more detailed operational guidelines can be developed.

These Guidelines should be read in conjunction with the NSW Health Department Infection Control Policy, Circular 2002/45.

These guidelines supersede the Best Practice Infection Control Guidelines.

If you require further information in relation to these guidelines please contact Joy Bogert on 9293 3276 or email jbogert@udh3.udh.cs.nsw.gov.au.

The NSW Infection Control Resource Centre provides an expert reference service in accordance with NSW Health Department directives, guidelines, policies and regulations. This service is available to all health care workers in NSW and can be contacted on 9332 9712 or email albicr@sesahs.nsw.gov.au

Robyn Kruk
Director-General

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Circular 2002/80

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Working as a Team

Infection Control Guidelines
for Oral Health Care Settings

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1 Introduction

NSW Health is committed to ensuring health and safety for patients in the oral health care settings and providing a healthy working environment for all employees. This includes adopting infection control guidelines that minimise the risk of patients and providers acquiring a health care associated or occupational infection.

Purpose

The purpose of these Guidelines is to provide oral health care settings with minimum infection control standards for maintenance of a safe and healthy environment for staff and patients. The Guidelines are intended as a framework within which more detailed operational guidelines can be developed.

Key elements

This guideline has been developed in accordance with the NSW Health *Infection Control Policy* and Regulations that define the registration requirements for dentists and dental technicians; available scientific evidence; and in consultation with key stakeholders and experts including the NSW Health Department, Oral Health Infection Control Committee. This guideline is subject to regular review.

All health care facilities and health care workers have a common law duty of care to take all reasonable steps to safe guard patients, staff and the general public from infection. The Occupational Health & Safety (OH&S) Act 2000 prescribes the employer's duty of care to provide a safe and healthy working environment for all employees, other health care workers and other persons on their premises. The OH&S Act also prescribes responsibilities for managers (who manage OH&S within the areas they control and influence) and employees (who must cooperate with the employers and not put anyone at risk by their acts or omissions). There is a requirement for employers to provide the information, instruction, training and supervision necessary to ensure the health and safety of employees at work.

2 Standard and additional precautions

Standard precautions

Refer to infection control practices in which all human secretions, most particularly in dentistry, blood and saliva, is assumed to be potentially infectious.

Standard Precautions involve the use of safe work practices and protective barriers, with all patients receiving care in health care facilities regardless of their diagnosis or presumed infectious status.

Transmission based precautions

Apply in those situations where Standard Precautions may be insufficient to prevent transmission of infection and are used in addition to Standard Precautions.

Transmission based precautions:

Are designed for patients known or suspected to be infected with pathogens for which additional precautions, beyond Standard Precautions are needed to interrupt transmission in health care facilities.

Types of transmission based precautions:

- airborne precautions
- droplet precautions
- contact precautions.

If additional help or information is needed, a consultation with the hospital, or Area Infection Control Practitioner, local Public Health Unit or the NSW Infection Control Resource Centre may be of assistance.

Airborne precautions

Airborne precautions apply to patients known or suspected to be infected with pathogens than can be transmitted by the airborne route, eg. TB, measles, chickenpox.

Droplet precautions

Droplet precautions are designed to reduce the risk of droplet transmission of an infectious agent. Droplet transmission involves contact of the conjunctiva or the mucous membrane of the nose or mouth of a susceptible person with large particle droplets, eg. mumps, influenza, rubella.

Contact precautions

Contact precautions are designed to reduce the risk of transmission of microorganisms by direct contact, usually direct skin contact, eg. herpes simplex, hepatitis A and MRSA.

3 Personal and patient protection

Personal hygiene

Staff is encouraged to practice good personal hygiene when working. Hair should be clean and tidy and if long, tied back.

Hand washing

Hand washing is the single most important procedure for preventing transmission of infection.

Hands are to be washed after touching blood, body substances, and contaminated items, whether or not gloves are worn.

Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross contamination of different body sites.

Research has shown that long finger nails and artificial nails increase the risk of microorganisms growing under nails or in cracked nail polish. Therefore:

- finger nails should be short and clean
- nail polish and artificial nails should not be worn
- rings, watches and bracelets should not be worn.

Staff should be able to easily access hand-washing facilities. Hands are only to be washed in the designated hand-washing sink.

Hands are to be cleaned before and after any direct patient care.

If skin is contaminated with blood or body substances, health care workers should wash their hands and all affected areas after the removal of personal protective equipment.

The requirement to clean hands applies regardless of whether gloves are also required to be worn.

Hands may be cleaned by:

- using washing facilities involving water and a soap or antiseptic
- if any of the above items are unavailable, using non-water cleansers or antiseptics.

When clean, running water is inaccessible non-water cleansers or antiseptics, such as alcohol-based hand rub or foam provide an appropriate alternative. However, hands should be washed with soap and water if visibly soiled.

An effective handwashing technique can be seen in the Appendix (page 25).

Drying hands

Single use paper towels or single use cloth towels should be used to dry hands in patient care areas.

Wash and dry hands:

- before commencing work
- before and after treating a patient
- after removing gloves
- before leaving the clinic
- after visiting the toilet
- after hands are visibly soiled
- after blowing or wiping of the nose
- before meals
- before leaving for home
- after smoking.

Hand care

Skin that is intact, that is without cuts, abrasions or lesions, are a natural defence against infection. Health care workers should cover cuts and abrasions on exposed skin with a water-resistant occlusive dressing which should be changed as necessary or when the dressing becomes soiled.

Other lesions that cannot be covered should have the condition assessed by a medical practitioner.

Hands can be protected from chafing by the regular use of non-oil based moisturising creams or lotions. Compatibility between lotion and antiseptic products and the integrity of gloves should be considered. Using collapsible squeeze tubes/bottles or pump packs should dispense lotions or creams. If lotions or creams cannot be decanted, then single use applicators or spatulas should be used.

Gloves

This section should be read in conjunction with NSW Health Department Circular 2000/99: *Policy Framework and Guidelines for the Prevention and Management of Latex Allergy*.

Gloves are worn as a barrier to protect the wearer's hands from contamination or to prevent the transfer of organisms already on the hands.

Hands must be checked for cuts or abrasions before gloving and lesions should be covered with a moisture resistant occlusive dressing.

