



## Infection Control for Dental Clinics

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### Abstract

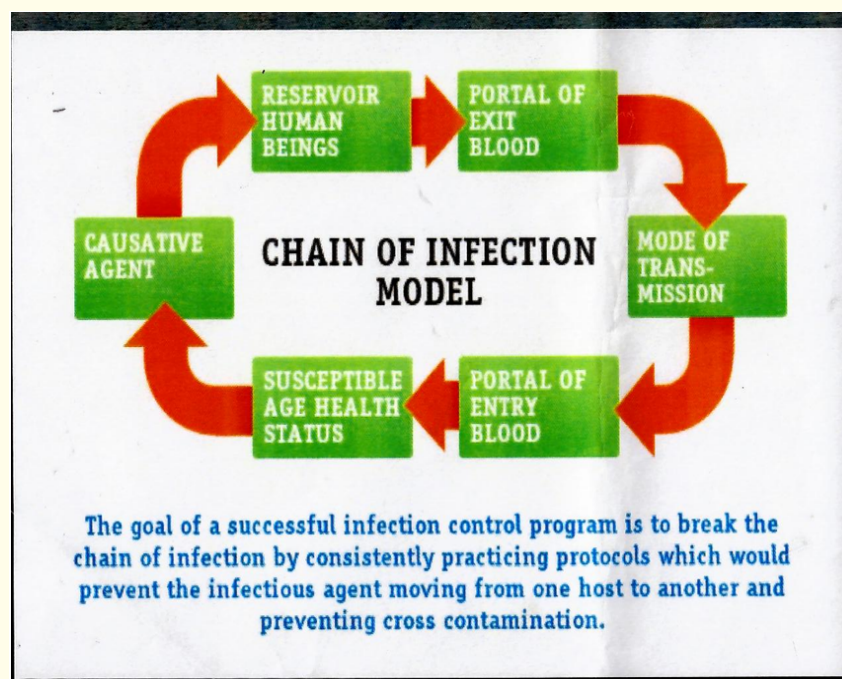
The control of transmission of infectious diseases and the safety of dental clinics are becoming increasingly important issues to dental health professionals and for which regularly procedures to protect both patients and dental team have been issues.

These guidelines will undoubtedly through interaction of the entire dental team lead to the successful prevention of the spread of disease and proper management of hazardous and waste materials.

To provide safe dental health services infection control in the dental clinic has been given special attention. the purpose of the manual is to provide basic concepts, specific - step- by step procedures and regulating mandates related to infection control in the dental clinic. the use of protective barriers, processing of contaminated instruments, surface asepsis, aseptic techniques, immunization and waste management are clearly outline.

All dental personnel have great deal in organizing and maintaining dental clinic safety programs. I therefore urge all users of this manual to apply the procedures used for infection control and dental clinic safety which require understanding basic concepts needed to respond to future changes and keep pace with the rapidly evolving developments in this field.

**Keywords:** Infection Control; Dental Clinics



Figure

## Introduction

Infection control is one of the most dynamic and important areas in dentistry. As new issues of concern are raised such as HIV, HBV, HCV innovative techniques are being developed to address these concerns and ensure that dental treatment remains safe and effective for all patients and staff.

In the dental clinic nothing has higher priority than infection control, our goal is to achieve protection of the health of the patients and staff at the same time of comply with applicable regulations governing infection control, job safety and management regulated medical waste.

To achieve this we follow rigorous protocols of sterilization, disinfection and infection control. Most items used in the mouth of patients are disposal, those instruments that are reusable are properly cleaned and sterilized. A complete monitoring program including physical, chemical, and biological monitoring is applied in order to achieve sterility assurance.

Our goal is to exceed what is expected from us. because we work meticulously with individuals and do not run a volume clinic.

Achieving this goal needs initial, annual and update training for dental personnel on dental infection control.

## Hand washing and care of hands

Hand washing is the most and the first important procedure in preventing spread of infection, it reduces the risk of transmission of diseases if it is a suitable method of hand washing [1].

## Infection control committee in school of dental medicine categorized hands care into:

### Hands Washing [2]:

- **Routine Hands Washing:** Using non - medicated soap to decrease transient microorganisms which is acquired from the patient. It has to be done whenever staff needed, particularly at the beginning of duty, after contact with the patient, before eating, after using of toilet...etc.
- **Antiseptic Hand Washing:** Using providing - Iodine 7.5% or chlorhexidine 4% (hibiscrub) or non - medicated soap followed by Alcohol rub (Figure 1).



