Malaysian Dental Council

Guidelines On Infection Control In Dental Practice

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This 3rd edition Guidelines document was endorsed by members of the Malaysian Dental Council (MDC) at the 117th MDC Meeting on 22 February 2017

FOREWORD
BY THE PRESIDENT OF
THE MALAYSIAN DENTAL COUNCIL

Infection control is an important aspect in dental practice, and it gives me great pleasure to write this foreword for the third edition of the Malaysian Dental Council's **Guidelines on Infection Control in Dental Practice**.

Infection control is a vital component of care, and it comprises of a set of principles and guidelines, which enhance the quality and standard of patient care. It is an evolving, dynamic discipline that must be continually reviewed and updated.

The Malaysian Dental Council published the previous guidelines ten years ago, and the basic principles have not changed. Nevertheless, over the last decade, the importance of infection control in the prevention of disease transmission has become crucial and is well recognised by oral healthcare workers. This third edition has been updated to ensure that it reflects current diseases and disease patterns, knowledge and practice.

These guidelines covers important issues such as the responsibilities of oral healthcare workers, disposing of waste, managing sharps, blood and body fluids, as well as the achieving and maintaining of a clean clinical environment. The document should be read in conjunction with the Dental Act and its Regulations, the Code of Professional Conduct for Dental Practitioners, other Guidelines issued by the Council, as well as any relevant statute or statutory provisions in force.

I would like to express my sincere thanks to Dato' Prof. Emeritus Dr. Hashim Yaacob and his committee who reviewed this document, and the Malaysian Dental Council members who provided valuable input.

Datuk Dr Noor Hisham bin Abdullah

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1. INTRODUCTION

In dental practice, there is a significant risk of cross infection between patients and oral healthcare workers (OHCW) if adequate precautions are not taken. These guidelines set out standard infection control measures that OHCW should take to protect their patients, other OHCW and themselves.

1.1 Background

An earlier set of guidelines on infection control in dental practice produced in 1996, by the then Dental Services Division, Ministry of Health Malaysia was adopted by the Malaysian Dental Council (MDC) in 1998. These were subsequently reviewed in 2007. With the passage of time and developments in scientific knowledge and technology, there have been changes in dental practice and protocols. It is for these reasons, and to incorporate elements of the Occupational Safety and Health Act 1994, that the previous guidelines have been reviewed. This document supersedes all previous documents.

1.2 Standard Precautions

Universal precautions, as outlined by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia have been the principal concept by which cross infection is prevented in the oral healthcare setting. All blood and body fluids that might be contaminated with blood should be considered infectious, as patients with blood-borne infections may be asymptomatic and unaware that they are infected.

The relevance of other aspects of disease transmission have been recognised, and the CDC expanded the concept of '**universal precautions**' and changed the term to **'standard precautions'**. Standard precautions are based on the concept that all blood and body fluids, secretions, and excretions (except sweat), regardless of whether they are contaminated with blood, may cause infections when they come into contact with non-intact skin or mucous membranes. As saliva has always been considered a potentially infectious material in

dental infection control, no operational difference exists in clinical dental practice between universal precautions and standard precautions.

Standard precautions are procedure-specific and not patient-specific. This means that the same set of precautions are taken for each type of procedure irrespective of who the patient is (and irrespective of whether the patient is known to be infected with a blood-borne virus).

1.3 Employer Responsibility

It is the responsibility of all healthcare organisations or employers to ensure that the members of their staff have adequate and continual training in infection control procedures. They should also ensure that standard precautions are always followed in the clinic. All clinical staff must be immunised against Hepatitis B infection. Relevant infection control protocols should be in place including one for exposure incident management, which includes reporting of the incident, record-keeping, evaluation, counseling, treatment and follow-up of affected OHCW.

2. RESPONSIBILITIES OF ORAL HEALTHCARE WORKERS

2.1 Using Personal Protective Equipment (PPE)

PPE such as gloves, masks, protective eyewear, face shields (visor) and protective clothing should be worn by all OHCW in appropriate situations.

2.1.1 Gloves

a. Gloves must be worn by OHCW when examining and treating patients or in any other situation where their hands may come into contact with blood, body fluids and clinical debris.

b. Wearing gloves should never replace hand washing. Hands must be washed both before wearing and after removing gloves.

c. Gloves must be discarded in the event of a visible puncture, and hands must be washed before new gloves are put on.

d. Disposable gloves are single use items and must be discarded after each patient. They must not be washed, disinfected or sterilised.

e. If any item not directly involved in patient care needs to be touched, overgloves may be worn or the treatment gloves removed. The overgloves are then discarded or new gloves are put on upon returning to patient care.

f. Double gloving should be practised during the treatment of high risk patients and during surgical procedures, as this has been shown to reduce the risk of the patient's blood coming into contact with the operator's skin.

g. Gloves in boxes must not be exposed to aerosol contamination and therefore must be kept in a closed space.

h. OHCW with non-intact skin (wounds, skin lesions etc.) on their hands must cover all breaks of the skin with waterproof dressings before wearing gloves (especially when performing a procedure). Double gloves should be used if the hands are extensively affected. OHCW should however avoid invasive procedures or procedures involving the use of sharp instruments when their skin lesions are active, or if there are extensive breaks of the skin.

i. Utility (heavy-duty) gloves that are puncture and chemical resistant must be worn when cleaning contaminated instruments and clinical contact surfaces. Used utility gloves must be considered contaminated and handled appropriately until properly disinfected. Utility gloves must be discarded if their barrier properties become compromised.

All OHCW involved in cleaning should possess and be responsible for their own pair of utility gloves.

2.1.2 Masks, Protective Eyewear, Face Shields and Protective Clothing

a. Debris, sprays and splashes generated during procedures may contain blood-borne viruses, which can gain entry into the bloodstream of the OHCW (both the operator and assistant) through the nasal and oral mucosa and the conjunctiva. Surgical masks which cover both the mouth and nose and appropriate protective eyewear (goggles or face shields) should be worn during such procedures, by both the operator and the assistant.

b. masks worn by OHCW also protect the patient against microorganisms generated from the mouth and nose of the OHCW and should be worn tight around the bridge of the nose, the chin and the back of the neck.

c. masks should be changed:
   - after a maximum of one hour of continuous use;
   - after a patient, if sprays or splashes have been generated during the procedure; or
   - when it becomes wet from within or without

d. Single and 2-ply masks should not be used by either the operator or the assistant as they provide almost no protection. Fluid-resistant mask should be used and should not be touched while being worn.

e. Protective eyewear and face shields must be cleaned with soap and water and disinfected with a low level disinfectant (Refer to Appendix 2a) after each patient.

f. Appropriate protective clothing should be worn during procedures that are likely to generate debris, sprays and splashes. The requirements for protective clothing include:
   - minimises the amount of uncovered skin and street clothing;

- design which allows the cuff to be tucked into gloves (long-sleeved);
- covers at least to the knees when seated – especially for surgical procedures;
- continuous in front or has a well-sealed closure;
- provides an effective barrier against bacteria even when wet i.e. high level of fluid resistance especially for surgery;
- enclosed footwear should be worn during procedures to protect against injury from dropped objects, sharps and materials; and
- protective clothing should be removed immediately upon leaving the work area.

g. Contaminated reusable protective clothing should be soaked in a disinfectant (intermediate level) before being washed with detergent and water.

2.2 Hepatitis B Vaccination

All OHCW should be immunised against Hepatitis B or show serological evidence of immunity to the Hepatitis B virus infection [positive for antibody to the Hepatitis B surface antigen (anti-HBs)].

Important points to note with regards to Hepatitis B vaccination:

a. Pre-vaccination testing is not essential.

b. The vaccination regime consists of 3 intramuscular injections at 0, 1 and 4-6 months.

c. Post-vaccination testing is essential and is done 1 to 2 months after completion of the primary vaccine series.

d. Responders to the primary vaccination series are those with anti-HBs levels ≥ 10mIU/ml and this signifies immunity to Hepatitis B infection. In such individuals, no further doses or testing are indicated, as there is life-long protection

e. Non-responders to the primary vaccine series are those individuals whose anti-HBs levels are < 10mIU/ml. Such individuals are revaccinated with a second series of 1 to 3 doses.

f. Non-responders after revaccination will be tested for HBsAg
   - those who are positive are considered infected with the Hepatitis B virus and will be referred for medical management.
   - those who are negative are considered to be susceptible to future Hepatitis B virus infection.

g. Pregnancy or lactation is not a contraindication to vaccination.

If your OHCW is found to be infected, refer to the Guidelines For Oral Healthcare Practitioners Infected With Blood-Borne Viruses for management.

2.3 Hand Hygiene

2.3.1 Hand Hygiene Policy

Hand hygiene is the single most effective means of controlling cross infection.

It is essential that hands are adequately washed before carrying out and after completing any procedure or patient care activity.

2.3.2 Hand Hygiene Methods

There are four methods of hand hygiene and the method chosen must be based on the indication.

The methods are listed in Table 1 and include:
a. routine hand wash
b. antiseptic hand wash
c. antiseptic hand rub
d. surgical hand antisepsis (surgical hand wash)

The proper handwashing technique is shown in Appendix 1.

