



Republic of Namibia
Ministry of Health and Social Services

STANDARD GUIDELINES ON INFECTION PREVENTION CONTROL IN DENTAL SURGERY



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PREFACE

All blood and body fluids including contaminated saliva are potentially infectious and it is not always known whether a patient has a disease that can be transmitted via blood (WHO 2003). Based on this assumption, it is important that all patients should be treated equally and all presumed infected so that standard infection control is followed.

Standard precautions integrate and expand the elements of universal precautions into a standard of care designed to protect health care providers and patients from pathogens that can be spread by blood or any other body fluid, excretion, or secretion. Standard precautions apply to contact with blood, all body fluids, secretions, and excretions (except sweat) regardless of whether they contain blood on non intact skin and mucous membranes. Saliva has always been considered a potentially infectious material in dental infection control; thus no operational difference exists in clinical dental practice between universal precautions and standard precautions.

The sentinel survey report of 2006 shows that the HIV infection is still wide-spread throughout Namibia with the prevalence rate of 19.9% in 2006. In other words, most health care workers including oral health care workers are treating HIV positive patients in their clinical practice on a daily basis. Whether the status of these patients is known or not, it is of paramount importance that high precaution should be taken. It is documented that about 70% of early manifestation lesions of HIV/AIDS is found in the oral cavity hence proper infection control measures by dental personnel can prevent spread of infection even at early stage. There are other infectious diseases which can be contracted from the oral cavity including Tuberculosis, Hepatitis B and Hepatitis C. Serological surveys shows that between 2 to 7 of general population are Hepatitis B carriers and in some areas it may be as high as 18%(Naidoo 2010).

The purpose of this document is to provide guidance to all health officials in-charge of oral health facilities regarding the standard guidelines to be adopted by oral health care providers across the country. Strict standard infection control precautions should be implemented. This will protect health care workers and patients from occupational transmission of all known blood-borne infections such as Hepatitis B and HIV as well as airborne diseases like Tuberculosis (TB).



ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CMV	Cytomegalovirus
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
TB	Tuberculosis
WHO	World Health Organization
MoHSS	Ministry of Health and Social Services
HCW	Health Care Workers

Contents

1.	INTRODUCTION	5
1.1	Current Provision.....	5
1.2	Purpose.....	6
1.3	Objectives of the guideline.....	6
2.	STANDARD CROSS INFECTION CONTROL MEASURES	7
2.1	General principle of cross infection control in dental surgery.....	7
2.2	Specific principles of cross infection control.....	7
3.	PERSONAL PROTECTION	8
3.1	Immunization.....	8
3.2	Prevention of spread of blood-borne pathogens.....	8
	3.2.1 Personal protective equipment.....	8
3.3	Avoid sharp injuries.....	9
4.	ENVIRONMENTAL INFECTION CONTROL	10
4.1	Disinfection.....	10
4.2	Waste disposal.....	10
	4.2.1 Amalgam disposal.....	10
5.	INSTRUMENT DISINFECTION AND STERILIZATION	12
5.1	Disinfection of instruments.....	12
5.2	Sterilization.....	12
5.3	Storage of sterile items.....	13
6.	SPECIAL CONSIDERATIONS	14
6.1	Handling of a dental patient.....	14
6.2	Handling of extracted tooth.....	14
6.3	Handling of TB patients.....	14
6.4	Post Exposure Prophylaxis (PEP).....	15
6.5	Sterilization of Dental hand pieces.....	15
6.6	Air, water and suction lines.....	16
6.7	Dental prostheses.....	16
7.	GLOSSARY	17
8.	REFERENCES	18

1. INTRODUCTION

Dental patients and dental health care personnel can be exposed to pathogenic microorganisms including Human Immunodeficiency Virus (HIV), cytomegalovirus (CMV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), herpes simplex virus types 1 and 2, *Mycobacterium tuberculosis*, staphylococci, streptococci, and other viruses and bacteria that colonize or infect the oral cavity and respiratory tract. These organisms can be transmitted in dental settings through direct contact with blood, oral fluids and other patient materials or indirect contact with contaminated objects like instruments, equipment, or environmental surfaces. Another means of transmission is through contact of conjunctival, nasal, or oral mucosa with droplets containing microorganisms generated from an infected person and propelled a short distance by coughing, sneezing, or talking.

Infection through any of these routes requires that all of the following conditions be present:

- a pathogenic organism of sufficient virulence and in adequate numbers to cause disease;
- a reservoir or source that allows the pathogen to survive and multiply (e.g., blood);
- a mode of transmission from the source to the host;
- a portal of entry through which the pathogen can enter the host; and
- a susceptible host (i.e., one who is not immune).

Occurrence of these events provides the chain of infection (6). Effective infection-control strategies prevent disease transmission by interrupting one or more links in the chain.