Glove use in the oral health care setting

Gloves must be used in situations where the health care worker is potentially exposed to blood and/or body substances, in particular:

- during any procedure where direct contact is anticipated with a patient's blood or body substances, mucous membranes or non-intact skin
- while suctioning a patient
- while handling items or surfaces that have come into contact with blood or body substances.

Glove selection and types

The type of glove selected should be appropriate to the type and risk of the procedure and a suitable size for the user.

Sterile gloves

Sterile gloves must be worn if the procedure involves contact with tissue that would be sterile under normal circumstance such as for oral surgery procedures where there is an incision into the mucosa and a muco-periosteal flap is raised.

Medical examination gloves

Medical examination gloves that meet the Australian/New Zealand Standard AS/NZS 4011: *Single-Use Examination Gloves – Specifications* should be used for all procedures that may involve direct skin or mucous membrane contact with blood or fluid capable of transmitting blood borne pathogens. Use of medical examination gloves for reasons other than preventing the transmission of blood borne pathogens may be indicated (eg. procedures involving other infectious agents or contaminated equipment).

General purpose gloves

For housekeeping activities, instrument cleaning and decontamination procedures, general-purpose household gloves (eg. neoprene, rubber and butyl) are appropriate. These can be washed and reused but should be discarded when they become peeled, cracked, discoloured, torn or punctured.

Seamed gloves

Seamed plastic or vinyl gloves should be worn during food preparation.

Gloves used in general dental practice

Gloves must be changed and discarded:

- as soon as they are torn or punctured
- after contact with an individual is complete and before care is provided to another
- when performing separate procedures on the same patient and there is a risk of transmitting infection from one part of the body to another.

Gloves do not substitute for careful hand washing. Hands should be washed before and after gloves are used.

Gloves should **never** be worn:

- when writing up notes
- in reception areas
- in waiting room areas
- leaving the department/clinic
- in common tea rooms, or cafeteria
- going to recreational areas
- answering the telephone.

Gloves must be worn for ALL intra-oral procedures, including taking of radiographs.

No attempt should be made to wash or rinse or re-use gloves.

Protective apparel

The facility should provide protective apparel and equipment and be readily accessible to the health care worker. The requirement of the type of protective clothing depends on the equipment to be used, the procedure and the individual clinical decision.

For dental procedures the following protective apparel must be worn if there is likelihood of splashes or contamination with blood or other body substances:

- gloves
- eye and /or facial protection
- masks
- fluid resistant gown or plastic aprons made of impervious material.

The health care worker should wear footwear that is enclosed and protects against injury if sharp objects are accidentally dropped.

Protective apparel should not be worn in tearooms, recreational areas or when leaving the clinic.

Gowns

A fluid-resistant gown or apron made of impervious material must be worn during any procedure where there is a likelihood of splashes or contamination with blood or other body substances.

Clothing contaminated with blood or body substances should be removed as soon as possible and before health care workers attend other patients or residents.

Eye wear

Protective eye wear must be worn while performing procedures where there is a likelihood of splashing or splattering of blood or other body substances.

Staff should wear protective eyewear over goggles or face shield. Generally spectacles used for vision are not suitable protective eyewear and there may be a need to add either side panels or over goggles.

Where face shields are worn, masks should also be worn.

Patients should be offered protective eye wear. Should a patient refuse to do this, the potential risk is to be explained and documented in the patient's notes.

Staff should wear protective eyewear when any cleaning procedure is to be undertaken.

Protective eyewear should be cleaned between patient appointments according to the manufacturer's instructions.

Masks

The type of mask selected to be worn should be appropriate to the type and risk of the procedure. A selection of masks should be made available for different procedures.

Staff should wear masks where there may be the likelihood of splashing or spraying of blood or other body fluids:

- the mask should be fitted as per manufacturers instructions
- the body of the mask should not be touched during the procedure
- a mask must be discarded once it has been worn and not used again
- a mask should not be worn around the neck or carried in a pocket of coats or uniforms
- disposable masks should be disposed after each patient appointment.

Appropriate handling of laundry

This section should be read in conjunction with Australian Standards 4146, Laundry Practice.

Handle, transport and process linen soiled with blood and body fluids, in a manner that prevents skin and mucous membrane exposures; contamination of clothing; and transfer of micro-organisms to other patients and to the environment.

4 Procedure for dental and clinical practice

Although the physical setting of some clinics is a limiting factor, the implementation of four handed dentistry is considered ideal in the delivery of care and should be practiced if possible

Four-handed dentistry is the cooperative action of the dentist and assistant to significantly enhance each others overall productivity and effectiveness. This eliminates the double-handling of instruments, limits the zone of contamination, increases efficiency, reduces stress and fatigue, and improves the quality of dental care. Instruments other than sharps should be transferred by an appropriate method.

Four handed dentistry involves planning, organisation and constant monitoring to ensure success. Leadership, planning, organisation, communication skills are all part of management.

Both clinicians and assistants should be trained in these techniques.

Premises

The premise design is fundamental, as the adequate barriers for infection control are difficult or impossible to maintain without a clear delineation of operating and cleaning areas.

Pre-plan/ pre-set/ pre-dispense

All instruments should be pre-set and materials pre dispensed prior to treatment commencing. This reduces the need to enter drawers or cupboards during an appointment.

The following guidelines should be adhered to:

- all instruments, including hand pieces and burs should be pre-set
- tray set-ups which are procedure based (eg an amalgam tray) will make pre-setting easier. Only frequently used instruments should be set in trays
- all materials should be pre-dispensed. For materials that cannot be pre-dispensed the containers will need to be decontaminated after use
- materials that require hand mixing should be mixed on a single sheet of paper
- a bib, tray or paper towel should be used to define the work surface. Pre-set/pre-dispensed items should be placed on the primary work surface.

If any other items are required during the appointment, gloves must be discarded or transfer tweezers used to retrieve the items.

Clinical areas

The area designed as contaminated should be identified in the clinical area. This area is centred on the patient's mouth and the clinician and assistant's worksurfaces. All items placed outside these areas should not be contaminated.