Table 1: Hand-Hygiene Methods and Indications

Method	Agent	Purpose	Duration/ Method	Indication
Routine hand wash	Water and non-antimicrobial liquid soap	Remove soil and transient microorganisms	15 seconds	Before wearing and after removal of gloves when treating non-surgical patients
Antiseptic hand wash	Water and antimicrobial liquid soap (e.g. chlorhexidine, iodophors, chloroxylenol [also known as parachlorometaxylenol - PCMX], triclosan)	Removes transient microorganisms and reduces resident microorganisms	15 seconds	After barehanded touching of objects likely to be contaminated with blood or saliva. Before regloving, after removing gloves that are torn, cut or punctured
Antiseptic hand rub	Waterless antimicrobial hand rub, preferably combined with antiseptic having persistent effect (e.g. chlorhexidine)	Removes transient microorganisms and reduces resident microorganisms. Hands should not be visibly soiled as there is no detergent activity.	Use 5 ml onto dry, clean hands. Rub for at least 15 seconds until dry	
Surgical hand antisepsis (Surgical hand wash)	Water and antimicrobial liquid soap with persistent effect (e.g. chlorhexidine, iodophors) Water and non-antimicrobial liquid soap followed by a waterless antimicrobial surgical hand-rub product with persistent effect	Removes transient microorganisms with increased reduction of resident microorganisms	3-5 minutes. For methods, refer to texts on operating theatre techniques	Before donning sterile gloves for surgical procedures.

2.3.3 Hand Hygiene Principles

a. Liquid antiseptic/soaps should be used and should be dispensed from hands-free dispensers with disposable containers. If reusable containers are used, they should be washed and dried thoroughly before refilling. Topping up is not advised.

b. Hands-free taps should be used. Otherwise, use turn on and off taps with disposable towels.

c. Drying is an essential part of hand hygiene. Wet hands have higher bacterial counts. Only disposable paper towels should be used to dry hands in clinical areas. Air hand dryers should not be used in clinical areas because of the risk of bacterial dispersal from aerosols.

d. Waterless antimicrobial hand rub may be used in place of hand washing to sanitise hand.

e. Fingernails must be kept short. Avoid biting the fingernails as this compromises the integrity of the surrounding skin.

f. Intact skin is impermeable to blood-borne viruses and therefore hand skin integrity and care is crucial. If moisturising lotions and creams are used to help maintain skin integrity, only water-based hand lotions and creams are recommended. Petroleum-based lotions and creams can interfere with the integrity of latex gloves.

2.4 Medical History of Patient

A thorough medical history must be obtained from the patient and recorded at the first visit. This history must be periodically updated during subsequent visits. The medical history helps identify medical conditions that might pose problems for the patient during the course of dental treatment. Nevertheless, the medical history cannot be relied upon to identity asymptomatic transmissible diseases. The FDI urges all oral healthcare professionals to be alert for signs and symptoms related to blood-borne and other infectious diseases in their patients.

Patients with medical histories or conditions suggestive of infection should be advised to undergo appropriate investigations. Such advice should be given in a supportive environment with due regard to privacy and sensitivity.

2.5 Other Responsibilities of OHCW

a. All instruments entering the patient's mouth or contacting non-intact skin must be sterile.

b. All clinical contact surfaces must be disinfected appropriately before the patient sits on the dental chair.

c. Bibs should be worn by all patients undergoing non-surgical procedures. For surgical procedures, sterile drapes should be used.

d. Protective eyewear should be worn by all patients to protect against physical damage to the eye from propelled and dropped objects. All protective eyewear must be washed and disinfected after each use.

e. Rubber dams should be used where appropriate.

f. If the patient is sensitive to latex, precautions must be taken to use non-latex gloves, non-latex rubber dams, and to avoid any other latex-containing products.

g. Food and drinks should not be consumed in the clinical area.

3. CLEANING, DISINFECTION AND STERILISATION OF PATIENT CARE ITEMS

3.1 Instrument Classification

Instruments are classified into 3 categories according to the degree of contamination and the type of post-treatment processing required.

a. **Critical instruments** are surgical and other instruments that penetrate soft tissue or bone or enter into or contact the blood-stream (e.g. forceps, scalpels, bone rongeur, scalers and burs). These instruments must be steam sterilised.

b. **Semi-critical instruments** are instruments that do not penetrate soft tissue or bone but contact oral tissue or non-intact skin (e.g. amalgam condensers, mouth mirrors, dental handpieces and digital radiography sensors). These instruments should be steam sterilised. If steam sterilisation is not possible they should be treated with a high level disinfectant.

c. **Non-critical instruments** and devices are instruments and devices that come into contact only with intact skin (e.g. x-ray cone, position indicator device for x-ray cone, and facebow). They should be processed as follows:
   - not visibly contaminated – clean and disinfect with a low level disinfectant; or
   - visibly contaminated with blood – clean and disinfect with an intermediate level disinfectant.

For Classification and Uses of Disinfectants and Sterilisation Methods refer to Appendix 2a and 2b.

3.2 Instrument Processing Area

In the instrument processing area, instruments are moved in a single loop from dirty through clean to sterile without doubling back and this area should therefore be divided into 3 sections which include:

a. a decontamination area for receiving, cleaning, and decontamination;
b. a sorting, packaging and sterilising area; and
c. a storage area for sterilised items.

3.3 Instrument Cleaning

Instruments are cleaned for 3 reasons:

a. to reduce bacterial counts;
b. to reduce the likelihood of corrosion, rusting and pitting; and
c. to remove visible debris which may protect microorganisms and hence compromise the sterilisation process.

Instruments should be wiped clean of visible blood immediately after use in the surgery before being transported to the instrument processing area.

Instrument should be washed clean of visible blood and wiped immediately after use before transporting to the instrument processing area. However, if this cannot be done immediately, instruments can be soaked in a holding solution in a puncture-resistant container to prevent drying of instruments which makes cleaning easier and less time-consuming. The holding solution should be either a detergent or an enzymatic cleaner.

Pre-cleaning disinfection – instruments are soaked in a disinfectant solution (at least intermediate level) to make the instruments safe for subsequent handling, especially if the instruments are going to be washed by hand.

Appropriate PPE, which includes heavy duty utility gloves, masks, protective eyewear and protective clothing, must be worn during cleaning because aerosols and splashes are generated.

Scrubbing by hand is the least desirable method because there is direct hand contact with contaminated instruments. Clean only 1 or 2 instruments at a time using a long-handled brush. Scrub instruments while submerged to minimise splashing.

Automated cleaning equipment such as ultrasonic cleaners and washer-disinfectors do not require scrubbing of instruments and they also do not require pre-cleaning disinfection, if disinfectant solutions are used in the cleaning process. These methods are therefore safer

and more efficient than manual cleaning. Use recommended solutions and follow the manufacturers' instructions. Very few instruments cannot be cleaned by these methods, e.g. some high speed handpieces (For handpiece processing see 4.2.2).

After cleaning, instruments should be rinsed with water to remove chemical or detergent residue. It is advisable to soak the instruments in a lubricant and a rust and corrosion inhibitor before packing. Follow the manufacturer's instructions for this.

Before sterilisation, instruments should be handled using gloves as though contaminated.

Staff involved in cleaning and reprocessing of instruments must be provided with training in relevant procedures.

3.4 Instrument Packaging

Cleaned instruments are inspected and assembled into functional sets or left as individual items. Hinged instruments are processed open and unlocked. Instruments should be dried before packing.

Critical and semi-critical instruments must be packaged or placed into container systems for sterilisation to:

a. allow penetration of sterilisation agent (steam); and
b. maintain sterility of the processed item after sterilization.

Examples of packaging materials include peel pouches of plastic/paper and sterilisation wraps (woven and non-woven).

An internal chemical indicator should be placed inside every package (see 3.5.4.2). An external chemical indicator should be used when the internal indicator cannot be seen from outside the package.

3.5 Sterilisation

3.5.1 Autoclaves

All critical and semi-critical autoclavable instruments must be autoclaved.

The type of that should be used depends on the item to be sterilised and the type of packing (Table 2):

a. Solid, hollow (dental hand pieces, cannulae) or porous (drapes, gowns) items.
b. Packaged or unpackaged items.

If the need is to process packaged items or hollow or porous items, a vacuum autoclave (Type S or Type B) is required.

If the need is to process only solid, unpackaged instruments, a simple downward displacement (Type N) autoclave is sufficient.

Table 2: Uses of Autoclaves

Type B (vacuum)	Any kind of item a. Solid, hollow and porous items. Single and double-wrapped packaged b. items and un-packaged items.
Type S (vacuum)	Unpackaged solid items; and Any of the items indicated for Type B as specified by the manufacturer.
Type N (non-vacuum/ downward displacement)	Unpackaged solid items

3.5.2 Sterilisation of Unwrapped Instruments

This should be used only for flash sterilisation i.e. sterilisation of items for immediate use.

Thorough cleaning and drying of instruments must precede the unwrapped sterilisation cycle.

Internal chemical indicators should be used for each cycle and placed in the tray or cassette with the items to be sterilised.

Items should be transported aseptically to the point of use to maintain sterility.

3.5.3 Heat Sensitive Instruments

Instruments that are sensitive to heat, such as intra-oral cameras, electronic periodontal probes, occlusal analysers and lasers should be cleaned and disinfected with at least a high level disinfectant.

3.5.4 Sterilisation Monitoring

Monitoring must be carried out to ensure that the sterilisation process is effective in achieving complete sterilisation of all instruments.

3.5.4.1 Physical Monitoring

Monitoring of temperature, pressure and time for every sterilisation cycle verifies only that the sterilisation process has taken place and not that actual sterilisation has occurred.

3.5.4.2 Chemical Monitoring

Chemical indicators used in chemical monitoring are classified and used as follows:

a. Class 1 indicators

These are external indicators which are used for distinguishing between packages that were or were not processed e.g. autoclave tape or markings on pouches.

b. Class 2 indicators

These indicators are used for specific tests e.g. the Dynamic Air Removal test (formerly called Bowie Dick test). This test uses a chemical indicator in a test pack to check if air removal and steam penetration is adequate. This test should be conducted daily in an empty chamber before the first load of instruments.

c. Class 3 indicators

These are single parameter indicators which are designed to react to only one parameter e.g. temperature tube.

d. Class 4-6 indicators

These are the internal indicators placed on the inside of instrument packages which are designed to show if the instruments have been exposed to the critical parameters for steam sterilisation (time, temperature and presence of steam).