1.1 Current Provision

All district dental clinics have the basic equipment necessary for infection control and some dental staffs have attended workshops on the same subject. During the supervisory visits to the regions, it was noted that there are no standard guidelines tailor made specifically for infection control in dental surgeries. As the result, each practitioner used his or her own method of cross infection control. This not only can endanger both the patients and the practitioners but also it leaves a loop hole for none compliancy on infection control. Nevertheless, the importance of strictly adhering to the standard infection control and conducting close monitoring of the routine dental services in regard to infection control cannot be overemphasized.

1.2 Purpose

The purpose of this document is to provide guidance to all health officials in – charge of oral health facilities regarding the standard guidelines to be adopted by oral health care providers across the country. It is aimed at addressing in detail the cross infection control in dental surgery with special consideration of dental surgery set-up.

1.3 Objectives of the guideline

- To standardize infection control procedures in oral health facilities.
- To break the circle of infection and eliminate cross-contamination.
- To protect patients and dental personnel from infections and their consequences.

2. STANDARD CROSS INFECTION CONTROL MEASURES

2.1 General principle of cross infection control in dental surgery

Although the physical setting of some clinics may be a limiting factor, the implementation of four handed dentistry is considered ideal and should be practised always. Four-handed dentistry is the cooperative action of the dentist and assistant to significantly enhance each other's overall productivity and effectiveness. This eliminates the double-handling of instruments, limits the zone of contamination, increases efficiency, reduces stress and fatigue, and improves the quality of dental care.

Instruments other than sharps should be transferred by an appropriate method. Four handed dentistry involves planning, organization and constant monitoring to ensure success. Leadership, planning, organization, communication skills are all part of management. Both clinicians and assistants should be trained in these techniques.

2.2 Specific principles of cross infection control

This section will focus on the specific Standard precautions on the following

- Personal protection (operator and patient)
- Environmental infection control
- Instruments disinfection and sterilization
- Special consideration of dental equipment

3. PERSONAL PROTECTION

3.1 Immunization

Dental Health Care Providers are at risk for exposure to, and possible infection with, infectious organisms. Immunizations substantially reduce both the number of dental health care provider susceptible to these diseases and the potential for disease transmission to other health care providers and patients.

As a preventative measure, it is imperative that all HCWs inclusive of students who come in contact with blood or other potentially contaminated body fluids receive the prophylactic Hepatitis B vaccine on commencement of employment.

A schedule of 3 doses at 0, 1 and 6 months is highly effective; it provides long term protection in most individuals.

No routine booster for HB vaccine at 5 years

3.2 Prevention of spread of blood-borne pathogens

This section is focusing on different methods for prevention of spread of infection from the patient to oral health care worker or vice versa. The methods are as follows:

3.2.1 Personal protective equipment

These are gadgets/equipment designed to protect the skin and the mucous membranes of the eyes, nose, and mouth of Oral health worker from exposure to blood or other potential infectious material. The oral health worker should follow the following instructions when attending to a dental patient.

- Use protective gowns or coat or apron while in dental surgery.
- Put on a surgical face mask and eye shield/ glass while conducting any dental procedure. Remember to change the mask as frequent as needed(if it is wet or contaminated).
- Hands must be checked for cuts or abrasions before putting on the gloves and lesions should be covered with a moisture resistant occlusive dressing.
- Operator should consider double gloves for complex dental procedures.
- Always wash your hands with the soap or detergent and dry them thoroughly before wearing the gloves, after removing the gloves, between patients and before leaving the surgery.

- Hands should not be washed in a sink which is used for either instrument cleaning or disposal of blood, body substances or chemicals.
- Always wear gloves when touching mucous membrane, blood, saliva or other potentially infectious material.
- Gloves should be changed between patients or when they are torn or punctured.
- Always wear correct gloves for specific procedure to be performed (surgical gloves for surgical procedure, examination gloves for patient examination and heavy duty gloves for cleaning and disinfection). Appropriate gloves in the correct size should be readily accessible.
- Wear double gloves when doing invasive/complicated procedures like disimpaction and Inter Maxillary Fixation (IMF).
- All protective clothing should be removed before leaving the working area.
- Keep your finger nails short and natural.

3.3 Avoid sharp injuries

This section focus on how to handle those instruments contaminated with body fluid which are sharp and can cut or puncture. The following measures should be followed to prevent sharp injuries (2010) MoHSS Infection Control Guidelines):

- When recapping the dental needle put the cap on the working surface pointing away and insert the needle.(Do not hold the cap).
- Pass sharps pointing away from anyone.
- Avoid picking up sharp instruments by hand (use holders).
- Use protable needle incinerator (needle-zap) if available to burn the dental needle before recapping.
- Dispose needles and other sharps in the sharp containers which should be at an arms length.
- Sharp container must be sealed and disposed off when not more than 2/3 full.
- Use double gloves when doing procedures like IMF.
- Wear sturdy utility gloved when cleaning the instruments to prevent cross infection and protect your self.

