

MOH/K/GIG/20.2007( GU)

# **Guidelines on Infection Control in Dental Practice**

Malaysian Dental Council

Oral Health Division  
Ministry of Health

2007

FOREWORD BY THE DIRECTOR OF ORAL HEALTH  
MINISTRY OF HEALTH MALAYSIA



To ensure confidence in the practice of dentistry in the country, oral health care has to be delivered and received in a safe manner. The possibility of transmission of infections between practitioner to patient, patient to practitioner, or between patients, should not exist. Safe dental practice is deemed to protect both the patient and the oral health care worker.

In 1996, the Guidelines on Infection Control in Dental Practice were published. The contemporary scenario where emergent and re-emergent infections become ever evident, necessitates a need to disseminate the latest knowledge on infection control. The practice of universal precautions has given way to standard precautions, in which all blood and body fluids, excretions and secretions, whether or not contaminated with blood, are considered infectious.

This book lists updated dental infection control principles and the required practices. The first draft of these reviewed guidelines was prepared by a committee set up by the Malaysian Dental Council. Subsequently, the Oral Health Division of the Ministry of Health expanded the scope of the guidelines and prepared a second draft. This was then disseminated to oral health care workers nationwide as well as Malaysian Dental Council members for comments. The culmination is this final document.

I would highly recommend that all new as well as established dental practitioners, and their staff, abide by these updated guidelines which are a testament to quality in oral health care.

A handwritten signature in black ink, appearing to read 'Norain Binti Abu Talib'.

DATIN DR. NORAIN BINTI ABU TALIB  
Director of Oral Health  
Ministry of Health Malaysia

<b><u>CONTENTS</u></b>		<b><u>Page</u></b>
	<b>FOREWORD</b>	ii
<b>1.</b>	<b>INTRODUCTION</b>	1
	1.1 Background	1
	1.2. Standard Precautions	1
	1.3 Employer Responsibility	2
<b>2.</b>	<b>RESPONSIBILITIES OF ORAL HEALTH CARE WORKERS</b>	2
	2.1 Using Personal Protective Equipment	2
	2.1.1 Gloves	2
	2.1.2 Masks, Protective Eyewear, Face Shields and Protective Clothing	3
	2.2 Hepatitis B Vaccination	4
	2.3 Hand Hygiene	5
	2.3.1 Hand Hygiene Policy	5
	2.3.2 Hand Hygiene Methods	5
	2.3.3 Hand Hygiene Principles	5
	2.4 Medical History of Patient	7
	2.5 Other Responsibilities of OHCW	7
<b>3.</b>	<b>CLEANING, DISINFECTION AND STERILISATION OF PATIENT CARE ITEMS</b>	8
	3.1 Instrument Classification	8
	3.2 Instrument Processing Area	8
	3.3 Instrument Cleaning	9

3.4	Instrument Packaging	10
3.5	Sterilization	10
3.5.1	Autoclaves	10
3.5.2	Sterilization of unwrapped instruments	11
3.5.3	Heat Sensitive instruments	11
3.5.4	Sterilisation Monitoring	12
	3.5.4.1 Physical Monitoring	12
	3.5.4.2 Chemical Monitoring	12
	3.5.4.3 Biological Monitoring	13
3.6	Instrument Storage	13
<b>4.</b>	<b>ENVIRONMENTAL INFECTION CONTROL</b>	<b>14</b>
4.1	Environmental Surfaces	14
4.1.1	Clinical Contact Surfaces	14
4.1.2	Housekeeping Surfaces	15
	4.1.2.1 Floor	15
	4.1.2.2 Ceiling and Walls	15
	4.1.2.3 Handles	16
4.2	Other Treatment Room Equipment	16
4.2.1	Dental Unit Waterlines	16
4.2.2	Dental Handpieces and Other Detachable Devices Attached to Air and Waterlines	16
4.2.3	Components Permanently Attached to Dental Unit Waterlines	17
4.2.4	Other Non-autoclavable Equipment	17

4.2.5	Suction Units (Aspirators), Spittoons, and Secretion Filters	17
4.3	Management of Spills of Blood and Body Fluids	18
4.3.1	General	18
4.3.2	Specific	18
<b>5.</b>	<b>RADIOLOGICAL ASEPSIS</b>	19
<b>6.</b>	<b>EXPOSURE INCIDENTS</b>	20
6.1	Introduction	20
6.1.1	Definition	20
6.1.2	Types of Exposure Incidents	20
6.2	Prevention Strategies	20
6.2.1	Administrative Controls	20
6.2.2	Work Practice Controls	20
6.2.3.	Engineering Controls	22
6.3.	Management	22
6.3.1	At the Dental Clinic	22
6.3.2	Collection of Information	23
6.3.3	Important Points to Note	23
6.3.4	Flowchart for Management	23
<b>7.</b>	<b>WASTE MANAGEMENT</b>	24
7.1	Clinical and General Waste	24
7.2	Segregation of Waste	24
7.3	Disposal Methods	25

7.3.1.	Solids (regulated clinical waste)	25
7.3.2.	Fluids (blood/body fluids/suctioned fluids)	25
7.3.3.	Sharps	25
7.3.4.	Broken Instruments	25
7.3.5.	General Waste (and non regulated clinical waste)	25
7.3.6	Disposal of Xray solutions and Disinfectants	25
<b>8.</b>	<b>HANDLING OF LABORATORY MATERIALS, BIOLOGICAL SPECIMENS AND EQUIPMENT FOR REPAIR</b>	<b>26</b>
8.1	Dental Laboratory Materials	26
8.2	Biological Specimens	26
8.3	Equipment for Repair	27
<b>9.</b>	<b>SUMMARY</b>	<b>27</b>
9.1	General Principles	27
9.2	Daily Work Practice	27
9.2.1.	Before Patient Treatment	27
9.2.2.	During Patient Treatment	28
9.2.3.	After Patient Treatment	28
9.2.4.	At the End of the Day	28
	<b>GLOSSARY OF TERMS</b>	<b>29</b>
	<b>REFERENCES</b>	<b>33</b>