Equipment should be positioned as follows:

- primary work surface, where instruments and equipment of direct relevance to the appointment should be on top of the assistant's cart and on the bracket table
- all other items such as amalgamators, patient notes and x-rays should remain outside the contaminated area and not be touched during the appointment unless gloves have first been removed
- if other items, equipment or consumables are required during the procedure they should be retrieved by the assistant:
  - using clean transfer tweezers

  or
  - removing gloves.

All other instruments and materials should be placed outside the zone of contamination. Depending on the design of the dental unit some equipment eg. a curing light may be attached to the unit.

Methods of limiting contamination

Dental dam

The use of dental dam is an effective measure in confining and limiting contamination.

Silicone dam should be used for patients who have a known sensitivity or allergy to latex (NSW Health Department Latex Policy 2000/99).

Suctioning

Effective suctioning at the tooth site will markedly reduce contamination from aerosol. This is achieved by:

- having staff assisting
- utilising suction tips that have a posterior and anterior end.

Suction tips should not be reversed during a procedure. If other end of the tip is required, a new tip should be used.

Dental clinic equipment

Chair controls

The chair should be pre-set at the commencement of treatment.

Where possible the chair should be foot controlled allowing adjustment at any time.

At the conclusion of the appointment, controls located on the back of the head rest or the side of the chair should be wiped clean with detergent and water and wiped dry with a paper towel.

Lights

The patient light should be:

- pre-set at the commencement of treatment;
- only the handles of the overhead light should be touched
- the handles should then be wiped clean with detergent and water and wiped with a paper towel following the appointment.

Spittoons

Where spittoons are not used the mouth can be rinsed with a triplex and high-speed suction. Following impressions a two-cup technique can be used by patients to rinse their mouth.

Sinks

One sink in the clinic area must be specifically designated for hand washing.

Hands should not be washed in a sink, which is used for either instrument cleaning, or disposal of blood, body substances or chemicals.

Air, water and suction lines

Suction lines should be non-convoluted with a flat bore and not covered with woven fabric.

Air and water lines should be flushed for a minimum of **2 minutes** at the start of the day and for **20-30 seconds** between patients.

All dental equipment, which supplies water to the oral cavity, is to be fitted with anti-retraction valves. Routine maintenance of anti-retraction valves is necessary to ensure their effectiveness and the manufacturer should be consulted to establish an appropriate maintenance routine.

Only potable water or filtered water as defined by the Australian Drinking Water Guidelines 1996 published by the National Health and Medical Research Council and the Agriculture and Resource Management Council of Australia and New Zealand should be used.

5 Safe handling and disposal of sharps

The potential of transmission of blood borne infections such as hepatitis B, hepatitis C and HIV is greatest when needles and sharps are handled. Sharps must be handled with care at all times and procedures devised so as to minimise the risk of injury during procedures and the cleaning of reusable instruments. **Wherever possible, the use of sharps should be minimised.**

Special care should be taken to prevent injuries during procedures, when cleaning reusable sharp instruments and during disposal of used sharps.

Sharps should be disposed of as soon as practical following use.

Responsibility for sharps

The person, who uses a sharp, in the practice of dentistry, is responsible for the proper management and disposal of the sharp.

Passing sharps

Sharps must not be passed by hand between a health care worker and any other person. A puncture resistant tray must be used to transfer sharps. However, this requirement does not apply if, in any case involving an invasive procedure, the proper conduct of the procedure would be adversely affected.

Transportation of reusable sharps

Reusable sharps must be placed immediately after use in a puncture-resistant sharp container specially kept for that purpose.

When more than one reusable sharp is carried in a container special care should be taken to prevent injury during placement of sharps into the container and during removal.

Removing scalpel blades from scalpel handles

The procedures and devices specified in the Australian/New Zealand Standard AS/NZS 3825: *Procedures and Devices for the Removal and Disposal of Scalpel Blades from Scalpel Handles*, should be followed for the removal and disposal of scalpel blades and other similar instruments eg. stitch cutters, from scalpel handles.

Removing and bending needles

A needle must not be removed from a disposable syringe for disposal, or be purposely broken or otherwise manipulated by hand, unless:

- it is necessary to remove the needle for technical reasons
- the practitioner is performing a procedure in which the needle is required to be bent.

A needle must not be bent after it is contaminated with blood or other body substances. In the event, the practitioner is performing a procedure in which the needle is required to be bent, a suitable pair of forceps should be used to manipulate the needle.

Do not re-sheath or dismantle endodontic irrigation syringes. Dispose as a complete uncapped unit.

Re-sheathing needles

In dentistry, where re-sheathing is required:

- the needle must be properly recapped
- the sheath must not be held in the fingers
- either a single-handed technique or Kelly forceps, or a suitable protective guard designed for the purpose must be used.

Dental local anaesthetic systems that do not need re-sheathing are now commercially available.

Sharps containers

Sharps containers should:

- comply with Australian/New Zealand Standard AS/NZS 4261: *Reusable Containers for the Collection of Sharp Items Used in Human and Animal Medical Applications*, if they are reusable. If they are non-reusable they should comply with Australian Standard AS 4031: *Non-Reusable Containers for the Collection of Sharp Medical Items Used in Health Care Areas*
- be puncture-resistant, waterproof and leak-proof
- have an opening that is wide enough to allow sharps to be dropped into the container by a single hand operation
- be clearly labelled with black lettering on yellow background with the 'biohazard' symbol printed on the container
- never be overfilled
- be securely sealed with a lid before disposal.

Sharps containers should be placed as close as practical to the point of use to limit the distance between use and disposal. Sharps containers should be placed so visitors, particularly children, can not easily access them.

Sharps should never be forced into a sharps container.

Reusable sharps containers should:

- be cleaned and disinfected before reuse
- be inspected before reuse to ascertain that they are clean, intact and without leaks
- if found to be defective, be repaired before use or taken out of service
- be resistant to leakage, impact rupture and corrosion.

The size of the container will vary according to need. The sharps container should be of an appropriate size for the dental cubicle to ensure that it is changed regularly and not kept for long periods.

6 Processing of instruments and equipment

The Australian Register of Therapeutic Goods

Only those disinfectants and sterilants specified in the Australian Register of Therapeutic Goods (ARTG) are to be used by health care workers for disinfection and sterilisation. The disinfectant or sterilant should only be used for the approved purpose.