4. ENVIRONMENTAL INFECTION CONTROL

Environmental infection Control ensures that there are adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces like floors, dental chairs, chair side equipment, and other frequently touched working surfaces in a dental surgery, and ensure that these procedures are being followed. It also includes management of dental waste (disposal).

4.1 Disinfection

Disinfection is the process of destruction of pathogenic and other kinds of microorganisms by physical or chemical means. Disinfection is less lethal than sterilization, because it destroys the majority of recognized pathogenic microorganisms, but not necessarily all microbial forms (e.g., bacterial spores). Disinfection does not ensure the degree of safety associated with sterilization processes.

- Disinfect all the clinical contact surfaces (light handle, trolley, table, door locks, drawer handlers switches) with hypochlorite solution or alcohol 70% everyday in the morning and between patients.
- Disinfect the suction tube, hand piece tube and ultrasonic scaler with hypochlorite solution or alcohol 70% everyday in the morning and between patients.
- Or use disposable covers. This cover must be changed after every patient. Note: all regions should procure hand pieces which are autoclavable.
- Clean the spillage of blood on the floor immediately with sodium hypochlorite antiseptic. This should be done while wearing the gloves.

4.2 Waste disposal

Waste disposal entails proper disposition of a discarded or discharged materials in accordance with the local environmental guidelines or laws as follows:

- Each dental surgery must have a dust bin with a cover marked biohazard or disposable color coded refuse bag.
- All blood contaminated waste should be disposed in red refuse bag.
- The red refuse bag must be securely sealed.
- The waste bag should be disposed every day before closing the surgery.

4.2.1 Amalgam disposal

Although mercury in the form of dental amalgam is stable, amalgam should **not** be disposed of in the garbage, infectious waste “red bag,” sharps container or incinerated. Amalgam also should **not** be rinsed down the drain. Excess amalgam filling material, empty amalgam capsule and extracted tooth with amalgam filling should be collected in a tight bottle or container and handed over to be disposed with other pharmaceutical items. Dental amalgam waste can be recycled to help prevent the release of mercury to the environment. The good news is that amalgam waste, kept separate from other waste, can be safely recycled. The mercury can be recovered from amalgam wastes through a distillation process and reused in new products. There is a need to establish the system for amalgam recycling in the country.

5. INSTRUMENT DISINFECTION AND STERILIZATION

5.1 Disinfection of instruments

Chemical disinfection or sterilization of instruments should NOT be used in the dental surgery unless you have to. Instruments must be cleaned of debris by scrubbing with soap/detergent and water before disinfection. The following are antiseptics which can be used where there is NO any other means of sterilization of dental instruments.

- Glutaraldehyde 2% for a minimum of 10 hours
- Stabilized Hydrogen peroxide 6% for minimum of 6 hours
- Ethyl alcohol 70% for surface disinfection (not instruments)
- Isopropyl alcohol
- Chlorine
- Iodophores and iodine
- Phenolics
- Quaternary ammonium compounds

5.2 Sterilization

This is a process of destroying all microorganism and their spores and it is required for all instruments and equipment which will be used during surgical procedure or will come in contact with open wounds or sterile body sites. The following are steps on sterilization:

- All dental surgeries must have an autoclave/sterilizer.
- Instruments must be cleaned of debris by scrubbing with soap/detergent and water, then put in disinfectant Cidex (Glutaraldehyde).
- Use heavy duty gloves while cleaning the instruments.
- Rinse thoroughly with running water and dry the instruments.
- Wrap the instruments in sterilizing bag and put them in the autoclave following the manufacturer instructions.

NOTE: Cold sterilization is NOT recommended for routine sterilization in the dental surgery as it is time consuming and does not destroy all pathogens hence less efficient.

5.3 Storage of sterile items

After sterilization, the instruments should be stored in a designated area as follows:

- The storage area should contain enclosed storage for sterile items and disposable (single-use) items.
- Packages containing sterile supplies should be inspected before use to verify barrier integrity and dryness.
- Instruments must be repacked and resterilized if there is any sign of damage to the wrapping.

6. SPECIAL CONSIDERATIONS

6.1 Handling of a dental patient

A dental patient should **always** be attended by an operator (dentist/dental therapist) assisted by the dental assistant (**four handed dentistry**).

6.2 Handling of extracted tooth

- Extracted tooth should be handled like other blood contaminated materials and should not be given to the patients routinely.
- Should a patient insist to be given his/her tooth, make sure that it is wrapped well in gauze or any suitable cover to avoid blood contamination.