## **APPENDICES**

- Appendix 1: Hand Washing Technique
- Appendix 2: Classification and Uses of Disinfectants and Sterilization Methods.
- Appendix 3: Management of Exposure Incident
- Appendix 4a: WEHU A1 (JKKP 6) Reporting Form
- Appendix 4b: WEHU A2 Reporting Form
- Appendix 5: Disposal of Clinical Waste
- Appendix 6: Committee Members



## 1. INTRODUCTION

In dental practice, there is a significant risk of cross infection between patients and oral healthcare workers (OHCW) if adequate precautions to prevent the spread of infection are not taken. These guidelines elaborate standard infection control precautions 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 by the then Dental Services Division, Ministry of Health Malaysia in 1996 was adopted by the Malaysian Dental Council (MDC) in 1998. With the passage of time and concurrent developments in scientific knowledge and technology, there have been changes to dental practice and protocols. It is for these reasons, and in keeping with the Occupational Safety and Health Act 1994, that the previous guidelines have been reviewed. This new document supersedes the previous document.

### 1.2. Standard Precautions

Previously, **universal precautions** as outlined by the Centers for Disease Control and Prevention (CDC) in Atlanta has been the principle mechanisms by which cross infections are prevented in the oral healthcare setting. It was considered that all blood and body fluids that might be **contaminated with blood** are **infectious**, as patients with blood-borne infections can be asymptomatic or unaware that they are infected.

In 1996, the relevance of other aspects of disease transmission was recognized, 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** are **infectious** when it comes into contact with non-intact skin and/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 organizations or employers to ensure that their members of staff have adequate and continuous training in infection control procedures. They should also ensure that standard precautions are always followed in the clinic. All clinical staff must be immunized 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 HEALTH CARE WORKERS**

### **2.1 Using Personal Protective Equipment (PPE)**

PPE such as gloves, masks, protective eyewear and protective clothing must be worn by all OHCW in appropriate situations.

#### **2.1.1 Gloves**

- 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 other clinical debris.
- Wearing gloves should never replace hand washing. Hands must be washed both before and after using gloves.
- Gloves must be discarded in the event of visible puncture, and hands must be washed before new gloves are put on.
- Disposable gloves are single use items and must be discarded after use on each patient. They must not be washed, disinfected or sterilized.
- If any item not directly involved in patient care needs to be touched, overgloves may be worn or the treatment gloves are removed. The overgloves are then discarded or new gloves are put on upon returning to patient care.
- Double gloves should be worn 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.
- OHCW with non-intact skin (wounds, skin lesions etc.) on their hands must cover all breaks in the skin with waterproof dressings before wearing gloves (especially when performing a procedure). Double gloves can 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 in the skin surface.
- Heavy-duty (utility) gloves that are puncture and chemical resistant must be worn when cleaning contaminated instruments

and when cleaning clinical contact surfaces because of the risks of injury to the hands from handling sharp instruments and because of the risk of exposure to infectious agents and potentially toxic chemicals. Utility gloves must be discarded if their barrier properties become compromised. Used utility gloves must be considered contaminated and handled appropriately until properly disinfected.

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**

- Debris, sprays and splashes generated during procedures may carry 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 conjunctiva of the eye. Surgical masks which cover both the mouth and nose and appropriate protective eyewear (goggles or face shields) should therefore be worn during such procedures by both the operator and the assistant.
- Surgical masks worn by OHCW also protect the patient against microorganisms generated from the mouth and nose of the OHCW
- Surgical masks should be changed
  - after a maximum of one hour of continuous use, or
  - after each patient if sprays or splashes have been generated during the procedure.
- Single and 2-ply masks should no longer be used by either the operator or the assistant as they provide almost no protection.
- Protective eyewear and face shields must be cleaned with soap and water and disinfected with a low level disinfectant after each patient. If visibly contaminated with blood, an intermediate level disinfectant must be used.
- Appropriate protective clothing should be worn during procedures that are likely to generate debris, sprays and splashes. The requirements for protective clothing include:
  - Minimizing the amount of uncovered skin and street clothing,

- Design which allows the cuff to be tucked into gloves (long-sleeved),
  - Covering at least to the knees when seated – especially for surgical procedures,
  - Continuous in front or have a well-sealed closure,
  - Providing an effective barrier against bacteria even when wet i.e. high level of fluid resistance especially for surgery,
  - Removal of the protective clothing immediate upon leaving the work area.
- Contaminated reusable protective clothing should be soaked in a disinfectant (intermediate level) before washing with detergent and water. Follow manufacturer's instructions on disinfectant use.

## 2.2 Hepatitis B Vaccination

All OHCW should be immunized with the Hepatitis B vaccine or show serological evidence of immunity to 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  $\geq 10\text{mIU/ml}$  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 level is  $< 10\text{mIU/ml}$ . 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.

## **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 (Table 1) include:

- a) routine hand wash
- b) antiseptic hand wash
- c) antiseptic hand rub
- d) surgical hand antisepsis (surgical hand wash)

The proper hand washing technique is shown in Appendix 1.

### **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. Disposable paper towels should be used to dry hands. Air hand dryers are not recommended in clinical areas because of the risk of bacterial dispersal from aerosols.
- d) Fingernails must be kept short. Avoid biting the fingernails as this compromises the integrity of the surrounding skin.
- e) Intact skin is impermeable to blood-borne viruses and therefore hand skin integrity and care is crucial. Use moisturizing lotions and creams to help maintain skin integrity. Use only water-based hand lotions and creams as petroleum-based lotions and creams interfere with the integrity of latex gloves.

**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 and after treating each non-surgical patient
Antiseptic hand wash	Water and antimicrobial liquid soap (e.g. chlorhexidine, iodophors, chloroxylenol [also known as parachlorometaxyl enol - 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	Alcohol-based 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 an alcohol-based 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.