Sponsors of disinfectants or sterilants are not required to document the product's listing on the ARTG on the product label. However, TGA will issue a 'listing certificate' or 'registration certificate' to sponsors (suppliers) with disinfectants or sterilants listed on the ARTG. These certificates are valid unless they are:

- cancelled by the sponsor advising TGA that they are no longer able to supply the listed disinfectants or sterilants
- cancelled by the Secretary of the Australian Department of Health and Ageing.

Health care workers involved in the purchase or use of disinfectants or sterilants, should, prior to purchase, seek a copy of the TGA 'listing certificate' or 'registration certificate' from the sponsor (supplier).

Type of reprocessing

The process indicated for an item depends on its intended use. Any microorganisms, including bacterial spores that come in contact with normally sterile tissue can potentially cause infection. These must be eliminated from items intended for use in sterile sites by cleaning and sterilisation. In general, intact skin acts as an effective barrier to most microorganisms, thus, items that touch intact skin need only be cleaned unless contaminated by blood and other body fluids or knowingly used on a patient with a multi-resistant organism eg. methicillin resistant Staphylococcus Aureus (MRSA) or Vancomycin Resistant Enterococci (VRE).

Consideration of the reprocessing requirements, ie. cleaning, and disinfection or sterilisation should be given when purchasing equipment. Instruments and equipment are divided into three categories, based on the degree of risk of infection associated with their use. Examples are listed in Table 1.

Category	Application	Process	Example
Critical	Instruments and equipment which enter, or are capable of entering, tissue that would be sterile under normal circumstances	Sterilisation	Instruments and equipment covered by this category include surgical instruments, implants, dental handpieces, ultrasonic scalers and stainless steel syringes.
Semi Critical	Instruments and equipment which come into contact with non sterile tissue (other than intact skin)	Disinfection	Instruments and equipment covered by this category includes prosthetic dental appliances, impressions, one way breathing valves, mouth shutters, respiratory therapy equipment
Non critical	Instruments and equipment which come into contact with intact skin	Cleaning	Instruments and equipment covered by this category includes dental chairs, benches and linen.

Table 1 *Level of process required for specific items and procedures. (This list is not exhaustive.)*

Cleaning of instruments and equipment

Cleaning is an essential pre-requisite for all disinfection or sterilisation processes as organic residue may prevent heat or steam penetration required for effective disinfection or sterilisation.

Any instrument or equipment that comes into contact with intact skin must be cleaned before it is used.

Any instrument or equipment that is required under this section to be disinfected or sterilised must be cleaned before it is disinfected or sterilised.

Cleaning agents shall be used to remove residual soil and organic matter from instruments and equipment.

The process of cleaning must involve water and physical or mechanical action (such as washing machines) and a cleaning agent such as detergent or proteolytic enzyme.

The cleaning process involves:

- rinsing the items with warm water to remove debris such as blood, mucous and tissue
- use of water, a chemical agent such as detergent and proteolytic enzyme and physical action
- where there is no instrument washer available, equipment should be rinsed with water, cleaned manually (hand scrubbing) using warm water, detergent and a brush then rinsing with running water
- abrasive cleaners or steel wool should not be used as the surface of instruments can be damaged
- brushes should be cleaned, autoclaved and stored dry.

Ultrasonic cleaners

Staff should observe correct usage and safety instructions for the use of ultrasonic cleaners during their operation. The use of ultrasonic cleaners should be in accordance with the Australian Standard AS 4187: *Cleaning, Disinfecting and Sterilizing Reusable Medical and Surgical Instruments and Equipment, and Maintenance of Associated Environments in Health Care Facilities* and includes the following:

- manufacturer's instruction should be followed for the use of the ultrasonic cleaner solutions. This includes changing the solution daily or more frequently depending on the use
- monitoring of the machine should be carried out daily, and the results documented. This is carried out using aluminium foil suspended vertically in the solution and running the machine through a cycle. At the completion of the cycle the aluminium foil should be uniformly peppered over the entire area, or by carbon removal
- the ultrasonic cleaner should be emptied each night.

Note: Ultrasonic cleaners are used to assist in cleaning jointed and serrated stainless steel instruments. Ultrasonic cleaners clean but do not disinfect or sterilise instruments.

All cleaning agents must be removed from instruments and equipment by rinsing prior to further processing.

Following the cleaning process the equipment to be disinfected or sterilised should be dried using a lint free cloth prior to packaging / processing.

Cleaning area requirements

On receipt of the contaminated equipment, items should be sorted according to equipment type and manufacturers recommendations for cleaning methods.

The cleaning area should be designed or set up to prevent possible contamination of processed items.

The clean section should be carefully defined, protected from all vapours (including aerosols), splashing, hand washing, instrument washing and ultra sonic cleaning.

The area should have adequate space for storage of effectively covered or packaged sterilised instruments and equipment.

The cleaning area should be at a central site ie. another room (if possible) with the flow of equipment from dirty → clean → sterile:

- the contaminated or dirty zone includes adequate bench space for the dismantling and initial cleaning (removal of bio burden) from instruments and equipment
- good lighting
- smooth surfaces without crevices
- adequate storage space for materials and equipment
- adequate bench space

- the floor should be non slip
- it requires a sink (separate from the hand washing basin)
- space for the cleaning of instruments
- an ultrasonic cleaner
- a mechanical washer if possible
- an autoclave.

Chemical disinfection of instruments and equipment

Any instrument or equipment that comes into contact with non-sterile tissue (other than intact skin) must be disinfected before it is used, with a disinfectant specified in the Australian Register of Therapeutic Goods, and the relevant manufacturer's instructions must be followed.

Disinfection is not a sterilising process.

Prior to disinfection all items must be cleaned.

All items placed into a chemical disinfectant solution should be completely submerged for the appropriate time according to the manufacturer's instructions. Items should not be added or removed during this time.

Do not store instruments in disinfectants before or after any form of processing.

Following immersion in the chemical disinfectant solution, all items must be thoroughly rinsed in sterile water.

Lifters must be used to remove items from chemical disinfection solutions.

Storage and disinfecting containers must have lids.

Storage or disinfecting containers must be sterilised or cleaned before use.