- Class 4 indicators (multi-parameter indicators) – these are designed to react to two or more parameters but usually at only a specific temperature

- Class 5 indicators (integrating indicators) – these are designed to react to all parameters over a specified range of temperatures

- Class 6 indicators (emulating indicators) – these are designed to react to all parameters based a specific sterilisation cycle

Chemical indicators do not prove sterilisation has been achieved and therefore are not a replacement for biological monitoring.

3.5.4.3 Biological Monitoring

Biological monitoring is the accepted method for monitoring the sterilisation process, because it assesses the ability to kill highly resistant microorganism, rather than merely testing the physical and chemical conditions necessary for sterilisation.

Vials or strips that contain harmless bacterial spores [biological indicators (BI)] are exposed to the sterilisation cycle. Users should follow the manufacturer's directions concerning the appropriate placement of BI in the autoclaves. A control BI from the same lot as the test indicator should be incubated with the test BI.

The test BI should not yield positive results for bacterial growth if the autoclave is functioning properly, and the control should yield positive results.

Biological monitoring should be performed at least once a week and the result should be recorded and kept properly.

3.6 Storage

When sterile items are left open to the air, they will eventually be contaminated. Critical and semi-critical instruments should therefore be stored packaged in an enclosed area.

Packages must be inspected before use to verify barrier integrity and dryness.

If shelf-life practices are used (usually 1 month) every sterilised package must be dated.

Event-related practices recognise that the instrument should remain sterile, unless an event causes it to become contaminated (e.g. torn or wet packaging). Practically, a sterile pack should not be stored for more than 6 months. Every package must be dated.

If the packaging is compromised, the instruments should be re-cleaned, packaged in new wrap, and sterilised again.

4. ENVIRONMENTAL INFECTION CONTROL

4.1 Environmental Surfaces

In the clinic, environmental surfaces can be easily contaminated. When these contaminated surfaces are touched, the microorganisms may be transferred to instruments, other surfaces and to the nose, mouth, or eyes of OHCW or patients. Hand hygiene, barrier protection as well as cleaning and disinfecting of environmental surfaces minimise this transferral.

Environmental controls should be considered when designing or refurbishing dental clinics to reduce the risk of transmission of infectious agents.

Environmental surfaces are divided into:

a. Clinical contact surfaces
b. Housekeeping surfaces

4.1.1 Clinical Contact Surfaces

Clinical contact surfaces (see glossary) include the:

a. dental chair and controls
b. spittoon
c. light handles
d. controls on amalgamators and curing lights
e. light emitter, handles and switches on curing light
f. work surfaces
g. triple syringe
h. handpiece brackets
i. end of suction hoses
j. impression material dispensers
k. chair side computers
l. drawer handles, sink handles, pens, telephones, doorknobs etc. that may be touched during treatment

For disinfection of these surfaces use:

a. low level disinfectants when the surfaces are not visibly contaminated; or

b. intermediate level disinfectants when the surfaces are visibly contaminated with blood.

High level disinfectants are usually not used as they may be toxic to the personnel or damage the surfaces.

Because of the risks associated with exposure to chemical disinfectants and contaminated surfaces, OHCW must wear chemical and puncture resistant utility gloves and other PPE during the cleaning process.

Principles of surface disinfection of clinical contact surfaces:

a. Disinfectants should not be sprayed directly onto surfaces as this causes significant aerosolisation of disinfectant, which may be an irritant to the respiratory system.

b. Disinfectants must be allowed to remain on the surface for a sufficient amount of time (according to manufacturer's instruction) to kill organisms. If applied to visibly contaminated surfaces, the disinfectant needs time to penetrate the bioburden.

c. Organic matter interferes with many disinfectants and therefore, cleaning is necessary before disinfecting.

d. For clinical surface disinfection, the disinfectants are first applied on the surface to lower organism numbers. The surface is then scrubbed clean and finally, the disinfectant is applied again to disinfect the surface.

4.1.2 Housekeeping Surfaces

Housekeeping surfaces (e.g. floors, walls, and sinks) have limited risk of disease transmission and therefore decontamination is less rigorous than those used for clinical contact surfaces.

Cleaning methods must avoid the generation of aerosols. Damp dusting, dust-retaining mops and vacuum cleaners with air filtration of the exhaust are recommended. Brooms must not be used in clinical areas as these disperse dust and bacteria into the air.

4.1.2.1 Floors

a. Surgery

- Mop at least twice daily with detergent and water - at the beginning of the day and at the end of the day.
- Clean up every spillage as it occurs.

b. General Areas

- Mop at least once a day.

Wash thoroughly with detergent and water once a week.
Different mops should be used for the clinical areas and the general areas.

4.1.2.2 Ceiling and Walls

a. Keep clean, dry and in good condition.
b. Wipe walls with a clean damp cloth to hand height periodically.
c. High damp dusting of the ceiling must be done periodically.

4.1.2.3 Door Handles

Clean with detergent and water once a day.

4.2 Other Treatment Room Equipment

4.2.1 Dental Unit Waterlines

Method for cleaning waterlines:

a. Flush waterlines for a minimum of two minutes each morning and with handpieces attached for 20 to 30 seconds between each patient.

The organisms which grow in waterline biofilms are environmental in origin. They flourish in the waterlines of dental units because lines to the handpieces, triple syringe and ultrasonic scaler are small in diameter, and hence have very slow flow rates and large surface area to volume ratios.

Dental units should have a separate water reservoir system to supply water or an in-built filtration system to the handpieces and scalers.

Water from the domestic water supply should be filtered before entering the rinsing cup and spittoon.

Handpieces and scalers should have anti-retraction valves to prevent retrograde contamination of the lines by fluids from the oral cavity.

4.2.2 Dental Handpieces and other Detachable Devices Attached to Air and Waterlines

These include high and low-speed handpieces, scaling tips, air abrasion devices, and air and water syringe tips. Surface disinfection or immersions in disinfectants are not acceptable methods for processing these devices. These devices should be autoclaved.

For handpieces, cleaning and lubrication are the most critical factors in determining performance and durability. Manufacturers' instructions for cleaning, lubrication and sterilisation should be followed closely.

Handpiece re-processing:

a. Flush handpieces while still attached to air/water lines in hose with bur inserted.
b. Clean and dry handpiece.
c. Flush with handpiece cleaner and lubricant. It is advisable to use an automated handpiece cleaning and lubricating system for this purpose.
d. Pack and autoclave.

e. Non-autoclavable handpieces should not be used. If the use of such a handpiece is unavoidable, the handpiece must the wiped thoroughly with a high level disinfectant after flushing with the cleaner and lubricant. If the handpiece needs to be reused immediately, a rapidly acting disinfectant (i.e. alcohol based) should be used.
f. Flush air/water lines in hose before re-attaching a handpiece.
g. Open package (lubricate, if necessary with separate post-sterilisation lubricant).
h. Attach to hose and expel excess lubricant (with bur inserted).

4.2.3 Components Permanently Attached to Dental Unit Waterlines

These are likely to become contaminated with blood and body fluids during procedures. Examples include the handles and tubing of saliva ejectors, high volume evacuators, handpieces, scalers and air/water syringes.

These can be covered with protective barriers that should be changed after each procedure. If not covered during use, they must be cleaned and disinfected with a low level disinfectant if not visibly contaminated. If visibly contaminated with blood, they must be disinfected with an intermediate level disinfectant before use on the next patient.

4.2.4 Other Non-autoclavable Equipment

Non-autoclavable equipment in the treatment room that might come into contact with the patient's blood and body fluids includes shade guides, the handles and tips of light curing units and pulp testers.

These must be cleaned and disinfected with a low level disinfectant if not visibly contaminated. If visibly contaminated with blood, they must be disinfected with an intermediate level disinfectant before use on the next patient.

An alternative is to, whenever possible, cover such equipment with a protective barrier that is changed between patients.

4.2.5 Suction Units (Aspirators), Spittoons and Secretion Filters

Suction lines attached to the dental chair should be flushed between patients and intermittently during long procedures. This prevents blood and saliva accumulating and coagulating in the lines.

Collection containers in portable suction apparatus must be cleaned and disinfected between patients.

Secretion filters/amalgam traps must be cleaned daily.

At the end of each day

a. suck a non-foaming detergent through the high and low volume aspirators
b. flush a non-foaming detergent through the spittoon.

4.3 Management of Spills of Blood and Body Fluids

4.3.1 General

Appropriate PPE should be worn.

a. Gloves (non-sterile) should be worn throughout the procedure but try and avoid direct contact between gloved hands and the spillage.
b. Rubber boots or plastic disposable overshoes may be worn if a large area is contaminated with the spillage.
c. Protective clothing should be used.

Disposable items used should be discarded as clinical waste.

Non-disposable equipment must be decontaminated after use.

All spillages must be cleared up without delay. The spillage must not be left unattended or unsecured. Mark the spill area so that others do not inadvertently enter the area until clean-up is complete.

If sharps are involved (including broken glass) they should be disposed off in sharps containers.

Ensure the area is well-ventilated.

At least an intermediate level disinfectant should be used. A low level disinfectant may be used only for small spills.

4.3.2 Specific

a. Small spills

- Remove visible blood with absorbent material (e.g. paper towels).
- Decontaminate area by wiping it with appropriate disinfectant.

b. Large spills

- Cover area first with paper towels so that the contaminated area does not spread.
- Pour disinfectant over the absorbent material and leave for 10 minutes.
- Wipe the whole spill with fresh absorbent material and place in contaminated waste container (mop may be used for large spills).
- Decontaminate area by wiping with disinfectant again.