## **2.4 Medical History of Patient**

A thorough medical history must be obtained from the patient and recorded at the first visit. This history must be intermittently updated during subsequent visits. The medical history helps identify medical conditions that might pose problems for the patient during the course of dental treatment. The medical history cannot be relied upon to identify asymptomatic transmissible diseases

## **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 for all patients undergoing non surgical procedures. Reusable bibs must be disinfected and washed after use on each patient. For surgical procedures, sterile drapes should be used.
- d) Protective eyewear should be worn for all patients to protect against physical damage to the eye from propelled and dropped objects. All protective eyewear must be washed and if visibly contaminated, disinfected after use on each patient.
- 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
- h) Contact lenses should not be applied in the clinical area
- i) Make-up should not be applied in the clinical area

### 3. CLEANING, DISINFECTION AND STERILIZATION OF PATIENT CARE ITEMS

For Classification of Disinfectants and Sterilization Methods refer to Appendix 2.

#### 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 bloodstream (e.g. forceps, scalpels, bone rongeur, scalers and burs). These instruments must be heat sterilized.
- b) **Semi-critical instruments** are instruments that do not penetrate soft tissue or bone but contacts oral tissue or non-intact skin (e.g. amalgam condensers, mouth mirrors, dental handpieces and digital radiography sensors). These instruments should be heat sterilized. If heat sterilization is not possible they should receive a minimum of high level disinfection.
- 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,
  - Visibly contaminated with blood – clean and disinfect with an intermediate level disinfectant.

#### 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 decontamination area for receiving, cleaning, and decontamination
- a packaging area for sorting and packaging
- a sterilizing area for sterilization and storage.

### 3.3 Instrument Cleaning

Instruments are cleaned for 3 reasons:

- to reduce bacterial counts
- to reduce the likelihood of corrosion, rusting and pitting
- to remove visible debris which may protect microorganisms and hence compromise the sterilization process

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

Instruments should be soaked in holding solution in a puncture-resistant container if cleaning is not performed immediately. This prevents 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 can be 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 utility gloves, masks, protective eyewear and protective clothing must be worn during cleaning because aerosols and splashes are generated.

Hand scrubbing 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 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 final sterilization, instruments should still be handled as though contaminated and handled using gloves.**

### **3.4 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 dry before packing.

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

- allow penetration of sterilization agent (steam)
- maintain sterility of the processed item after sterilization.

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

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

### **3.5 Sterilization**

#### **3.5.1 Autoclaves**

All critical and semi-critical instruments must be autoclaved if possible.

The type of autoclave used (Table 2) will depend on whether there is a need to process:

- a) packaged items i.e. for storage purposes
- b) hollow items, such as dental hand pieces or cannulae
- c) porous items, such as drapes or gowns

If there is a need to process any of the above items, a vacuum autoclave (Type S or Type B) will be required.

If the need is to process only solid, unpackaged instruments and none of the above items, a simple downward displacement (Type N) autoclave will be sufficient.

**Table 2: Types of Autoclaves**

Type B(vacuum)	Sterilizes any kind of object E.g. solid instruments, porous objects and hollow objects, both single and double wrapped packaged and un-packaged instruments
Type S(vacuum)	Sterilizes un-packaged solid instruments plus one or more of the other types of objects or instruments indicated for Type B - e.g. single wrapped and hollow instruments (this will be specified by the manufacturer)
Type N (non-vacuum / downward displacement)	Sterilizes only un-packaged solid instruments

### **3.5.2 Sterilization of unwrapped instruments**

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

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

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

Items are transported aseptically to the point of use to maintain sterility.

### **3.5.3 Heat Sensitive instruments**

Instruments such as intra-oral cameras, electronic periodontal probes, occlusal analyzers and lasers should be cleaned, and disinfected with at least a high level disinfectant.

### **3.5.4 Sterilisation Monitoring**

This 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**

This is a simple checklist 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**

This type of monitoring uses chemical indicators. Chemical indicators 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 see if air removal and steam penetration is adequate. This test is 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 sterilization (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 sterilization cycle

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

#### **3.5.4.3 Biological Monitoring**

This is the only method of verifying sterilisation.

Vials or strips that contain harmless bacterial spores (biological indicators) are exposed to the sterilisation cycle. The vials or strips are then cultured and if the culture is positive, sterilisation did not occur.

Biological monitoring should be performed at least once a week.

#### **3.6 Storage**

When sterile items are open to the air, they will eventually become 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 sterilized package must be dated.

Event-related practices recognize 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 sterilized again.

## **4. ENVIRONMENTAL INFECTION CONTROL**

### **4.1 Environmental Surfaces**

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

Environmental surfaces are divided into:

- Clinical contact surfaces
- Housekeeping surfaces

#### **4.1.1 Clinical Contact Surfaces**

Clinical contact surfaces (see glossary) include the:

- dental chair and controls
- spittoon
- light handles
- controls on amalgamators and curing lights
- light emitter, handles and switches on curing light
- work surfaces
- triple syringe
- handpiece brackets
- end of suction hoses
- impression material dispensers
- chair side computers
- drawer handles, sink handles, pens, telephones, doorknobs etc that may be touched during treatment

For disinfection of these surfaces use:

- low level disinfectants when the surfaces are not visibly contaminated,
- 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:

- Disinfectants should not be sprayed directly onto surfaces as this causes significant aerosolization of disinfectant which is an irritant to the respiratory system.
- 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.
- Organic matter interferes with many disinfectants and therefore cleaning is necessary before disinfecting.
- 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 with less rigorous methods than those used for clinical contact surfaces.

##### **4.1.2.1 Floor**

Surgery

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

General Areas

- Mop once a day.

Wash thoroughly with detergent and water once a week.