Storage and disinfecting containers are not to be lined with linen, gauze, or any other material (eg. sponge rubber) as these materials may neutralise the chemical used and may act as a reservoir for microbes.

Sterilisation

Sterilisation must be consistent with Australian Standard AS 4187: *Cleaning, Disinfecting and Sterilising Reusable Medical and Surgical Instruments and Equipment, and Maintenance of Associated Environments in Health Care Facilities*.

Any instrument or equipment used to enter, or that is capable of entering tissue that would be sterile under normal circumstances, must be sterilised before it is used.

All instruments and equipment must be cleaned prior to sterilisation.

The method of sterilisation must be compatible with the particular type of instrument or equipment.

If a steriliser is used (whether it is a benchtop/portable steriliser or a permanently plumbed or wired steriliser), the following criteria must be met:

- the relevant manufacturer's instructions must be followed
- an ongoing monitoring program which reflects the requirements of Table 7.1 'Steriliser Tests and Test Frequencies' of Australian Standard AS 4187 must be followed.

Microwave ovens, pressure cookers, dishwashers, ultraviolet cabinets, ultrasonic cleaners and similar devices do not sterilise and therefore must not be used for the purpose of sterilisation.

Wrapped or packed items

Instrument packs wrapped or packaged for sterilisation should have a sterilising date attached to the pack.

Where trays and equipment cannot be packed into 'see through' packaging, the contents should be double wrapped and the contents listed on the outside of the pack along with the date of sterilising.

Marking pen has been shown to allow microorganisms to penetrate paper, therefore the processing date should be written on one end of the pack on the edge. A biro is not to be used. Only those marking pens used for that purpose should be used.

Autoclaves

The most efficient and reliable method of sterilising of instruments and equipment is by steam under pressure (autoclaving) and is the preferred method of sterilising in dentistry.

All sterilisers must meet the requirements of the relevant Australian Standards and be operated according to the Australian Standard AS 4187.

Bench top sterilisers are to have a 'registration certificate or 'listing certificate' with the TGA (Therapeutic Goods Administration).

Autoclaves should have a maintenance program in place, which includes checking with a thermocouple. Equipment should be checked at least every six months and this is to be documented.

Autoclave cycles

Autoclaves should be set to the recommended sterilising cycles as specified in the table below.

°C	Kpa	Psi	Holding time plus safety factor (minutes)
121	103	15	15
126	138	20	10
132	186	27	4
134	206	30	3

Table 2 *Recommended autoclave steralising cycles*

Manufacturer's instruction for effective and safe use of the steriliser must be followed.

All packaged and wrapped sterile instruments and equipment must be stored in a manner that ensures sterility is maintained.

Monitoring

Every autoclave cycle should be monitored using a chemical strip or indicator, which indicates that the temperature has been reached. Validation of the strip should be documented and signed off by the person in charge of the sterilising for the practice. The strip should be checked in conjunction with the information from the printer to ensure both tests agree with each other.

Biological monitors

A biological indicator containing the test organism bacillus strearothermophilus is performed for steam sterilisation and should be used once a week and results documented (AS4187, Table 7.1).

Daily biological monitored testing is not required if a permanent record of autoclave performance is recorded as shown in the following example.

Downward displacement steriliser - check			
Printer	every cycle	document	
Chemical indicator	every cycle	document	+ printer
Biological indicator	weekly/following	document	
	repair/service	document	

Pre vac steriliser – check			
Leak rate test	daily	document	
Bowie Dick test	daily	document	
Chemical indicator	each load	document	+ printer
Biological Monitor	weekly following/service repairs	document document	

Following repairs or breakdowns of the autoclave, a biological monitor should be used and the results documented before the autoclave is placed back into service.

Storage of sterilised instruments and equipment

On removal from the steriliser the packs should be aired and allowed to cool before storing.

Sterilised items must be stored and handled in a manner that maintains the integrity of the packaging material, and prevents contamination of the contents.

Sterilised equipment should be stored in a clean area such as a cupboard, as opposed to open shelving.

Sterilised items should be stored so that packaging is not crushed or bent or compressed or punctured or held together with elastic bands or paper clips. The contents of any sterilised package should be considered contaminated if the packaging is either damaged or becomes wet.

Unsterile equipment should not be stored with sterilised equipment.

Unless an instrument or equipment has been sterilised by the wrapped method and stored in a manner, which maintains sterility, it cannot be considered sterile unless it is used immediately.

Shelf life and rotation of stock

Procedure trays/wraps and instruments that are not used frequently should be packed into heat seal or self-adhesive, see through packages and in plastic dust covers and dated with sterilising date.

Factors, which influence shelf life, are event-related and include:

- package design
- packaging material
- storage and handling conditions.

A stock rotation policy and procedure should be developed. The system of stock rotation should be based on the date of sterilisation.

Documentation

Documentation should be maintained in relation to equipment validation, which incorporates the commissioning procedure, ongoing maintenance and performance testing using physical, chemical and biological means.

Dry heat sterilisation

Manufacturer's instructions for effective and safe use of the steriliser must be followed.

Maintain instruments and equipment in a dry air oven (dry heat steriliser- hot air type) at 160 degrees Celsius for a minimum one-hour holding time.

All packaged and wrapped instruments and equipment must be stored in a manner, which ensures sterility is maintained.

Parametric release

of sterilised items and contingency plan for retrieval of suspected or unsterile or inadequately disinfected goods

An instrument or piece of equipment should be determined to be sterile based on either the steriliser's physical or chemical process data. In some instances, both physical and chemical process data are required. This declaration is known as 'parametric release' and is the accepted method of determination in all types of health care facilities.

Parametric release requires:

- pre-use validation of all sterilising processes
- routine monitoring and recording of the sterilising process
- maintenance of the steriliser as referred to in Australian Standards AS 4187.

In the event of a failure the machine must not be used again until satisfactory results are obtained from physical, chemical and biological monitoring.

Steriliser failure

Procedures to be undertaken in the event of steriliser failure:

- contents are abandoned (not released/used)
- nurse in charge/dentist in charge to be informed **immediately**
- to establish the cause of failure
- the engineer/service personnel notified **if necessary**
- repairs are to be under taken
- following repair by engineer or service contractor and the machine is deemed -operational
- the engineer/service contractor will check printer, pressure and temperature indicating correct sterilising has been validated
- **only after** a biological monitor has been validated and results documented
- the machine is returned to service.