4.4 Design of Premises

The design of premises and the layout of the dental surgery and treatment areas are important when planning new premises and renovating existing premises for successful infection control.

Work areas should be well lit and ventilated with sufficient tabletop space to accommodate necessary equipment.

The dental surgery and sterilising rooms must have clearly defined clean and contaminated zones. The clean zones of the dental practice include areas used for storage of supplies and sterilised instruments and equipment.

The contaminated zone includes all areas contaminated with materials from patient care, as well as the instrument cleaning area.

In the dental surgery, instruments and materials must move from the clean zone to the contaminated zone. Care must be taken to avoid contaminated instruments or equipment re-entering the clean zone.

Floor coverings in the dental surgery must be non-slip and seamless. Carpets must not be used in clinical, laboratory, and sterilising areas.

Pantry and common areas for dental staff must be separate from patient treatment areas and the dental laboratory.

5. HANDLING OF BIOLOGICAL SPECIMENS

Biological specimens should be kept in a sturdy container with a secure lid to prevent leakage during transportation. All containers must be labeled 'Biohazard'. Care should be taken when collecting specimens to avoid contamination of the outside of the container. If the outside of the container is visibly contaminated it should be cleaned and disinfected with at least an intermediate level disinfectant or placed in an impervious bag.

6. INFECTION CONTROL DURING IMAGING/RADIOGRAPHIC PROCEDURES

OHCW have a legal duty to ensure that all necessary steps are taken to prevent cross-contamination (infection) to protect themselves, their colleagues and the patients. Effective infection control measures are also required in intraoral imaging even though most investigations are regarded as non-invasive or non-exposure prone procedures. The main risk of cross-infection is from patients (direct contact) or contamination of work areas and equipment (indirect contact).

6.1 Intraoral Imaging for Unidentified or Non-Specified Cases (Standard Precautions)

a. Protective, non-powdered gloves should be worn for all imaging procedures and changed after every patient.

b. Other PPE should be used to prevent spread of infection by saliva or blood.

c. Use a clean sterile image receptor-holder for each patient. Digital receptors must also be placed inside appropriate dental barrier envelopes.

d. Position the holder in the patient's mouth. Never insert fingers into the patient's mouth to position the holder.

e. After the imaging procedure, remove the digital receptor from the barrier envelope and discard the envelope as clinical waste.

f. Subsequently wash and clean the holder. If you have used a film packet (without a barrier envelope), then it should be washed with the holder under running water.

g. Remove the film packet with forceps. Dip the film packet in disinfectant solution and dry the packet with a paper towel before sending for processing.

h. If not autoclavable, the holder should be disinfected before use on the next patient.

6.2 Intraoral Imaging for Identified High-Risk Patients

a. Apply a plastic cover (cling film) to the yoke, tube-head cone, control panel, headrest and any hand-held switches.

b. The operator should double glove and PPE (disposable items where available) be used.

c. The intra-oral receptor (film packet or sensor) should be inserted into a dental barrier envelope to guard against contamination.

d. The enveloped receptor is inserted into a disposable or autoclavable receptor-holder.

e. A disposable apron should be placed over the lead apron worn by the patient.

f. After the imaging procedure, the receptor-holder (disposable) and apron should be disposed off as clinical waste.

g. Open the dental barrier envelope and allow the receptor to drop onto a paper towel/cup.

h. The contaminated dental barrier envelope and the outer pair of gloves should then be disposed off as clinical waste.

i. The receptor can now be sent for processing.

j. All plastic covers (cling film) should be removed and the dental chair, x-ray tube, lead apron, exposure switch, door handle and other work surfaces should be disinfected and left to dry for 10-15 minutes.

k. The inner pair of gloves should be disposed off as clinical waste.

When using daylight-loading automatic processors ensure that there is no salivary contamination of the soft flexible arm sleeves. Film packets must only be introduced into the processor using clean hands or un-powdered gloves (powdered gloves may cause artefacts on the films).

Digital sensors, including photostimulable phosphor (PSP) plates (in addition to placing in dental barrier envelopes) should be disinfected between patients using the method recommended by the manufacturer.

7. EXPOSURE INCIDENTS

7.1 Introduction

7.1.1 Definition

An exposure incident is defined as a percutaneous injury or any contact of non-intact skin, eye, mouth, or other mucous membrane with blood or body fluid or tissue that are potentially infectious to the OHCW. This exposure might place them at risk of acquiring a HIV, HBV or HBC (see glossary) infection from the patient. Therefore, immediate evaluation and treatment of the exposure site should be carried out by qualified healthcare professionals.

7.1.2 Types of Exposure Incidents

a. Percutaneous/penetrating injury (e.g. needles, burs, scapel blades, etc.).

b. Contact of non-intact skin with blood, tissue or body fluids.

c. Contact of intact mucous membrane with blood, tissue or body fluids.

d. Bites or scratches inflicted by patients.

e. Contact of intact skin with blood when;

- the duration of contact is prolonged (e.g. several minutes or more); or
- it involves an extensive area.

7.2 Prevention Strategies

7.2.1 Administrative Controls

a. The employer should provide education, training and standard operating procedures to all OHCW in the organisation.

b. An individual knowledgeable in infection control guidelines and recommendations should be assigned responsibility in managing the exposure control and prevention programme.

7.2.2 Work Practice Controls

All OHCW should follow work procedures or guidelines to reduce the likehood of exposure incidents.

All procedures involving blood or any potentially infectious material must be performed in such a manner as to minimise splashing, spraying, spattering and droplets of these substances.

All sharp instruments must be handled and used with care and techniques should be employed to minimise the risk of penetrating injuries.

a. Before beginning a procedure:
   - Equipment/instruments are arranged within arms reach.
   - There is adequate lighting and space.
   - Sharps are pointed away from the operator.
   - If a sharp is reusable, place in a safe area (e.g. in a tray or neutral zone).

b. During a procedure:
   - Instruments should be arranged systematically during the procedure so that everyone is aware of the location of the sharp instruments.

- Sutures and blades are separated from the rest of the surgical set-up to ensure that they are very visible to prevent injury.

- When handling sharps, be aware of staff in the immediate environment.

- Minimise uncontrolled and forceful manipulation of sharp instruments.

- An instrument is used to retract tissue during any procedures and during anesthetic injections.

- Pass instruments with sharp ends pointing away from all persons and announce instrument passes.

- Penetrative instruments e.g. Gates Glidden burs must be removed from handpieces immediately after use.

- Scaler tips of ultrasonic scalers should be sheathed or removed immediately after use.

- Needles must not be recapped unless using an approved recapping device. A one-handed scoop technique can be applied to recap a needle on a non-disposable anesthetic syringe.

c. During clean-up:
    - Visually inspect the areas containing waste materials used during the procedure for presence of sharps.

    - Insert and remove all scalpel blades using a suitable instrument.

    - All burs must be removed from handpieces before removing the handpieces from the dental unit to avoid percutaneous injury.

- Do not remove burs without cushioning the sharp edges with gauze or other materials to prevent gloves from being torn or punctured.

- Do not cut, bend or remove needles by hand before disposal.

- Do not remove needles from disposable syringes.

- Transport reusable sharps in a secured container to prevent spillage of contents.

d. During disposal of sharps:
    - The clinician using a disposable sharp items must be responsible for its use and disposal into a sharps bin after use.

    - A separate sharps bin should be located in each surgery room.

    - Do not put fingers into the sharps bin. Use instruments to transport sharps into the sharps bin.

    - Keep hands behind the sharp tip when disposing.

    - If disposing of a sharps with attached tubing (tubing can recoil and lead to injury) maintain control of the tubing.

    - Sharps bin must be sealed when filled to the line marked on the bin or when three-quarters full.

e. After disposal:
    - Keep sealed sharps bins awaiting final disposal in a secure area.

    - Replace sharps bins when they are three-quarters filled or up to a maximum of one week. Choose the appropriate size bin depending on usage.

- If an improperly disposed sharps is encountered in the work environment, handle the device carefully, with an instrument if possible.

7.2.3 Engineering Controls

These are technology-based controls for safer design of instruments and devices at the workplace e.g. sharps bin, high velocity evacuation, needle resheathing devices, ultrasonic cleaners, washer/ decontaminators or other devices, that minimise handling during clean-up procedures.

7.3 Management of an Exposure Incident

7.3.1 At the Dental Clinic

a. Treatment of the exposure site.
   - Decontaminate the exposure site immediately:
     - Wounds and skin sites - wash with soap and water.
     - Mucus membranes - flush with water.
     - Eyes - rinse gently and thoroughly with water or normal saline, with eyes open.
   - There is no evidence that use of antiseptics or expressing fluid by squeezing the wound further reduces the risk of transmission of blood-borne pathogens.
   - If the procedure that is being carried out at the time of the exposure has to be completed – cover the injured site on the hand with a dressing before wearing gloves.

b. Inform the employer and/or immediate superior and document the incident.

c. Refer to a Hospital/Health Clinic according to local guidelines.

7.3.2 Collection of Information

Each exposure incident must be reported immediately to enhance the effectiveness of post exposure treatments.

Important information needs to be collected, which is necessary for the subsequent management of the exposure.

a. Date and time of exposure.

b. Details of the procedure being performed
   - what procedure was being performed when the exposure occurred;
   - where and how the exposure occurred; and
   - whether the exposure involved a sharp device, type and brand of device and how and when during its handling the exposure occurred.

c. Details of the exposure.
   - For a percutaneous injury, this includes:
     - the depth of the wound;
     - the gauge of the needle; and
     - whether fluid was injected.