##### **4.1.2.2 Ceiling and Walls**

- Keep clean, dry and in good repaired condition.
- Wipe wall with a piece of clean damp cloth to hand height periodically
- 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:

- Flush lines for 1 minute each morning and with handpieces attached for 20 to 30 seconds between each patient.

Satisfactory reduction of microbiological counts from waterlines cannot be achieved by the above method only.

Dental units should use a separate water reservoir system to supply water to the handpieces and scalers.

Dental units should filter water from the domestic water supply to the rinsing cup and spittoon.

Handpieces and scalers should have anti-retraction valves.

Consider using a dental unit with a self-contained water purification system. This disinfects water entering the patient's mouth.

### **4.2.2 Dental Handpieces And Other Detachable Devices Attached to Air and Water Lines**

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 sterilization should be followed closely.

Handpiece re-processing:

- Flush handpiece while still attached to air/water lines in hose with bur inserted
- Clean and dry handpiece
- Flush with handpiece cleaner and lubricant. It is advisable to use an automated handpiece cleaning and lubricating system for this purpose
- Pack and autoclave
- Non-autoclavable handpieces should not be used. If the use of such a handpiece is unavoidable, the handpiece must be 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) is used

- Flush air/water lines in hose before re-attaching handpiece
- Open package (lubricate, if required with separate post-sterilization lubricant)
- 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 a procedure. 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 are 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 include 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 intermittently between patients and during long procedures. This prevents blood and saliva accumulating and coagulating in 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

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

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

Disposable items used should be discarded as clinical waste.

Non-disposable equipments used 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 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.

## 5. RADIOLOGICAL ASEPSIS

There is a risk of cross infection during the taking and processing of intra-oral radiographs. Precautions taken should include the following:

- a) Gloves (non-sterile) must be worn.
- b) Other PPE (e.g. mask, protective eyewear, and gowns) should be used if splashing of blood or other body fluids might occur.
- c) All film holders must be washed and sterilized after use.
- d) The x-ray tube head and control panel can be barrier-protected during use. The barriers are changed between patients if it has come into contact with the OHCW's gloved hands or contaminated film packets.
- e) If not barrier protected, they should be cleaned and then disinfected using a low level disinfectant. If visibly contaminated with blood, an intermediate level disinfectant must be used.
- f) After exposure, the radiograph must be wiped with a disposable gauze or paper to remove blood and saliva. Alternatively, the radiograph may be placed in a barrier envelope to prevent contamination of the outer film packet.
- g) After exposure, the film is placed in a container (e.g. disposable cup) for transport to the developing area.
- h) Digital radiography sensors and imaging plates should be cleaned and either sterilized or high level disinfected after each patient. If this cannot be done, it should be barrier-protected during use. After removal of the barrier, the sensor should be disinfected with at least a low level disinfectant. Use only disinfectants recommended by the manufacturer of the sensor or imaging plate.
- i) Clean and disinfect all work surfaces after use.

## **6. EXPOSURE INCIDENTS**

### **6.1 Introduction**

#### **6.1.1 Definition**

An exposure incident is defined as an exposure of the OHCW to the blood or body fluids of a patient which may place the OHCW at risk of acquiring a HIV, HBV or HCV (see glossary) infection from the patient and for which Post-Exposure Prophylaxis (PEP) may be a consideration.

#### **6.1.2 Types of Exposure Incidents**

- a) Percutaneous injury (e.g. needlestick)
- b) Contact of mucous membrane with blood
- c) Contact of non-intact skin with blood
- d) Contact of intact skin with blood when
  - the duration of contact is prolonged (e.g. several minutes or more)
  - it involves an extensive area.

### **6.2 Prevention Strategies**

#### **6.2.1 Administrative Controls**

- a) The employer should provide education, training and standard operating procedures to all OHCW in the organization.
- b) An individual knowledgeable in infection control guidelines and recommendations should be assigned responsibility in managing the exposure control and prevention program.

#### **6.2.2 Work Practice Controls**

Follow proper work procedures or guidelines to reduce the likelihood of sharps injury occurring.

Before beginning a procedure:

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

During a procedure:

- Instruments should be arranged systematically during the procedure so that everyone is aware of the location of the sharp instruments
- When handling sharps, be aware of staff in the immediate environment
- Minimize uncontrolled and forceful manipulation of sharp instruments
- Use instruments instead of fingers to retract tissues during suturing and during anaesthetic 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
- To recap a needle in between use on a non-disposable anesthetic syringe, use a one-handed scoop technique or a re-sheathing device. Alternatively, safety syringes may be used.

During clean-up:

- Visually inspect the areas containing waste materials used during the procedure for presence of sharps
- Separate & transport reusable sharps in a closed container - secured to prevent spillage of contents
- Insert and remove all scalpel blades using a suitable instrument,
- Do not cut, bend or remove needles by hand before disposal
- Do not remove needles from disposable syringes.

During disposal of sharps:

- Visually inspect sharps container for overfilling
- Make sure sharps container is large enough to accommodate the entire device
- Whenever possible use instruments to transport sharps into the sharps container.
- Avoid bringing hands close to the opening of the sharps container - never place fingers into container!
- Keep the hands behind the sharp tip when disposing
- If disposing of a sharp with attached tubing (tubing can recoil and lead to injury) maintain control of tubing.

After disposal:

- Visually inspect sharps containers for overfilling before removal - if overfilled, obtain a new container and use forceps or tongs to transfer protruding devices
- Keep filled sharps containers awaiting final disposal in a secure area
- Replace sharps containers when they are three-quarters filled or up to a maximum of one week. Choose the appropriate size container depending on usage
- If an improperly disposed sharp is encountered in the work environment, handle the device carefully, with an instrument if possible

### **6.2.3. Engineering Controls**

Use technology intended to remove or isolate hazards in the workplace e.g. needle resheathing devices, ultrasonic cleaners, washer/decontaminators or other devices that minimize handling during clean-up procedures

## **6.3. Management of Exposure Incident**

### **6.3.1 At the Dental Clinic**

1. Treat 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 done at the time of the exposure has to be completed – cover the injured site on the hand with a dressing before wearing gloves.
2. Inform the employer and/or immediate superior and document the incident.
3. Refer to Hospital/Health Clinic according to local guidelines.