Steriliser failure and contaminated equipment used on a patient(s)

This is to be read in conjunction with NSW Health Department Circular 2001/55, *Management of Reportable Infection Control Incidents*.

1 Inform senior nurse and Dentist in charge **immediately** who should in turn ensure that the Area CEO is advised with due regard to confidentiality of the individual(s) involved.

2 Nurse and dentist to ascertain how long the steriliser has been non-functional and which patients have had unsterile instruments used on them.

3 Review the disinfection and sterilising procedures of the facility.

4 Repairs to be initiated as described in 'Steriliser failure' on page 14.

5 Patient's notes retrieved during break down time and medical histories reviewed.

6 Regional Principal dental officer contacted and Area CEO and the Public Health Unit contacted with this information as it is deemed a critical incident.

7 Patient tracing is to be undertaken following direction from the Area.

8 Counselling to be provided to the affected patients.

9 Debriefing for staff to be undertaken.

10 Further education training and in service should be given to staff working in sterilising area.

The incident may need to be treated as a Reportable Incident and reported to NSW Health Department. If the incident occurs in a private health care facility it should be reported to the NSW Health Department Private Healthcare Branch.

7 Clinical practice environment

Environmental cleaning

This section should be read in conjunction with:

- NSW Health. Circular 96/55: *Colour Coding of Cleaning Equipment*
- NSW Health. *Cleaning Service Standards, Guidelines and Policy for NSW Health Facilities*.

Deposits of dust, soil and microbes on surfaces may be a potential source of health care associated infection.

Work surfaces should be cleaned regularly. Surfaces should be cleaned immediately following spills or when visibly soiled.

Walls, blinds and curtains should be cleaned regularly and when they are visibly soiled. Curtains should be changed regularly and as necessary.

Carpets should be vacuumed daily.

A neutral detergent should be used for general cleaning. Disinfectants should not be used for general cleaning.

General-purpose gloves should be worn when cleaning. If there is a likelihood of splashing during environmental cleaning, then a fluid-resistant gown, protective eyewear and mask should be worn.

Cleaning items, including solutions, water, buckets, cleaning cloths and mop heads should be changed routinely and immediately following the cleaning of blood or body substances spills or contaminated areas such as clinic rooms. These items should be stored dry between use.

Surface contamination

Clinical area

Surfaces are to be wiped over between each patient using a **neutral** detergent, water and a paper towel. They are to be wiped systematically always beginning with the least contaminated (dirty) areas and then proceeding to the most contaminated areas.

Spillage

In the event of a blood or body substance spill the following procedure should be implemented:

- don protective apparel including gloves **and** eyewear
- confine and contain the spill
- cover spill with paper towels to absorb the bulk of the blood/body substances
- treat the debris as clinical waste
- clean the spill site thoroughly with detergent and water.

Spills on carpets (eg. waiting areas)

It is likely that products that can clean spills of blood or body substances on carpets will cause damage to the carpet. Spills on carpet should be managed as follows:

- mop up as much as possible using paper towels; and
- clean with neutral detergent and arrange for the carpet to be cleaned with an industrial cleaner as soon as possible.

8 Waste management

Management of clinical waste

Clinical waste must be managed in accordance with the:

- New South Wales Environment Protection Authority (EPA) Guidelines
- New South Wales EPA. *Waste Avoidance and Resource Recovery Act, 2001*
- NSW Health. *Waste Management Guidelines for Health Care Facilities*.

Clinical waste is waste that has the potential to cause sharps injury, infection or offence. Clinical waste includes the following types of waste:

- sharps
- human tissue (excluding hair, teeth and nails)
- bulk body fluids and blood
- visibly blood stained body fluids and visibly blood stained disposal material and equipment
- laboratory specimens and cultures, animal tissues, carcasses or other waste arising from laboratory investigation or for medical or veterinary research unless treated to standards approved by the Director-General of NSW Health.

Clinical waste should be segregated (ie. placed in appropriate leak-proof bags or containers) and contained at the source of generation.

Clinical waste bags must have sufficient strength to contain the waste safely.

Disposable sharps must be disposed of in a puncture resistant container immediately after use.

Clinical waste bags and containers should not be overfilled. Overfilling will prevent closure and increase the risk of rupture in transit.

Clinical waste bags should be tied or sealed, then stored in a secure place for collection.

Heavy duty gloves or other type of gloves specified by the facility must be worn when handling clinical waste bags and containers.

Clinical waste bags and containers should not be transported in chutes.

Clinical waste bags and containers should be coloured yellow with the 'biohazard' symbol printed on the bag or container.

Mobile garbage bins, trolleys, storage areas and protective personal apparel used for the transportation and storage of clinical waste should conform to the requirements of the NSW Health, *Waste Management Guidelines for Health Care Facilities*.

Workers involved in disposal of blood or body substances must:

- wear appropriate personal protective equipment
- slowly pour liquid waste down a drain connected to a sanitary sewer system and flush immediately after disposal
- minimise splashing or contamination to mucosa or skin.

Waste amalgam

Waste amalgam is to be stored in a correctly labelled, screw top jar under radiographic fixer solution to await collection and correct disposal by an approved waste-recycling agent.

Waste amalgam must not be incinerated. For the handling and storage of mercury related dental waste, refer to the 1988 NH&MRC's publication *Recommendations on Dental Mercury Hygiene*. It is recommended that mercury wastes be returned to metal or precious metal recyclers for reclamation. If necessary the Environment Protection Authority should be contacted for specific requirements for disposal of mercury.

9 Prosthetics / laboratory

Infection control in the laboratory

Items under Personal and Patient Protection in Section 3 should be followed.

Staff should wear personal protective clothing in the laboratory.

When polishing items/appliances face shields or goggles should be worn.

Clinical area

Mixing of impressions

For mixing of impressions, a rubber bowl and spatula are used. The rubber bowl and spatula must be cleaned with detergent and water and dried after use.

All impressions must be rinsed clean with running water until all debris is removed and then disinfected.

All impressions must be transported to the laboratory in a designated container or single plastic bags.