Figure 1



**Wearing of Gloves:** Gloves can be latex sterilized for surgical procedure uses or latex not sterilized for examination procedure and other staff activity inside the dental clinic. Other kind of gloves which is not disposable and thick enough for washing sharp instrument inside CSSD. (A water - proof dressing is used for damaged skin).

**Nails are kept Short and Clean**

**Protective attire and barrier technique**

- 1. **Gloves:** The staff should be wearing gloves before any contact of patients or spoiled items and protective gloves non - disposable is used insides CSSD for washing instruments.

- 2. **Masks:** Disposable surgical and non - surgical mask is being used by staff whenever contact with any procedure to the patient to avoid spatter and they are changed after each patient [3].
- 3. **Protective eye wear:** If there is uncontrolled splash or blood or mucus a face shield or goggles is being used. And disinfected by Cidex after using [4] (Figure 2).

**Protective Eye Wear:** In spite of wearing lab coat a disposable water - proof gown is used for protection of splashes and this gown changed daily. For surgical procedure, a disposable surgical gown is worn and it is disposed after finishing of the procedure or surgery.



Figure 2

**Disposable sheath:** Plastic disposable sheath or aluminum paper is used to protect or cover hand pieces and air- water syringe and over-head light (Figure 3).

**Using of dental dam:** PAnd high volume evacuation of minimize the amount of potentially contaminated splash\* 1.

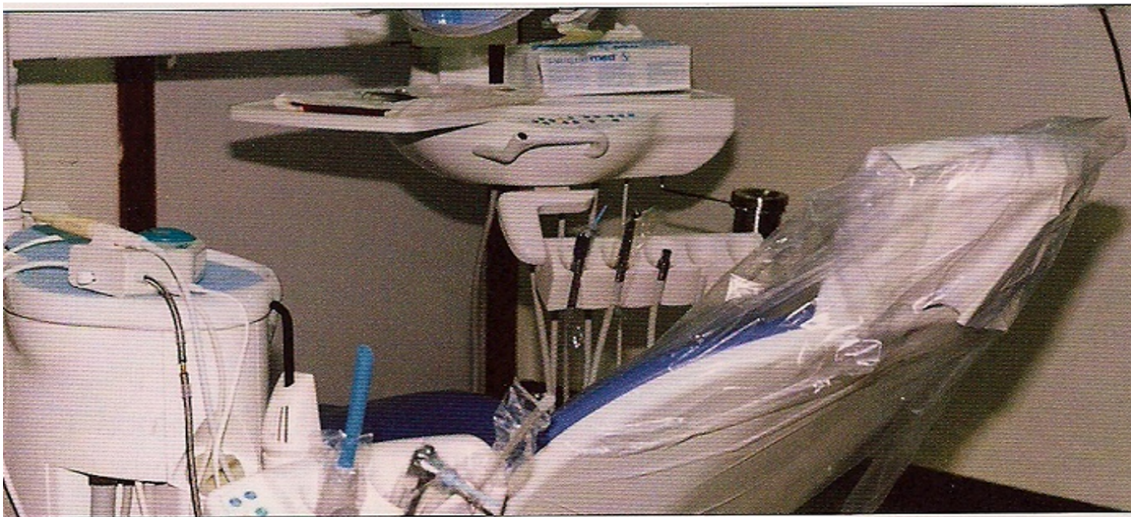


Figure 3



\*1 MMWR, JUNE 7, 1996 update: provisional public Health Service Recommendations for Chemoprophylaxis After Occupational Exposure to HIV.

### Waste disposal

Any sharp disposable dental instrument like needles, scalpel blades, wires used for any patient are discarded directly into special sharp container which is an impermeable container designed only for this reason (Figure 4).

**Note:** Any accident needle stick or sharp injury happen, the bleeding at the site of puncture encouraged without squeezing, an accident report is supplied directly to the manager or nurse in charge for follow up and patient history is reviewed as a dental school policy.

**Medical Waste:** All solid contaminated waste of blood body patient secretion are discarded into yellow bag  $\frac{3}{4}$  capacity then it is sealed and the policy of double bagging technique is performed.



Figure 4

**Non-Medical Waste:** All other non-contaminated waste are disposed into black  $\frac{3}{4}$  capacity (Figure 5).

### Sterilization and disinfections

The aim of this process is either decreasing the microorganism acquired from the patient i.e. disinfections or killing and



Figure 5



diminishing any organisms present on the instrument or items i.e. sterilization.

**Cleaning:** Process of decontamination that reduces the number of organisms present on the instrument by using non - medicated

soap or disinfectant solution. ultrasonic solution is used in covered ultrasonic device for (10 - 15) minutes.