### **6.3.2 Collection of Information**

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

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

For a percutaneous injury, this includes:

  - the depth of the wound,
  - the gauge of the needle,
  - whether fluid was injected.

For a skin or mucous membrane exposure, this includes:

  - the estimated volume of material,
  - the duration of contact,
  - the condition of the skin (e.g. chapped, abraded or intact).

### **6.3.3 Important Points to Note**

Evaluation and testing of 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. Testing is done preferably on the day of the incident. Confidentiality must always be maintained. If the source is seronegative and with no clinical symptoms, no further testing is done.

Evaluation and baseline testing of exposed OHCW:

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

### **6.3.4 Flowchart for Management**

The flowchart for the subsequent management of the exposure incident is shown in Appendix 3. Reporting forms that will be filled by the relevant Hospital/Health Clinic are shown in Appendix 4a and 4b.

## 7. WASTE MANAGEMENT

### 7.1 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, swabs or dressings, needles or other sharp instruments.

General waste is all other waste and includes waste from offices, corridors and public areas.

### 7.2 Segregation of Waste

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

**Table 3: Categories of Waste**

Clinical waste	Yellow bags with 'Biohazard' label
Sharp instruments and objects	Yellow puncture-resistant and leakproof containers with a biohazard label
General waste	Black bags

(Flow chart for the disposal of clinical waste is shown in Appendix 5)

### **7.3 Disposal Methods**

Dispose waste according to regulations under the Environmental Quality Act 1974 (Act127) and the following legislations made under it :

- Environmental Quality (Scheduled Waste) Regulations 1989
- Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989
- Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987; and
- Environmental Quality (Clean Air) Regulations 1978

#### **7.3.1. Solids**

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

#### **7.3.2. Fluids** (blood/body fluids/suctioned fluids)

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

#### **7.3.3. Sharps**

All sharps must be disposed off into yellow Sharps Bins. When two thirds full or up to a maximum of one week, the Sharps Bin must be sealed and sent for incineration according to regulations under the Environmental Act 1989.

#### **7.3.4. Broken Instruments**

Broken instruments and endodontic files should be disposed as sharps.

#### **7.3.5. General Waste**

General waste should be disposed in black plastic bags.

#### **7.3.6 Disposal of X-ray solutions and Disinfectants**

X-ray solutions and disinfectants should be disposed into the sewerage system. However, it should be ensured that the disinfectants used are biodegradable.

## **8. HANDLING OF LABORATORY MATERIALS, BIOLOGICAL SPECIMENS AND EQUIPMENT FOR REPAIR**

### **8.1 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.

- Items from the laboratory should be cleaned and disinfected with a high level disinfectant prior to placement in the patients' mouths. Materials that are to be used in surgical procedures should be subjected to heat sterilization or if this is not possible, the item must be chemically sterilized.
- Items bound for the laboratory such as impressions, prosthetic appliances etc., should be first cleaned to remove saliva, blood and debris. The items are then disinfected appropriately using at least an intermediate level disinfectant.

**The cleaning and disinfection must be done in the clinic.**

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

- Laboratory items that become contaminated but do not normally contact the patient (e.g. burs, polishing points, rag wheels, articulators, case pans, and lathes) should be cleaned and sterilized or disinfected according to the manufacturers' instructions. If manufacturer instructions are unavailable, clean and heat-sterilize heat-tolerant items or clean and disinfect with at least an intermediate level disinfectant.

### **8.2 Biological Specimens**

In general, 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.

### **8.3 Equipment for Repair**

All clinical and laboratory instruments should be sterilized or disinfected with at least an intermediate level disinfectant, prior to sending for repair.

## **9. SUMMARY**

### **9.1 General Principles**

The general principles of infection control resulting in safe work practice must be adhered to and are as follows:

- a) All patients should be assumed to be infected with a blood borne virus
- b) Standard infection control precautions must be followed and compliance needs to be monitored regularly
- c) Exposure incidents should be prevented but if it occurs, the proper protocol for its management should be followed
- d) Spillage of blood and body fluids must be prevented or contained once it has occurred and dealt with promptly and appropriately.

### **9.2 Daily Work Practice**

#### **9.2.1. Before Patient Treatment**

- a) Ensure that all instruments and equipment has been sterilized or adequately disinfected
- b) Avoid contamination of sterile instruments by proper preparation prior to patient treatment
- c) Put disposable coverings in place
- d) Arrange instruments to be used systematically and in the appropriate location
- e) Arrange materials and mixing instruments in the appropriate location.

#### **9.2.2. During Patient Treatment**

- a) Treat 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 rubber dam to isolate, where appropriate

- g) Use high-vacuum aspiration
- h) Handle sharps carefully
- i) Avoid contact with non-working surfaces once treatment has commenced.

### **9.2.3. After Patient Treatment**

- a) Dispose sharps and clinical waste in the designated containers
- b) Clean all instruments thoroughly before sterilizing them in an autoclave
- c) Instruments that cannot be autoclaved must be sterilized or disinfected by other appropriate means
- d) Flush air, suction and water lines
- e) Clean and disinfect all contaminated areas
- f) Clean and disinfect impressions and other dental appliances before sending to the dental laboratory
- g) Prepare dental unit for next patient.

### **9.2.4. At the End of the Day**

- a) Dispose all clinical waste appropriately
- b) Clean and disinfect all clinical contact surfaces thoroughly
- c) Flush air and water lines
- d) Flush the suction lines and spittoon
- e) Clean secretion filters

## **GLOSSARY OF TERMS**

### **Alcohol-based hand rub**

An antiseptic preparation containing alcohol but without a detergent. Used without water to reduce the number of viable microorganism on the hand.