6.3 Handling of TB patients

- TB is uniquely hazardous to oral health care workers because of its airborne route of transmission. The magnitude of risk varies by setting. The possibility of a person exposed to TB becoming infected depends on the concentration of infectious droplet nuclei in the air and the duration of exposure to a person with infectious TB diseases. The generation of aerosol in modern dentistry is a recognized risk for transmission of infection which is droplet spread. Dental treatments involve lengthy processes hence expose the oral health care workers to the greater risk of contracting airborne infection. In addition, use of standard surgical face masks does not protect against TB transmission. The following precaution should be adhered to:
- As surgical masks do not offer any protection against potential TB -transmission, Oral HCWs should put on a personal respirator (N95) when conducting any dental procedure on a patient with a suspected or confirmed TB diagnosis, including drug-resistant tuberculosis.
- Educate all dental team members on recognizing signs and symptoms of TB as well as on how TB is transmitted.
- Assess each patient for history of TB as well as symptoms indicative of TB and document findings on the patient health passport.
- Separate and evaluate the patient known or suspected to have active TB.
- When a patient with active TB is being evaluated, the patient should wear a surgical mask and be instructed to observe strict respiratory hygiene and cough etiquette procedures (cover his/her mouth and nose when coughing or sneezing).

- Defer elective non-urgent dental treatment until the patient is confirmed to be non-infectious.
- In the event that a dental procedure on infectious TB cannot be postponed, such patients should be attended to last after all other patients have been seen. Fresh air should be allowed in the room to allow air mixing and removal of contaminated air.

6.4 Post Exposure Prophylaxis (PEP)

Should follow the national guidelines on post exposure prophylaxis which is readily available in all the districts.

6.5 Sterilization of Dental hand pieces

- Although there may be no documented cases of disease transmission associated with dental hand pieces, sterilization between patients with acceptable methods that ensure internal as well as external sterility is recommended. The inside lines of high speed hand pieces may become contaminated when patient fluids retract back through air- water opening. If the hand piece is not properly processed, the retracted fluids may enter the mouth of the next patient.
- Dental units manufactured after the middle 1980s have anti-retraction valves already installed. Since these valves fail periodically, retraction must be routinely checked and the valve replaced when necessary. Retraction is checked by observing the tip of the water line opening at the hand piece connection when the water is turned on and then off. If a drop of water 'hangs' on the tip, retraction is not occurring. If the water is drawn back into the line, the retraction is occurring,
- For proper sterilization of hand piece, the manufacturer's instructions must be followed. First, the hand piece should be flushed with water by running it for 20 to 30 seconds, discharging the water into a sink or container.
- If recommended by the manufacturer, use ultrasonic cleaner to remove any adherent material, otherwise, it should be scrubbed thoroughly with a detergent and hot water.
- Lubricate high speed hand pieces when indicated by the manufacturer and spray out excess lubricant. Depending upon the hand piece, some must be lubricated before, after, or before and after sterilization or not at all. Package for sterilization in steam or unsaturated chemical vapor should be sterilized by following the manufacturer's directions. If disinfecting a hand piece that cannot be heat-sterilized, spray or saturate with disinfectant recommended by the manufacturer.

6.6 Air, water and suction lines

Suction lines should be non-convoluted with a flat bore and not covered with woven fabric. Air and water lines should be flushed for a minimum of 2 minutes at the start of the day and for 20-30 seconds between patients.

6.7 Dental prostheses

Dental prostheses or impressions brought into the laboratory can be contaminated with bacteria, viruses, and fungi. Dental prostheses, impressions, orthodontic appliances, and other prosthodontic materials (e.g. occlusal rims, temporary prostheses, bite registrations, or extracted teeth) should be thoroughly cleaned of blood and other bioburden, disinfected with chlorhexidine and thoroughly rinsed before being handled in the laboratory or sent to an off-site laboratory.

The best time to clean and disinfect impressions, prostheses, or appliances is as soon as possible after removal from the patient's mouth before drying of blood or other bioburden can occur.

7. GLOSSARY

Sterilization: Elimination of all microorganisms (Viral, bacterial and fungal) through heat, using an autoclave, steam or other appropriate methods

Antiseptic: A substance for dermal application to kill microorganisms or to prevent the growth of microorganisms

Disinfectant: A chemical which destroys or removes microorganisms but not bacteria spore. It is used to clean surgical instruments, equipment, surfaces or furniture

Infection: Invasion or multiplication of harmful microorganism in body tissue

Prophylaxis: The means to prevent diseases

Contamination: Presence of infectious agent in blood and other body fluids, on body surfaces and medical equipment

Bioburden: Microbiological load (i.e., number of viable organisms in or on an object or surface) or organic material on a surface or object before decontamination, or sterilization. Also known as bioload or microbial load

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

Four handed dentistry: is the cooperative action of the dentist/therapist and assistant to significantly enhance each other's overall productivity and effectiveness

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Notes:

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