Disinfection of impressions/prosthesis

A TGA approved disinfectant solution should be used for the disinfection of impressions and appliances. Containers used to transfer appliances must have lids and should be cleaned and decontaminated before and after use, alternatively, single use plastic bags can be used.

Any items sent to the laboratory should be rinsed, cleaned and disinfected.

All impressions must be cleaned and disinfected before leaving the surgery. It must be indicated to the laboratory staff that the procedure has been completed. A suggested method of cleaning and disinfection is as follows:

- rinse under running water
- squirt with detergent
- rinse again under running water to ensure the removal of all detergent
- shake out excess water
- disinfect with an appropriate solution following the manufacturers instructions
- it is important not to leave the impression in the solution for longer than the time specified by the manufacturer, as impression material can absorb the extra moisture and distort the impression
- rinse shake off excess/water/solution and package or pour up the model as necessary
- it must be indicated to the laboratory staff that cleaning and disinfection has been done.

Containers used to transfer appliances must have lids or alternatively single use plastic bags may be used. Containers must be cleaned and dried after use.

Polishing attachments

For new items and appliances it is recommended that:

- Separate polishing attachments eg. mops, brushes and polishing agents should be kept for brand new items/appliances
- Pumice must not be used for more than one item and must be discarded after use
- Where it is possible it is recommended that a laundry service be organised for mops. If this is not possible the mop should be cleaned with soap and water and rinsed thoroughly, and dried
- Brushes should be cleaned and disinfected after use and where possible mops should be autoclaved.

Repairs or relines

It is recommended that mops are cleaned and dried after use and where possible autoclaved.

Polishing mops and brushes used for repair and reline should be cleaned after use.

Minor adjustments

Where possible denture adjustments are to be done in the laboratory. Minor adjustments may be performed at the chair side in the surgery over a bin. Burs used for adjustments should be cleaned and sterilised after use.

Return to the clinic

Dental prosthesis must be disinfected before leaving the laboratory for patient areas.

Items must be transferred in sealed containers or plastic bags with proper identification.

Bites/ try ins

Must be cleaned, disinfected prior to sending to the laboratory and when returned to the clinic, disinfected prior to insertion into the patient's mouth.

10 Radiography

Staff involved in radiography, should wear protective apparel.

The head of the x-ray tube is wiped down with detergent and water and dried with a paper towel after use. Lead apron should be cleaned with detergent and water and dried with paper towel when visibly soiled.

Taking radiographs

Films may be purchased in barrier envelopes or can be wiped over prior to processing with neutral detergent. If more films are required, use transfer tweezers or have the dental assistant get them.

Extra-oral radiographic equipment

OPG chin rests, head frames, cephaslostat earpieces and extra-oral cassettes are to be thoroughly **cleaned** with detergent and water after use. Bite- pieces for the OPG machine must be cleaned with detergent and water, and disinfected after use. This equipment should then be allowed to air dry prior to storage or re-use.

Disposal of used radiographic fixer and developer

Disposal of used radiographic fixer and developer should be in accordance with the local policy (hospital or local government) waste management guidelines.

Please refer to NSW Health Department Circular

11 Staff health issues

2001/91 *Occupational Screening and Vaccination of Health Care Workers against Infectious Diseases* for this section.

12 Education

Education program relevant to oral health practice

Education should include demonstration of infection control requirements specific to dental practice. Such training programs should include:

- clinic organisation and set up procedures
- hand washing and hand cleaning techniques
- good personal hygiene requirements
- Occupational Health and Safety issues
- use of protective apparel and equipment
- safe handling and disposal of sharps
- management of blood/body substance exposure
- waste disposal
- vaccination and health screening programs
- cleaning, disinfection and sterilising techniques
- packing equipment for sterilising
- monitoring & validation of sterilisers
- documenting sterilising results
- quality management and legal /ethical issues.

13 Creutzfeldt-Jakob disease

The infection control precautions for all patients with known or suspected to have prion disease including Creutzfeldt-Jakob disease (CJD), Gerstmann-Straussler-Scheinker syndrome (GSS), Fatal Familial Insomnia (FFI), or variant Creutzfeldt-Jakob disease (vCJD) should be in accordance with the NSW Health *Infection Control Policy 2002/45*.

If additional information is needed a consultation with the hospital or Area Infection Control Practitioner, local Public Health Unit or the NSW Infection Control Resource Centre may be of assistance.

Public Health Unit Tel. Under 'H' in the *Telstra White Pages*

NSW Resource Centre Tel. (02) 9332 1090

14 Glossary

body substance	Includes any human bodily secretions or substance other than blood.
bioburden	Organic debris or body substance remaining in the surface of equipment prior to cleaning disinfecting or sterilising.
cleaning	Means the removal of all foreign material from objects, eg soil/organic material and the reduction in the number of microorganisms from a surface. Cleaning is normally done with water, mechanical action and detergents. Cleaning must precede disinfection and sterilisation.
cleaning area	The space allocated in the sterilising area to receive contaminated equipment and the area where cleaning of the equipment is under taken also called the 'dirty' area.
clinical waste	Means waste which has the potential to cause injury, infection or offence and includes contaminated sharps, dressings and disposable linen heavily soiled with blood or body substances, bulk blood or body substances, microbiological and pathological waste, and tissue.
disinfection	Means the inactivation of non-sporing organisms using either thermal (heat and water), or chemical means.
decontamination	Disinfection of used articles to make them safe to handle.
health care worker	Means persons including students and trainees involved in contact with patients or with blood or body substances from patients.
health care facility	Means hospitals within the meaning of the Public Hospital Act and any institute licensed under the Private Hospitals and Day Procedures Centres Act, the Nursing Homes Act, and any other facility where health care workers have contact with patients.
invasive procedure	Means any one or more of the following: • surgical entry into body tissues, cavities, or organs • surgical repair of injuries • the manipulation, cutting, or removal of any oral or peri-oral tissues, including tooth structure, • during which bleeding may occur • periodontics– as delineated in the Australian Dental Association Schedule of Services in series 200 • oral surgery – Schedule of Dental Services in series 300.
monitoring	A programmed series of changes and checks, repeated periodically, and carried out according to a documented protocol which demonstrates that the process being studied is both reliable and repeatable.
operating area	The area set aside as the primary working area includes patient's mouth, bracket table and dental assistant's kit.
oral surgery procedure	Is where there is an incision into the mucosa and a muco-periosteal flap is raised.
patient	Includes (but is not limited to) a person who is accessing medical or health services or who is undergoing any medical or health procedure.