### **Antiseptic**

A germicide used on skin or living tissue for the purpose of inhibiting or destroying microorganisms (e.g., 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, e.g. organic material, from objects. Normally accomplished with water, mechanical action, and detergents or enzymatic products.

### **Clinical contact surfaces**

Surfaces that are usually touched and contaminated during dental procedures.

### **Clinical waste**

Any waste which consists wholly or partly of human or animal tissue, blood or other body fluids, excretions, drugs or other pharmaceutical products, swabs or dressings, syringes, needles or other sharps instruments, which unless rendered safe may prove hazardous to any person coming into contact with it.

### **Cross infection**

Infection transmitted from individuals infected with different 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. staphylococci, salmonellae, viruses) to safe or relatively safe level.

- **High level disinfection**

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

- **Intermediate level disinfection**

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**

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**

A device intended for single use or single-patient use.

**General Waste**

General waste is all other non-clinical waste and includes waste from offices, corridors and public areas.

**Hand hygiene**

General term that applies to handwashing, antiseptic handwash, antiseptic hand rub, or surgical hand antiseptics.

**HIV**

Human Immunodeficiency Virus

**HBV**

Hepatitis B Virus

**HCV**

Hepatitis C Virus

**Oral Healthcare Worker (OHCW)**

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

**Percutaneous injuries**

Injuries caused by sharps.

**Persistent effect**

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

**Personal Protective Equipment (PPE)**

Specialized clothing or equipment worn by an employee for protection against infectious materials.

### **Safety Syringes**

These syringes have reusable and disposable components which allow the needle to be protected and disposed off together with the disposable component therefore not requiring re-sheathing or removal of the needle from the syringe.

### **Sharps**

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.

### **Sterile**

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

### **Sterilisation**

Use of a physical or chemical procedure to destroy all microorganisms including substantial numbers of resistant bacterial spores

### **Vaccination**

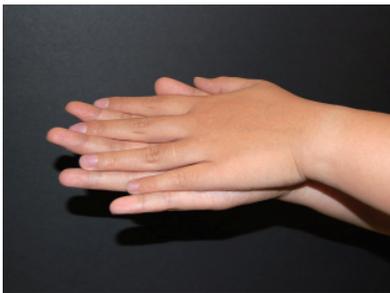
Administration of vaccine into patients in an attempt to protect them from a specific disease.

## REFERENCES

1. Centers for Disease Control and Prevention. Guidelines for Infection Control in Dental Health-Care Settings — 2003. MMWR 2003;52(No. RR-17)
2. British Dental Association. Infection Control in Dentistry. Advice Sheet. February 2003
3. AIDS/STD Section, Ministry Of Health Malaysia. Standard Precaution (KKM/3,000/2004)
4. Environmental Quality Act 1974 (Act 127)  
Environmental Quality (Scheduled Waste) Regulation 1989  
Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989  
Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987  
Environmental Quality (Clean Air) Regulations 1978
5. Prevention and Control of Infectious Disease Act 1988
6. Smith A. J, Cameron S. O, Bagg J, and Kennedy D. Management of Needlestick Injuries in General Dental Practice. British Dental Journal Vol 190 No. 12 June 23, 2001
7. Scottish Hospital Technical Note No 3. Management and Disposal of Clinical Waste (Version 4.0: October 2002)
8. Australian Government Department of Health. Infection Control Guidelines. January 2004
9. Australian Dental Association Victoria Branch. Systematic Operating Procedure. Protocol for Infection Control in Dental Practice. 1996
10. ANSI/AMMI/ISO 11140-1: 2005

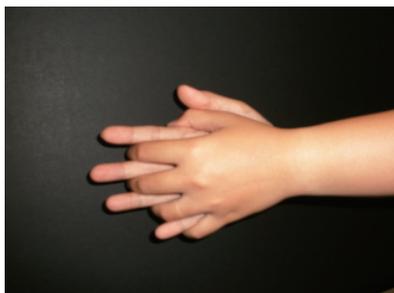
## Appendices

## HAND WASHING TECHNIQUE



1. Scrub palm to palm

2. Right palm over left  
dorsum and left palm over  
right dorsum



3. Palm to palm with fingers  
interlaced



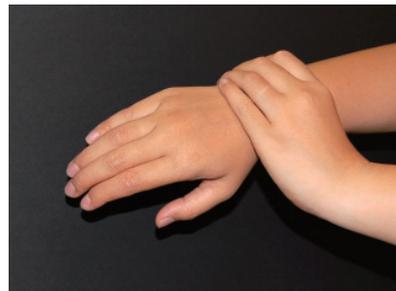
4. Backs of fingers to opposing palms with fingers interlocked