   - For a skin or mucous membrane exposure, this includes:
     - the estimated volume of material;
     - the duration of contact; and
     - the condition of the skin (e.g. chapped, abraded or intact).

7.3.3 Important Points to Note

a. Evaluation and testing of the patient:
   - If the infection status of the patient is not known, the patient is informed of the incident and a proper informed consent for testing is taken, after counselling. Preferably, testing should be preferably on the day of the incident. Confidentiality must always be maintained. If the source is seronegative, with no clinical symptoms, no further testing is done.

b. Evaluation and baseline testing of exposed OHCW:
    - The exposed OHCW is referred to the identified physician for evaluation and baseline testing within hours.

7.3.4 Flowchart for Management

The flowchart for the Management of Sharps Injury/Exposure to Blood is shown in Appendix 3. Reporting forms that will be filled by the relevant Hospital/Health Clinic are shown in Appendix 4a, 4b, 4c, 4d and 4e.

Forms:

4a: Patient Safety Incident- Management & Reporting Form (IR1.1)- for the purpose of Root Cause Analysis (RCA);
4b: Inoculation Accident Surveillance (IAS-1) Form to be fill by OHCW;
4c: Notification of Occupational Accident and Dangerous Occurance (WEHU A1);
4d: WEHU A2 (to be fill by supervisor only for splash cases); and
4e: Epidemiology Section Form OHU/SIS-1 (NSI).

Blood test:

a. Anti - HIV, HBsAb, HBsAg and Anti HCV (OHCW).
b. Anti - HIV, HBsAg and Anti HCV (patient)
c. Full Blood Count (FBC), Renal Profile (RP) and Liver Function Test (LFT) from OHCW and patient as a baseline investigation.

8. WASTE MANAGEMENT

8.1 Clinical and General Waste

Clinical waste is defined as waste arising from healthcare procedures, which by nature of its potentially infectious, toxic or dangerous content, may prove to be hazardous unless rendered safe and inoffensive. It includes any waste which consists, wholly or partly, of human or animal tissue, blood or other body fluids, excretions, drugs or other pharmaceuticals products. Clinical waste also encompasses laboratory wastes that include specimens or culture medium discarded in the course of dental practice or research.

Sharps is defined as clinical instruments with sharp points or edges, such as discarded syringes, needles, cartridges, broken glass, scalpel blades, saws and any other sharp instruments, that could cause a cut or puncture.

General waste means waste that does not pose an immediate threat to the health or environment. It includes floor sweepings, paper towels, dressing wrappers, documents, non-soiled personal protective equipment.

8.2 Segregation of Waste

Waste in healthcare establishments should be segregated according to its category at source (the point of generation) and placed in the appropriate colour-coded bags/containers (Table 3).

Table 3: Categories of Waste

Content	Container type	Colour coding
Sharp instruments and objects	Puncture-resistant and leak proof containers with 'Biohazard' label	Yellow
Other Clinical waste	Plastic bag with 'Biohazard' label	Yellow
General waste	Plastic bag	Black

8.3 Disposal Methods

Dispose waste according to regulations under the Environmental Quality Act 1974 (Act 127) and the following legislations made under it:

a. Environmental Quality (Scheduled Waste) (Amendment) Regulations 2007;

b. Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) (Amendments) Order 2006;
c. Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987; and
d. Environmental Quality (Clean Air) Regulations 2014.

8.3.1 Solids

In a waste bin lined with a yellow, leak-proof plastic bag, which is sealed when three quarters full. Dispose according to regulations under the Environmental Act 1974.

8.3.2 Fluids (blood/body fluids/suctioned fluids)

All fluid waste must be disposed of directly into the sewer system and not into open drains.

8.3.3 Sharps

All sharps must be disposed off into yellow sharps bins. When three quarters full or after a maximum of one week, the sharps bin must be sealed and sent for incineration according to regulations under the Environmental Act 1989.

8.3.4 Broken Instruments

Broken instruments and endodontic files should be disposed of as sharps.

8.3.5 General Waste

General waste should be disposed of in black plastic bags.

8.3.6 X-ray Solutions and Disinfectants

X-ray film processing solutions and disinfectants should be disposed of into the sewerage system. However, you should ensure that the disinfectants used are biodegradable.

9. HANDLING OF LABORATORY MATERIALS AND EQUIPMENT FOR REPAIR

9.1 Dental Laboratory Materials

Dental laboratory materials and other items (e.g. impressions, bite registration, fixed and removable prostheses, orthodontic appliances) are potential sources of cross-infection and should thus be handled appropriately.

Impressions, prostheses and appliances should be rinsed thoroughly to remove all visible blood and debris, and then disinfected before being sent to the laboratory. Gloves should be worn when handling impressions and pouring models.

a. Items from the laboratory should be cleaned and disinfected with a high level disinfectant, prior to being sent to the surgery. Materials that are to be used in surgical procedures should be heat sterilised or if this is not possible, the item must be chemically sterilised.

   Containers or plastic bags should be used for transportation of items into and out of the laboratory. PPE should be used at least until the items have been disinfected.

b. Laboratory items that become contaminated (e.g. burs, polishing points, rag wheels, articulators, case pans and lathes) should be cleaned and sterilised or disinfected according to the manufacturers' instructions. If the manufacturers' instructions are unavailable, clean and heat-sterilise heat-tolerant items or clean and disinfect with at least an intermediate level disinfectant.

9.2 Equipment for Repair

All clinical and laboratory instruments should be sterilised or disinfected with at least an intermediate level disinfectant prior to being sent for repair.

10. SUMMARY

10.1 General Principles

The general principles of infection control, to ensure safe work practice, must be adhered to at all times. The essential points are as follows:

a. It should be assumed that all patients are infected with a blood borne virus.

b. Standard infection control precautions must be followed and compliance must be monitored regularly.

c. All efforts must be taken to prevent exposure incidents but if they occur, the proper protocol for management should be followed.

d. Spillage of blood and body fluids must be prevented or contained and dealt with promptly and appropriately.

10.2 Daily Work Practice

The following daily procedures should be followed meticulously by all OHCW and monitored closely.

10.2.1 Before Treatment Commences

a. Ensure that all instruments and equipment have been sterilised or adequately disinfected.

b. Avoid contamination of sterile instruments by proper preparation prior to treatment.

c. Use disposable coverings as necessary.

d. Arrange instruments systematically and in the appropriate position.

e. Arrange materials and mixing instruments in the appropriate location.

10.2.2 During Treatment

a. Manage all patients as potentially infectious.

b. Wear appropriate PPE.

c. Provide a bib or drape and eye protection for the patient.

d. Wash hands before gloving; a new pair of gloves must be used for each patient.

e. Discard gloves that are torn, cut or punctured.

f. Use a rubber dam to isolate, where appropriate.

g. Use high-vacuum aspiration.

h. Handle sharps carefully.

i. Avoid touching non-working surfaces with gloved hands.

10.2.3 After Completion of Treatment

a. Dispose of sharps and clinical waste in the designated containers.

b. Clean all instruments thoroughly.

c. Instruments should be sterilised in an autoclave.

d. Instruments that cannot be autoclaved must be sterilised or disinfected by other appropriate means.

e. Flush all air, suction and water lines.

f. Clean and disinfect all contaminated areas.

g. Clean and disinfect impressions and other dental appliances before sending them to the dental laboratory.

h. Prepare the dental unit for the next patient.

10.2.4 At the End of the Day

a. Dispose of all clinical waste appropriately.

b. Clean and disinfect all clinical contact surfaces thoroughly.

c. Flush all air, suction and water lines for a minimum of 2 minutes.

d. Clean the spittoon and secretion filters thoroughly.

GLOSSARY OF TERMS

Antiseptic

A germicide used on skin or living tissue for the purpose of inhibiting or destroying microorganisms. Examples are alcohols, chlorhexidine, chlorine, hexachlorophene, iodine, chloroxylenol [PCMX], quaternary ammonium compounds and triclosan.

Antimicrobial soap

A detergent containing an antiseptic agent.

Bioburden

Microbiological load or organic material on a surface or object before decontamination or sterilisation.

Cleaning

Removal of all foreign material from objects. Normally accomplished with water, mechanical action, and detergents or enzymatic products.

Clinical contact surfaces

Surfaces that are touched and contaminated during dental procedures.

Cross infection

Infection transmitted from individuals infected with pathogenic microorganisms to healthy individuals.

Decontamination

Use of physical or chemical means to remove, inactivate, or destroy pathogens on a surface or item so that they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Disinfectant

A chemical agent used on inanimate objects to destroy virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms.

Disinfection

A process, which reduces vegetative microorganisms (e.g. staphylococi, salmonellae, viruses) to a safe or relatively safe level.

- **High level disinfection**

  A disinfection process that inactivates vegetative bacteria, mycobacteria, fungi, and viruses but not necessarily high numbers of bacterial spores.

- **Intermediate level disinfection**

  A disinfection process that inactivates vegetative bacteria majority of fungi, mycobacteria, and the majority of viruses (particularly enveloped viruses) but not bacterial spores.

- **Low level disinfection**

  A process that inactivates the majority of vegetative bacteria, certain fungi, and certain viruses, but cannot be relied on to inactivate resistant microorganisms (e.g. mycobacteria or bacterial spores).

Disposable

Refers to a device intended for single use.

Hand hygiene

General term that applies to handwashing, antiseptic handwashing, antiseptic hand rubbing or surgical hand antisepsis.

Hand rub

An antiseptic preparation without a detergent. Used without water to reduce the number of viable microorganisms on the hand.

Oral Healthcare Worker (OHCW)

Personnel involved in delivering oral healthcare, including dental practitioners, dental nurses, dental therapists, dental surgery assistants, dental technologists, dental attendants and students/trainees of the aforementioned dental and allied health professions.