sharps	Means any object capable of inflicting penetrating injury, and includes hollow bore needles, suture needles, scalpel blades, orthodontic wires, matrix bands, trocars, auto lancets, ultra sonic scaler tips, burs, and broken glass ware.
sterilisation	Means the complete destruction of all microorganisms including bacterial spores.
sterilisation time	The total time of the sterilisation stage after the sterilising chamber and load has reached the sterilising temperature (penetration time plus holding time plus safety factor).
standard precautions (were universal precautions)	Means the use of protective barriers and practices to protect patients and health care workers from parenteral, mucous membrane and non-intact skin exposure to blood-borne pathogens, blood and body substances including blood, blood components, all body secretions and exudates (except perspiration).
additional precautions	Means the use of practices where 'Standard Precautions' may be insufficient to prevent transmission of infection, especially via the air borne route. These are to be used for patients known or suspected to be infected by pathogens that can cause infection: • by air borne transmission (eg mycobacterium tuberculosis, measles virus, chickenpox virus) • by droplet transmission (eg mumps, rubella, pertussis, influenza) • by direct or indirect contact with dry skin (eg colonisation with MRSA), or with contaminated surfaces • by any combination of these routes. This implies a two tiered approach as Additional Precautions must be applied in addition to Standard Precautions.
technical procedures	Those procedures carried out by dental technicians within the dental laboratory.
zone of contamination	The primary work surface is where items of direct relevance to the procedure are placed, ie. bracket table and the assistant's kit.

15 References

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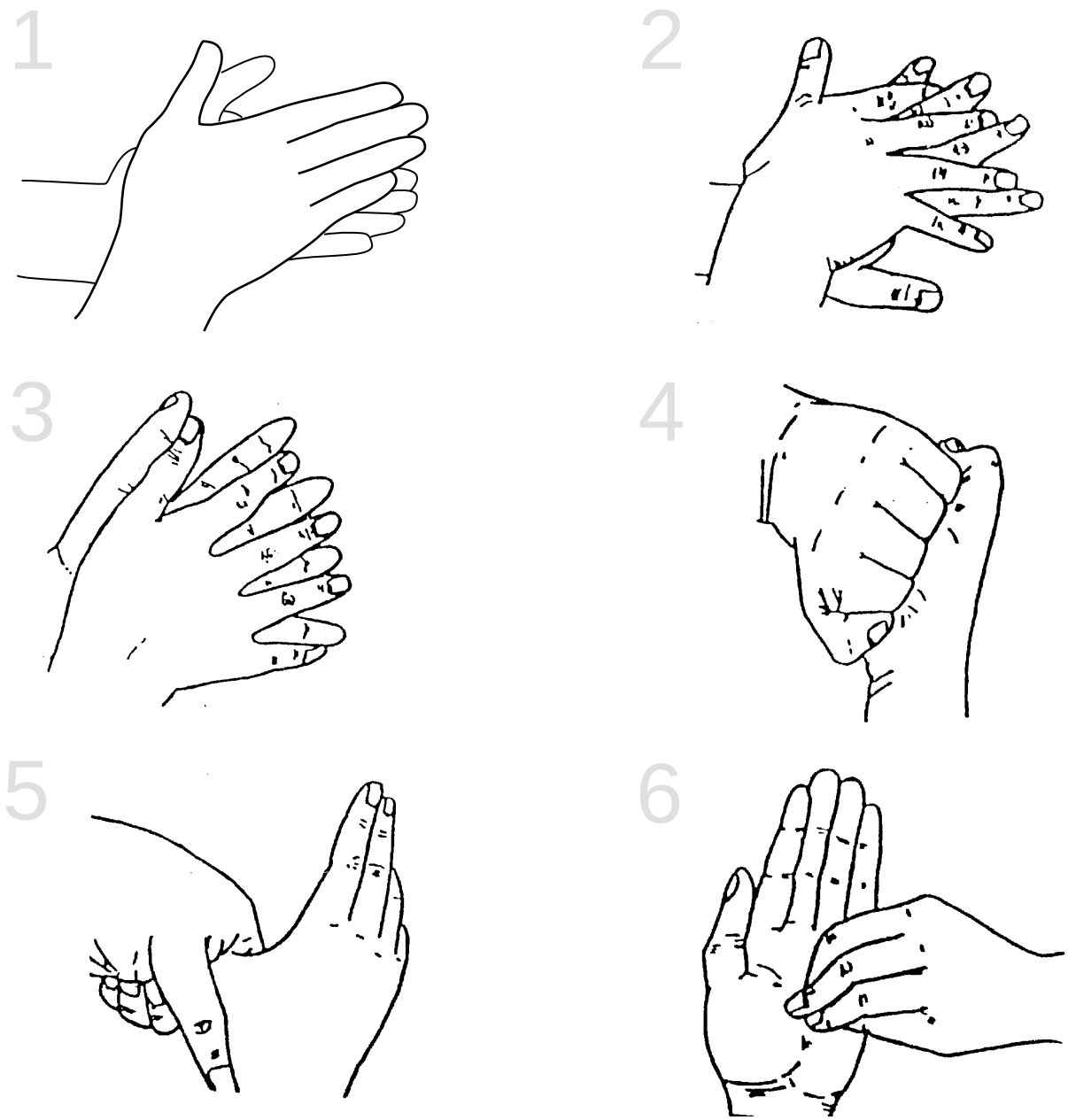
Appendix

An effective handwashing technique



1. Palm to palm
2. Right palm over left dorsum, left palm over right dorsum
3. Palm to palm, fingers interlaced
4. Backs of fingers to opposing palm with fingers interlaced
5. Rotational rubbing of right thumb clasped over left palm, and left thumb over right palm
6. Rotational rubbing backwards and forwards with clasped fingers of right hand in palm of left hand and vice versa
7. Hands and wrists rubbed till end of 30 second period

NB Number of strokes in each step is 5