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



6. Rotational rubbing, with clasped fingers of right hand in left palm and vice versa

7. Rotational rubbing of right wrist with left hand and vice versa. Rinse and dry thoroughly.



## Classification and Uses of Disinfectants

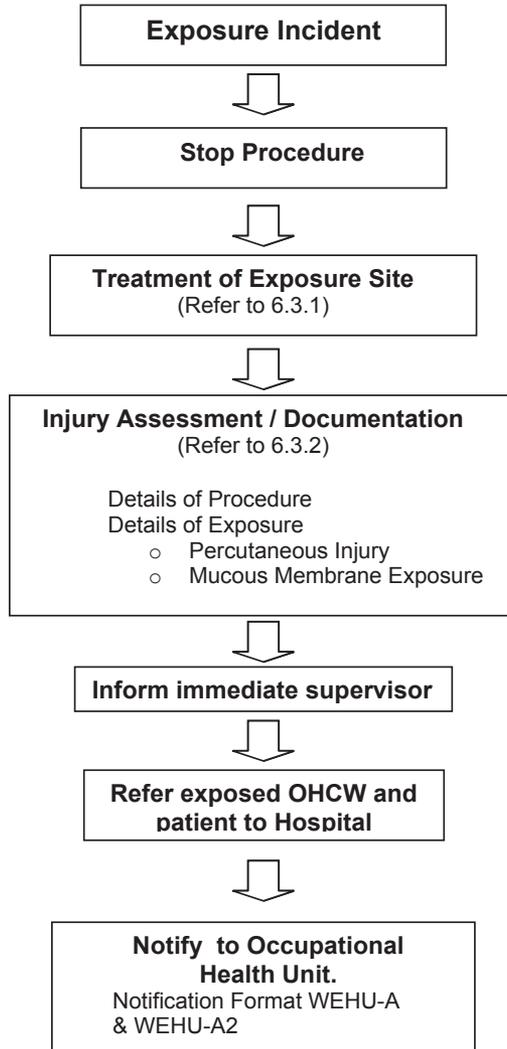
Level of Disinfectant	Uses	Examples
High Level/ Instrument Grade/ Chemical Sterilants	<ul style="list-style-type: none"> <li>• For making potentially infectious items safe for subsequent handling</li> <li>• For critical / semi critical items where no other suitable method of sterilization is available</li> <li>• For materials from the laboratory that cannot be heat sterilized, which are to be put into the patients mouth (high level) or used in surgical procedures (chemical sterilant)</li> </ul>	<ul style="list-style-type: none"> <li>• Halogenated Tertiary Amines</li> <li>• Chlorine Dioxide</li> <li>• <i>Ortho</i>-phthaldehyde</li> <li>• Some Halogens (e.g. Dichloroisocyanurate, Sodium Hypochlorite)</li> <li>• Hydrogen Peroxide</li> <li>• Peracetic Acid</li> </ul>
Intermediate Level/ Hospital Grade	<ul style="list-style-type: none"> <li>• For clinical contact surfaces</li> <li>• For non critical items that are visibly contaminated with blood</li> <li>• For materials bound for the laboratory that have been in the patients mouth</li> <li>• For blood spills</li> </ul>	<ul style="list-style-type: none"> <li>• Some Phenolics (e.g. Benzalkonium chloride)</li> <li>• Some Halogens (e.g. Povidone Iodine)</li> <li>• Alcohol Containing Solutions</li> <li>• Diluted High Level Disinfectants according to manufacturer's instructions</li> </ul>
Low Level / Hospital Grade	<ul style="list-style-type: none"> <li>• For housekeeping surfaces</li> <li>• For non critical items that are not visibly contaminated</li> <li>• Most antiseptics</li> </ul>	<ul style="list-style-type: none"> <li>• Quaternary Ammonium Compounds</li> <li>• Some Phenolics (e.g. Parachlorometaxlenol)</li> <li>• Biguanides (e.g. Chlorhexidine)</li> <li>• Diluted High and Intermediate Level Disinfectants according to manufacturers instructions</li> </ul>

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

### Sterilization Methods

Type of instruments to sterilize	Method
For instruments not sensitive to moisture or heat	Steam under pressure sterilizer (Autoclave)
For moisture sensitive instruments	Dry heat sterilizer (Hot air oven) Chemical vapour sterilizer
For moisture and heat sensitive instruments	Vapour-phase hydrogen peroxide sterilizer Ethylene Oxide Gas sterilizer
For materials and instruments that cannot be sterilized by any of the above methods	Gamma beam radiation Electron beam radiation
If no other suitable method of sterilization is available	Cold Sterilization e.g. Instruments soaked in chemical sterilants
For sterilization of contaminated metallic instruments - during endodontic procedures ( Do not use for sterilization of instruments between patients)	Bead Sterilizer

### Management of Exposure Incident



**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  /  /   
 New IC/ Pasport no.   
 Nationality   
 Gender  Male  Female  
 Occupation   
 Ethnic group   
 Name and address of organization   
 District  State   
 Duration of current job   
 Date of first 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

WEHU A2

Date of notification

Part I : Particulars of reporting unit	Part II : Particulars of patient
Name of facility <input type="text"/>	Date seen/treated/admitted <input type="text"/>
Unit / Department / Ward <input type="text"/>	Medical certificate (MC) given <input type="checkbox"/> No <input type="checkbox"/> Yes
	Duration of MC <input type="text"/> days

**Part III : Classification of accident**  
(Tick  more than one if relevant)

1. Nature of injury

- |                                                      |                                                        |
|------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Abrasions                   | <input type="checkbox"/> Fracture                      |
| <input type="checkbox"/> Amputation                  | <input type="checkbox"/> Drown                         |
| <input type="checkbox"/> Asphyxia                    | <input type="checkbox"/> Laceration                    |
| <input type="checkbox"/> Burns (heat)                | <input type="checkbox"/> Sharp injuries                |
| <input type="checkbox"/> Burns (chemical)            | <input type="checkbox"/> Sprain & strain               |
| <input type="checkbox"/> Bruises and contusions      | <input type="checkbox"/> Internal injuries             |
| <input type="checkbox"/> Concussions                 | <input type="checkbox"/> Splash of blood/body fluid    |
| <input type="checkbox"/> Cuts                        | <input type="checkbox"/> Splash of chemicals           |
| <input type="checkbox"/> Effect of electric currents | <input type="checkbox"/> Others (please specify) _____ |
| <input type="checkbox"/> Effect of radiation         |                                                        |