Percutaneous injuries

An exposure event occuring when a needle or other sharp object penetrates the skin. This term is interchangeable with "sharp injury".

Persistent effect

Prolonged effect that prevents or inhibits proliferation or survival of microorganisms after application of a product.

Personal Protective Equipment (PPE)

Specialized clothing or equipment worn for protection against infectious materials.

Sterile

Denotes the complete absence of all viable microbes and other forms of pathogens.

Sterilisation

Use of a physical or chemical procedures to destroy all microorganisms including bacterial spores.

Vaccination

Administration of a vaccine in an attempt to provide protection from a specific disease.

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Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987
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ABBREVIATION

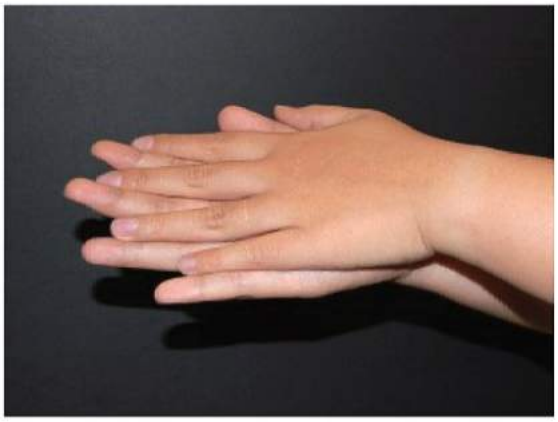
Anti-HBs	-	Antibody to Hepatitis B Surface Antigen
Anti-HCV	-	Antibody to Hepatitis C Virus
Anti-HIV	-	Antibody to Human Immunodeficiency Virus
CDC	-	Centers for Disease Control and Prevention
FDI	-	World Dental Federation
HBsAg	-	Hepatitis B Surface Antigen
HBV	-	Hepatitis B Virus
HCV	-	Hepatitis C Virus
HIV	-	Human Immunodeficiency Virus
MDC	-	Malaysian Dental Council
NSI	-	Needle Stick Injury
OHCW	-	Oral Healthcare Workers
PPE	-	Personal Protective Equipment
PSP	-	Photo Stimulable Phosphor
RCA	-	Root Cause Analysis

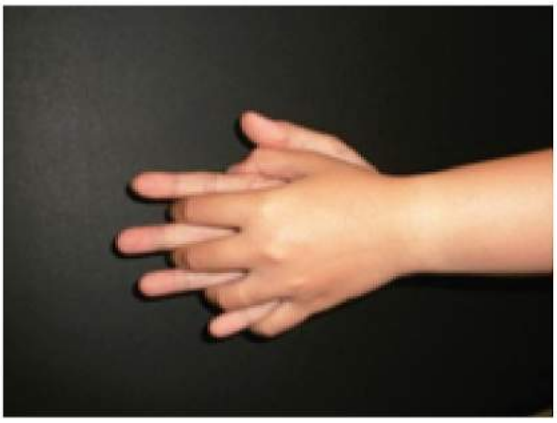
Appendices

HANDWASHING TECHNIQUE

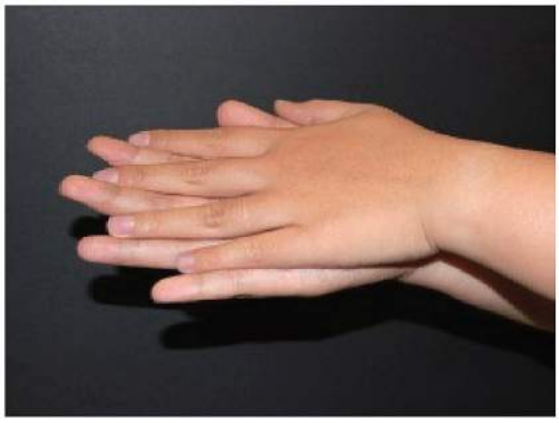
1. Apply quantity of product as recommended by the manufacturer.
2. Rotational rubbing, backward and forward with clasped fingers of right hand on left palm and vice versa.

3. Rub from palm to palm.



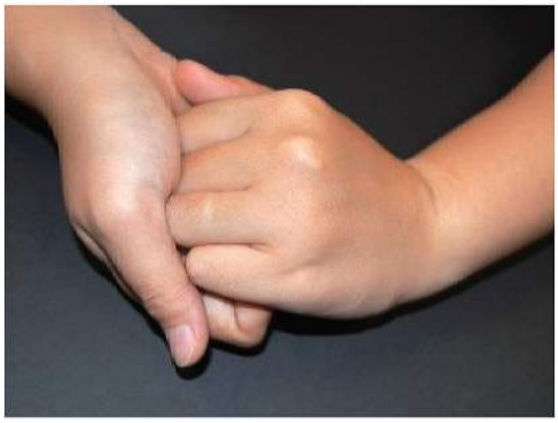


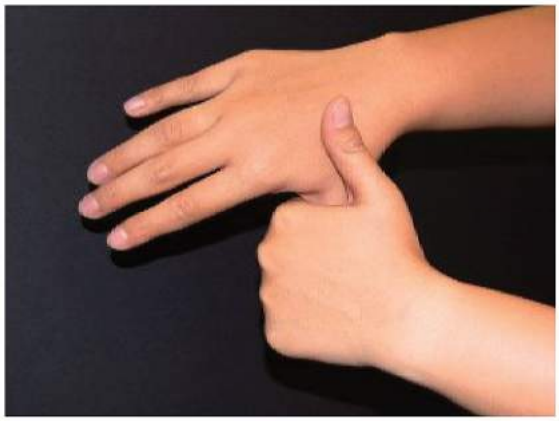
4. From palm to palm with fingers interlaced.



5. Rub right palm over left dorsum, and left palm over right dorsum.

6. Backs of fingers to opposing palms with fingers interlocked, concentrate on the fingertips.





7. Rotational rubbing of right thumb clasped in left palm and vice versa.

Classification and Uses of Disinfectants

Level of Disinfectant	Uses	Examples
High Level (Instrument Grade)	• For making potentially infectious items safe for subsequent handling • For critical/semi-critical items where no other suitable method of sterilisation is available • For materials from the laboratory that cannot be heat sterilised, which are to be put into the patients' mouths or used in surgical procedures	• Halogenated Tertiary Amines • Chlorine Dioxide • *Ortho*-phthaldehyde Some Halogens (e.g. Dichloroisocyanurate, Sodium Hypochlorite) • Hydrogen Peroxide • Peracetic Acid
Intermediate Level	• For clinical contact surfaces • For non-critical items • For materials bound for the laboratory that have been in the patients' mouths • For cleaning areas after blood spills	• Some Phenolics (e.g. Benzalkonium chloride) • Some Halogens (e.g. Povidone Iodine) • Alcohol Containing Solutions • Diluted High Level Disinfectants to the manufacturer's instructions
Low Level	• For housekeeping surfaces	• Quaternary Ammonium Compounds • Some Phenolics (e.g. Parachlorometaxylenol) • Biguanides (e.g. Chlorhexidine) • Diluted High and Intermediate Level Disinfectants to the manufacturers' instructions

Disinfectants used should preferably be biodegradable, non-toxic and non-corrosive.

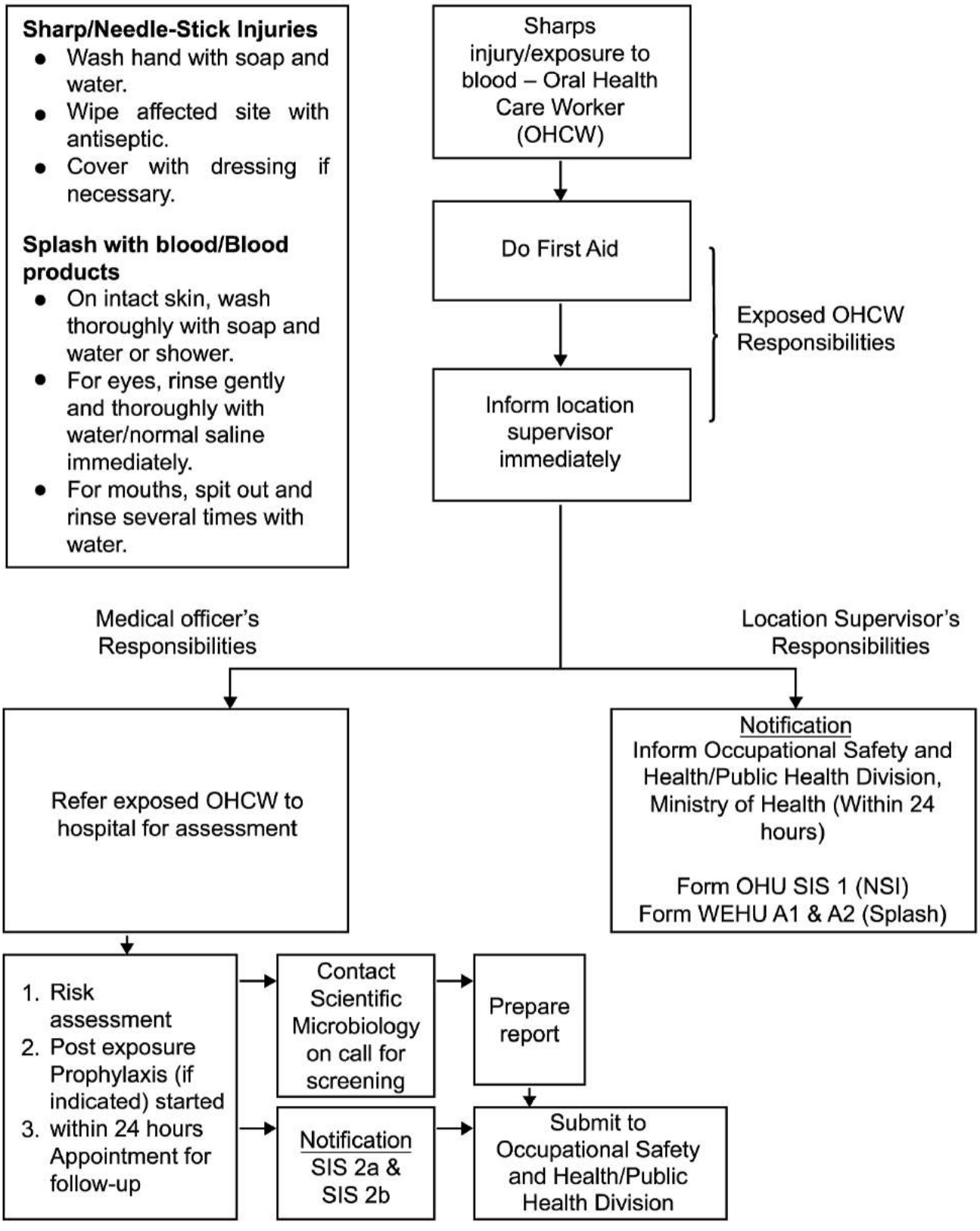
Follow the manufacturers' instructions on disinfectant use.