All instruments either critical or non - critical are cleaned in ultrasonic solution (Figure 6).



Figure 6

Spoiled instruments of HBV or HIV or *Mycobacterium tuberculosis* are soaked Glutaraldehyde solution 2% (cidex) for 10 hours before cleaning with ultrasonic solution.

Brushing, soap, detergent and polishing instruments are used before next step.

#### Hand - pieces sterilization

##### Hand - pieces are sterilized and disinfected as follow:

1. Cleaning and washing thoroughly with soap and water using brush.
2. Cleaning with ultrasonic cleaners as instruction of manufacturers.
3. Using of assistina device which has two way mixing oil and disinfectant solution by the aid of air pressure (Figure 7).

4. Sterilization under pressure steam autoclave.
5. Drying phase the oven.
6. Before using the line of the unit is flushed for(20-30) second for physical out patient's material that may inter the tube line despite the use of antiseptic pipe and line solution.

**After finishing the cleaning:** Of all critical and non-critical instrument, they are washed under running water thoroughly then dried and packaged by sterilization bag or tray. Date and name of the staff who did the procedure has to be written on the package.

**Use of steam under pressure sterilizer** (steam - autoclave): All critical and non - critical instruments after packaging are sterilized by steam autoclave with different cycles depending on the manufacturer instructions of the instruments (Figure 8).





Figure 7



Figure 8



### Steam autoclave functioning is monitored by two ways:

1. Chemical indicators: Which are sensitive to heat by changing color.
2. Biological indicators: Spore test that checked after incubation of two days from steam sterilizing whether bacterial growth is there or not [5] (Figure 9).



Figure 9

These two measures are filed into infection control monitor book for reference.

**Heat sterilizer (oven):** Oven only used for the aim of drying, not for sterilizing in ADC.

### Delivery to the clinic

**\*\*Note:** Dental instruments are classified as:

- **Critical:** surgical and other instruments used to penetrate tissue or bone. These includes forceps, scalpels, bone chisels, scalers and burs.
- **Semi - critical:** such as mirror and amalgam condensers that do not penetrate soft tissues or bone but contact oral tissue.
- **Non- critical:** instruments or medical devices such as external components of x-ray head heads come into contact only with intact skin [6].

### Cleaning and disinfection of dental unit and environmental surfaces

**Using of germicidal wiping:** After each procedure to the patient

and between patients, all top counter surface, dental unit surfaces, air - water syringe and external surface of lines are decontaminated and disinfected by germicidal non- volatile wipes for wide spectrum bacterial, tuberculin and HBV (Figure 10).

Floor is cleaned disinfected regularly three times per shift and on need by certain detergent contains sodium hypochloride.

### Dental unit pipe, lines and suction

Dental unit pipe and lines are disinfected by disinfectant solution regularly three times per shift and in surgical clinic after each surgery (Figure 11).

Suction lines are cleaned and disinfected by using hypo chloride sodium, dilution (1:100) or ¼ cup of bleach to 1 gallon of water.

**Using of plastic cover or sheath on head light, air:** water syringe and chair which is disposed after each patient (aluminum paper may be used).





Figure 10



Figure 11

#### Disinfection in the dental laboratory

- All impressions and intra oral appliances are cleaned and disinfected before sending to the lab by (1:10) sodium hypo chloride solution.
- All items comes from our dental laboratory such as prosthesis, orthodontic appliances are disinfected and cleaned thoroughly by soap and water.
- Any spoiled instrument with blood or patient secretion are sent to CSSD



- All lab staff wear protective Attire like gown, gloves and eye wear as needed [7-10].

### Vaccination

All staff members either who have direct or indirect contact with patients received all doses of hepatitis vaccine free of charge delivered from ministry of health [4,11].

### Single use disposable instruments

For each dental clinic four examination sets should be distributed for any known case of HBV or HIV patient carrier. these instruments are discarded after single use in the sharps disposal container.

### Continuous education

Seminars and article presentation are regularly set to increase level of awareness to the staff and for the aim of continuous education, increasing level of skills concerning infection control measures.

Concerning education, any extracted teeth that are reserved for the aim of study should be handled with care using all previous infection control measures.

### Conclusion

Because of the constantly changing nature of the infection control in the Dental Health Care, it is important that accurate and timely guidance about infection control practices have to be imparted to dental health care providers.

Representing the Dental Service on the Infection Control Committee. Ensuring initial, annual, and update training for standard dental infection control.

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