2. Part of Body Injured

- | Head and Neck                     | Upper Limbs                                   | Torso                            | Lower Limbs                        |
|-----------------------------------|-----------------------------------------------|----------------------------------|------------------------------------|
| <input type="checkbox"/> Scalp    | <input type="checkbox"/> Upper arms R/L       | <input type="checkbox"/> Back    | <input type="checkbox"/> Hip R/L   |
| <input type="checkbox"/> Skull    | <input type="checkbox"/> Elbow R/L            | <input type="checkbox"/> Chest   | <input type="checkbox"/> Thigh R/L |
| <input type="checkbox"/> Eyes R/L | <input type="checkbox"/> Forearm R/L          | <input type="checkbox"/> Abdomen | <input type="checkbox"/> Leg R/L   |
| <input type="checkbox"/> Ears R/L | <input type="checkbox"/> Wrist R/L            | <input type="checkbox"/> Pelvis  | <input type="checkbox"/> Knee R/L  |
| <input type="checkbox"/> Nose     | <input type="checkbox"/> Hand R/L             | <input type="checkbox"/> Groin   | <input type="checkbox"/> Ankle R/L |
| <input type="checkbox"/> Mouth    | <input type="checkbox"/> Palm R/L             |                                  | <input type="checkbox"/> Feet R/L  |
| <input type="checkbox"/> Teeth    | <input type="checkbox"/> Fingers R/L          |                                  | <input type="checkbox"/> Toes R/L  |
| <input type="checkbox"/> Face     | <input type="checkbox"/> Other specify: _____ |                                  |                                    |
| <input type="checkbox"/> Neck     |                                               |                                  |                                    |

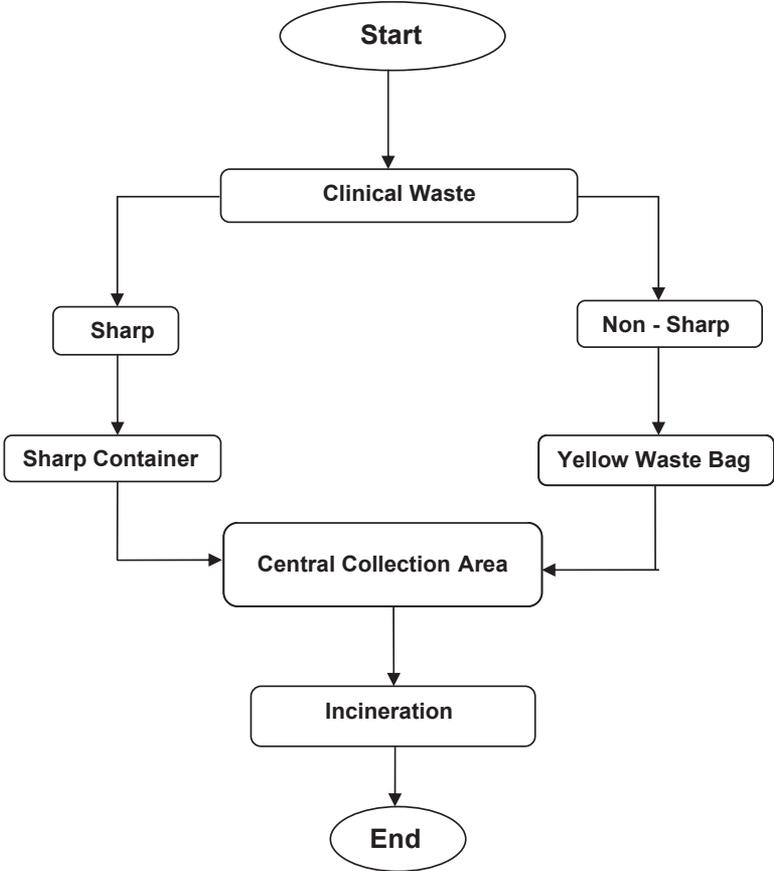
3. Mechanism of accident

- |                                                                                    |                                                                                       |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <input type="checkbox"/> Struck against object                                     | <input type="checkbox"/> Exposure to / or contact with harmful substances / radiation |
| <input type="checkbox"/> Struck by sliding, falling, flying or other moving object | <input type="checkbox"/> Exposure to / or contact with electric currents              |
| <input type="checkbox"/> Motor vehicle accident                                    | <input type="checkbox"/> Exposure to explosion                                        |
| <input type="checkbox"/> Caught in / or between object                             | <input type="checkbox"/> Drowning                                                     |
| <input type="checkbox"/> Fall or slip on same level                                | <input type="checkbox"/> Crush by moving / sliding object                             |
| <input type="checkbox"/> Fall from height                                          | <input type="checkbox"/> Needle stick / Needle prick                                  |
| <input type="checkbox"/> Injured while handling, lifting or carrying               | <input type="checkbox"/> Physical assault                                             |
| <input type="checkbox"/> Contact with extreme temperature                          |                                                                                       |
| <input type="checkbox"/> Others (please specify) _____                             |                                                                                       |

**WEHU A2 (cont'd)**

4. Agent involved in accident
- Machine / Electrical equipment
  - Lifting equipment
  - Transport equipment / Vehicle
  - Needles
  - Medical / Surgical / Dental instruments (other than needles)
  - Lab instruments
  - 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) \_\_\_\_\_

**Disposal of Clinical Waste**



## **COMMITTEE MEMBERS**

### **ORAL HEALTH DIVISION, MINISTRY OF HEALTH**

1. Dr. Zaini bt Mansor
2. Datin Dr. Nooral Zeila bt Junid
3. Dr. Christopher Vincent
4. Dr. Rusni bt Mohd Yusoff
5. Dr. Mohd. Rashid bin Baharon
6. Puan Seti Salmiah bt Abd Rahman
7. En Mohd Tohir bin Ibrahim
8. Puan Aziyah bt Ghazali

### **MALAYSIAN DENTAL COUNCIL**

1. Prof. Dr. Toh Chooi Gait
2. Prof. Dr. Zainal Ariff b. Abd. Rahman
3. Mej. (Dr.) Liana Ma Abdullah
4. Dr. Noraini Nun Nahar bt. Yunus
5. Dr. Yeo Kian Boon
6. Dr. Ahmad Sharifuddin b. Mohd. Asari
7. Dr. Elise Monerasinghe

### **REVIEWER**

1. Prof. Dato' Dr. Ishak bin Abdul Razak