Sterilisation Methods

Type of instruments	Method
For instruments not sensitive to moisture or heat	Steam under pressure (Autoclave)
For moisture sensitive instruments	Dry heat (Hot air oven) Chemical vapour
For moisture and heat sensitive instruments	Vapour-phase hydrogen peroxide Ethylene Oxide Gas
For materials and instruments that cannot be sterilised by any of the above methods	Gamma beam radiation Electron beam radiation
If no other suitable method of sterilisation is available	Cold Sterilisation e.g. Instruments soaked in chemical sterilants

Appendix 3

Management of Sharps Injury/Exposure to Blood



CONFIDENTIAL **FORM IR1.1**

PATIENT SAFETY INCIDENT- MANAGEMENT & REPORTING FORM
PART I – Initial Report

A. Incident particulars (refer to guidance notes for sentinel event and incident codes)

Enter Incident Code

Date of Incident	D	D	M	M	Y	Y

Time of

24 hour clock			
H	H	M	M

Date of Incident reporting	D	D	M	M	Y	Y

Unit/ Dept.

Location Where incident happened

Other departments involved(if any)

B. Patient particulars

Name **Male** **Female** **Inpatient** **Outpatient**

ID/Passport No. **RN No.**

	D	D	M	M	Y	Y
Date of admission						
Date of Birth						
Age						

Admission diagnosis

Race

Communication problem with patient? Yes No

Native language

Language use to communicate

C. Incident description

Provide a brief description of the incident, the people involved (including staff), any harm suffered by patient and immediate staff response. Please state facts and not opinion.

People involved: Patient Family Staff

Any Harm suffered No / Yes If yes, what type of harm.....

Brief description of the incident:

Immediate correction:

Full name: _____
Designation: _____

Continue on a separate sheet if necessary.

PART II – Immediate Supervisor Report (e.g. specialist, consultant, ward manager, matron)

D. Immediate corrective action taken to reduce risk

Provide a brief description of any corrective action taken immediately following the incident

Full name: _____
Designation: _____ Date: _____

Continue on a separate sheet if necessary

Official Use Only: Date received _____ **Incident Reference** _____

Part III – Designated Person Report (Full name_____ Date_____)

E. Investigation priority assessment (triage) and response

1. Actual patient impact/outcome (circle appropriate box/number)

None	Minor	Moderate	Major	Death
L	M	M	H	H

2. Duration of impact Temp ☐ Permanent ☐ N/A ☐ Unsure ☐

3. Potential risk to future patients and organisation if no further action taken (circle)

	Most Likely impact/outcome				
2. Likelihood	None	Minor	Moderate	Major	Death
Almost Certain	L	M	M	H	H
Likely	L	M	M	H	H
Possible	L	M	M	M	M
Unlikely	L	M	M	M	M
Remote	L	L	L	L	L

L: Low M: Moderate H: High

4. Circle the (Actual impact) and (Potential Risk) boxes. *A full RCA may be require for accountability purposes

A	P	Response
H	H	Full RCA
H	M	Mini RCA*
H	L	Mini RCA*
M	H	Mini RCA
M	M	Mini RCA
M	L	Minimal
L	H	Mini RCA
L	M	Minimal
L	L	None

5. Investigation response

	Suggested	Actual
None		
Minimal		
Mini RCA		
Full RCA		

F. Contributing factors (select codes from list or write in words) – Rujuk panduan di atas.

1	Patient	
2	Task and technology	
3	Individual staff	
4	Team	
5	Work and care environment	
6	Management and organisational	
7	External	

G. Further action proposed to reduce risk (write or attach a copy of RCA report with action plan -Rujuk panduan di atas.

No	Description	Person responsible	Date action completed
1			
2			
3			
4			
5			

Continue on a separate sheet if necessary

PART IV – Head of Department Comments

H. Organisational impact/outcomes, learning points and general comments

Full name:_____
Designation:_____ Date:_____

Continue on a separate sheet if necessary

INNOCULATION ACCIDENT SURVEILLANCE FORM (IAS-1)*

SHARPS/ NEEDLE STICK INJURY SURVEILLANCE

Date _____ Unit _____

1. Name of staff member _____

   Grade of staff member: Doctor ( ) Attendant ( )

   Nurse ( ) Technician ( ) Student nurse ( )

2. Account of accident (describe):

   _____

   Type of sharp involved

   _____

   Incident date _____ Time _____

   Place of accident (ward/clinic/O.T. A & E): _____

3. Hepatitis B status: Vaccinated ( ) Non-vaccinated ( ) Unknown ( )

4. Tetanus immunization: Date/ Year ( ) Unknown ( )

5. Patient contact known? Yes ( ) No ( )

   If "Yes", please specify:

   Patient's name _____ R.N _____

   Ward _____ Diagnosis _____

Was patient in a "high risk" group? Yes ( ) No ( ) Unknown ( )

If "Yes", please specify: _____

6. Immediate action:

Health Care Worker

a. 5ml of blood taken for testing: Yes ( ) No ( )

If "No", please specify:

_____

b. **Patient contact (if unknown)**

5 ml of blood taken for testing: Yes ( ) No ( )

If "No", please specify:

_____

Form completed by:

Name: _____

Signature: _____

I agree to HIV testing: Signature _____

* This has been implemented at the University Hospital

Appendix 4c

WEHU - A1
(JKKP 6)

NOTIFICATION OF OCCUPATIONAL ACCIDENT AND DANGEROUS OCCURRENCE

Location of accident /incident

Date of accident /incident | Time of accident/incident occur | hrs

Send to:

Pengarah Kesihatan Negeri

Jabatan Kesihatan Negeri _____

Part A - Detail of Notifier

Name

Designation

Name and address of organization

Contact no.

Part B - Affected person (If more than one person please list the name in Part C)

Name

Date of birth / / (DD MM YY)

New IC/Passport no.

Nationality

Gender ☐ Male ☐ Female

Occupation

Ethnic group

Name and address of organization

District | State

Duration of current job

Date of firts informing DOSH

Part C- Description of accident or dangerous occurrence

a) What were the activities involved prior to the accident?

b) What actually happened during the accident (agent involved and effect to the person involved)?

c) Why did the accident happen?

d) What were the actions taken following the accident?

Signature of Notifier | Date

Appendix 4d

WEHU - A2

Date of Notification ☐

Part I : Particulars of reporting unit	**Part II : Particulars of patients**
Name of facility ☐	Date seen/treated/admitted ☐
Unit / Department / Ward ☐	Medical certificate (MC) given ☐ No ☐ Yes
	Duration of MC ☐ days

Part III : Classification of accident
(Tick [√] more than one if relevant)

1. Nature of injury

- ☐ Abrasions
- ☐ Amputation
- ☐ Asphyxia
- ☐ Burns
- ☐ Bruises and contusions
- ☐ Concussions
- ☐ Cuts
- ☐ Dislocation
- ☐ Electrocution
- ☐ Radiation
- ☐ Fracture
- ☐ Drown
- ☐ Laceration
- ☐ Punctured Wound/prick
- ☐ Sprain & strain
- ☐ Internal injuries
- ☐ Others (please specify) _____

2. Part of Body Injured — For R/L: Please circle

Head and Neck		**Upper Limbs**		**Torso**		**Lower Limbs**	
☐ Scalp		☐ Upper arms	R/L	☐ Back		☐ Hip	R/L
☐ Skull		☐ Elbow	R/L	☐ Chest		☐ Thigh	R/L
☐ Eyes	R/L	☐ Forearm	R/L	☐ Abdomen		☐ Leg	R/L
☐ Ears	R/L	☐ Wrist	R/L	☐ Pelvis		☐ Knee	R/L
☐ Nose		☐ Hand	R/L	☐ Groin		☐ Ankle	R/L
☐ Mouth		☐ Palm	R/L			☐ Feet	R/L
☐ Teeth		☐ Fingers	R/L			☐ Toes	R/L
☐ Face		☐ Other specify: _____				☐	
☐ Neck							

3. Mechanism of accident

- ☐ Struck against object
- ☐ Struck by sliding, falling, flying or other moving object
- ☐ Motor vehicle accident
- ☐ Caught in/or between object
- ☐ Fall or slip on same level
- ☐ Fall from height
- ☐ Injured while handling, lifting or carrying
- ☐ Contact with extreme temperature
- ☐ Others (please specify):

  _____
- ☐ Splash of blood/body fluid
- ☐ Splash of chemicals
- ☐ Exposure to/or contact with harmful substances/radiation
- ☐ Exposure to/or contact with electric currents
- ☐ Exposure to explosion
- ☐ Drowning
- ☐ Crush by moving/sliding object
- ☐ Needle stick/Needle prick
- ☐ Physical assault

4. Agent involved in accident
   - ☐ Machine/Electrical equipment
   - ☐ Lifting equipment
   - ☐ Transport equipment/Vehicle
   - ☐ Needles: ☐ Hollowbore ☐ Solid
   - ☐ Medical/Surgical/Dental instruments (other than needles): please specify _____
   - ☐ Lab instruments
   - ☐ Pressure Vessels
   - ☐ Blood/Body fluids
   - ☐ Chemicals/Gases
   - ☐ Floors/Levels
   - ☐ Ladders
   - ☐ Stairs/steps
   - ☐ Others (please specify) _____

5. Existing control measure at workplace
   - ☐ Engineering Control
   - ☐ Standard Operating Procedure (SOP)
   - ☐ Training/Education/Work Schedule/Rotation
   - ☐ Personal Protective Equipment (PPE)
   - ☐ Other (please specify) _____

OHU/SIS-1

SHARPS INJURY SURVEILLANCE
OCCUPATIONAL HEALTH UNIT
MINISTRY OF HEALTH
"Rakan Anda Dalam Meningkatkan Kesihatan Pekerja"
"Your Partner In Enhancing Workers Health"

COPY FOR MINISTRY

EPIDEMIOLOGY SECTION (OHU/SIS-1)

EPIDEMIOLOGY SECTION
(to be filled by staff from Infection Control Team / Occupational Health Unit / Occupational Safety and Health Committee Secretary)

PARTICULARS OF AFFECTED PERSON

1. Date of notification : .....
2. State : .....
3. District : .....
4. Name of hospital / health clinic : .....

(Please tick (✓) where applicable)

»1.Name : .....

»2.Gender : Male ☐ Female ☐

»3.NRIC : New : ☐☐☐☐☐☐ ☐☐ ☐☐☐☐
Old : ☐☐☐☐☐☐☐☐

4. Nationality : .....

5. Age on the 1st of January : ☐☐ Years

6. Department Presently attached to : .....

7. Contact number : .....

»8.Date of injury : month ☐☐ day ☐☐ year ☐☐

Time : ..... *am / pm

9. Date and time of seeking treatment from medical / ID team : month ☐☐ day ☐☐ year ☐☐

Time : ..... *am / pm

10. Duration of employment in Ministry of Health : ☐☐ *month (s) / Year (s)

11. Duration of work in handling sharps : ☐☐ *month (s) / Year (s)

(*) delete where is not applicable
(») to be filled in the registry

1/4

»1. JOB CATEGORY (Please tick (✓) where applicable)

Medical Officer	☐	Dental Surgery Assistant	☐
Medical and Health Officer	☐	Dental Technician	☐
House Officer	☐	Dental Attendant	☐
Matron / Sister *	☐	Pharmacist / Pharmacy Assistant *	☐
Staff Nurse / Assistant Nurse *	☐	MLT / Lab Assistant *	☐
Midwife / Community Nurse *	☐	Radiology Staff	☐
Medical Assistant *	☐	Hospital Support Service Staff	☐
Specialist / Consultant (please specify speciality) * :	☐	Laundry Staff	☐
.....		Administration Staff	☐
		Health Inspector	☐
DENTAL		Health Attendant	☐
Dental Specialist	☐	Driver	☐
Dental Officer	☐	Trainee (please specify) :	☐
Dental Nurse	☐	Others (please specify) :	☐

»2. WHERE DID THE SHARPS INJURY OCCUR? (Please tick (✓) where applicable)

Ward (please specify):		Intensive Care Unit	☐
a. At patient's bedside	☐	Specialist Clinic	☐
b. Side room / nurses table	☐	Health Clinic / Polyclinic	☐
c. Elsewhere in the ward (please specify):	☐	Dental Clinic	☐
.....		School / College / Faculty *	☐
		Pharmacy	☐
Operating Theatre	☐	Laboratory	☐
Accident & Emergency	☐	Others (please specify) :	☐
Labour Room	☐	.....	

3. HOW DID THE SHARPS INJURY OCCUR? (Please tick (✓) where applicable) select one(1) answer

3a) While handling patient or needle/sharps:

		Passing / Transferring equipment	☐
While inserting needle in line	☐	While inserting needle in patient	☐
While manipulating needle in line	☐	While manipulating needle in patient	☐
While withdrawing needle from line	☐	While withdrawing needle from patient	☐

3b) While in operative field or during suturing procedures or autopsy:

Suturing	☐	Palpating / Exploring *	☐
Incising	☐	Manipulating suture needle in holder	☐
Tying sutures	☐	Passing / receiving equipment *	☐

(*) delete where is not applicable
(»)to be filled in the registry

3c) Handling equipment / specimens:

Processing specimens	☐	Passing / transferring equipment *	☐
Recapping (missed / pierced cap)	☐	Cap fell off after recapping	☐
Activating safety device	☐	Disassembling device / equipment	☐
During clean-up	☐	In transit to disposal	☐
Opening / breaking glass containers	☐	Decontamination / processing of used equipment	☐
Handling equipment on tray / stand	☐	Transferring blood / body fluids into specimen container *	☐

3d) Collision / contact with sharps object:

Collided with co-worker or other person	☐	Collided with sharps instrument	☐
Sharps instrument dropped	☐	Struck by detached IV line needle	☐

3e) Disposal related:

Injured by sharps being disposed	☐	While manipulating sharps bin	☐
Injured by sharps already in sharps bin	☐	Over-filled sharps bin	☐
Punctured sharps bin	☐	Protruding from opened sharps bin	☐
While transporting the sharps to collection center	☐		

3f) Sharps in unusual locations:

In trash	☐	Left on table / tray *	☐
Left in bed / mattress	☐	In pocket / clothing	☐
In linen / laundry	☐	Other unusual locations (please describe):	☐
On floor	☐	.....	

3g) Other circumstances (please describe):

.....

.....

.....

»4. WHICH TYPE OF DEVICE CAUSED THE INJURY? (Please tick (✓) where applicable) select one(1) answer

4a) Needles:

Hypodermic needle	☐	Butterfly needle	☐
IV Catheter stylet (Venofix / Branula)	☐	Bone marrow needle	☐
Needle on IV line e.g piggy back, IV line connector	☐	Biopsy needle	☐
Central line catheter introducer needle	☐	Others (please describe):	☐
Spinal / epidural needle	☐	.....	

4b) Glass:

Medication ampoule	☐	Capillary tube	☐
Vacuum tube (glass)	☐	Specimen / test tube (glass)	☐
Pipette (glass)	☐	Medication / IV bottle (large volume)	☐
Glass slide	☐	Other glass item (please describe):	☐
		.....	

(*) delete where is not applicable

(»)) to be filled in the registry

4c) Surgical instruments or other items:

Lancet	☐	Specimen / test tube (plastic)	☐	Razor	☐
Finger nails / teeth	☐	Scalpel	☐	Retractor, Skin / bone hook *	☐
Scissors	☐	Pipette (plastic)	☐	Wire (suture / fixation / guide wire)	☐
Bone cutter	☐	Staple / steel suture	☐	Electro-cautery device	☐
Bone chip	☐	Microtome blade	☐	Pickup / Forcep / Hemostat / Clamp	☐
Towel clip	☐	Tenaculum	☐	Vacuum tube (plastic)	☐
Trocar	☐	Suture Needle	☐	Other sharps item (please describe):	
Histology cutting blade	☐	Explorer	☐	.....	

5. WAS THE DEVICE CONTAMINATED?:

Contaminated (known exposure to patient or contaminated equipment) ☐
Uncontaminated (no known exposure to patient or contaminated equipment) ☐
Unknown ☐

»6. WHAT WAS THE PROCEDURE CONDUCTED? (Please tick (✓) where applicable)

Unknown / not applicable ☐
Injection- * IV / IM / SC ☐
Heparin or saline flush ☐
Other injections into (or aspiration from) IV injection sites or IV ports ☐
Drawing venous blood sample ☐
Drawing arterial blood sample ☐
Starting IV or setting up Heparin block (IV catheter or butterfly type needle) ☐
Connecting IV line (intermittent IV line / piggy back / other IV connections) ☐
Placing an arterial / central line ☐
Finger stick / Heel stik (e.g to do glucometer) * ☐
Suturing ☐
Dissecting ☐
Drilling ☐
Electrocautery ☐
Obtaining body fluid or tissue samples *(CSF / Peritoneal fluid / Pleural fluid / Biopsy) ☐
Non medical procedures (please describe):

.....

.....

Others (please describe):

.....

.....

.....

.....

.....

(*) delete where is not applicable
(») to be filled in the registry

4/4

COMMITTEE MEMBERS

Chairman	Dato' Prof. Emeritus Dr. Hashim bin Yaacob
Members	Prof. Emeritus Dato' Dr. Wan Mohamad Nasir bin Wan Othman
	Prof. Dr. Phrabhakaran a/l K. N. Nambiar
	Prof. Madya Dr. Sabri bin Musa
	Dr. Elise Monerasinghe
	Dr. Ng Woan Tyng
	Dr. Norhayati binti Omar
	Dr. Salleh bin Zakaria
	Dr. Iswan Zuraidi bin Zainol
	Encik Abd Rahaman bin Jaafar
	Puan Arbiah binti Basri
Secretary	Dr. Noor Akmal binti Muhamat
Co-secretaries	Dr. Norfarhana binti Md Daud
	Dr. Noorhidayah binti Mohd Arof

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