

INFECTION CONTROL IN THE DENTAL LABORATORY

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Introduction

Dental laboratory personnel are exposed to microorganisms carried through materials (impressions, prosthetic and orthodontic appliances) sent in the dental laboratory from the dental surgery. These materials originate from unknown patients who may carry infectious diseases. Hence such materials should be considered as potentially infectious.

It is the responsibility of the dentist to make sure that all items sent to the dental laboratory are cleaned and disinfected. If material from the dental surgery arrives at the laboratory in a dirty state, the laboratory technician has to execute precautions to avoid transmission of microorganisms from this dirty material to laboratory personnel.

Dental laboratory routine procedures were established many years ago. With new knowledge and technical developments available in the field of dentistry and with the emergence of new infectious diseases, old routine measures have to be substituted by new routine measures or at least the old routine should be modified in order to achieve an appropriate level of cross-infection control in the dental laboratory. The present review deals with the risks of infection and proposes measures to prevent transmission of diseases in the dental laboratory.

Transmission of pathogens

Pathogens on impressions and dental appliances from the patient can easily be transferred to:

1. The respiratory tract, eyes and in existing or accidental lesions in the skin of the laboratory technician.
2. Instruments in the dental laboratory which may then be a source of spreading pathogens.
3. Stone casts, through which transmission of pathogens may occur.
4. The laboratory environment eg. tables and working surfaces.

Precautions to be taken in the dental surgery

Before sending any item to the dental laboratory the following procedures are suggested: Complete and partial dentures, removable or fixed and orthodontic appliances that have been in patient's mouth and which have to be repaired or adjusted should be:

1. rinsed under running water to remove saliva and blood.
2. and then be wrapped in paper towel or a napkin impregnated with a disinfectant (Table 1).
3. and placed in a (sealed) plastic bag for mailing to the dental laboratory.

Table 1. Disinfection of prosthetic and orthodontic appliances

Disinfectant	Exposure time	Draw back
Sodiumhypochlorite 0.5%	20 minutes	Corrosive to metal
Glutaraldehyde 2%	20 minutes	Should not be used with acrylic. Difficult to remove residues from the appliance by rinsing with water. Residue may cause tissue irritation
Savlon 3.3% in 70% alcohol	20 minutes	-
Chlorhexidine 0.5% in 70% alcohol	20 minutes	-
Iodophors	20 minutes	Used in the form of spray which is currently not available in Tanzania

From literature (1-4).

Impressions should be:

1. rinsed under running water to remove saliva and blood.
- 2.1 In case the impression is to be casted in the surgery, the impression should be soaked in disinfectant for 20 minutes (Table 2) and then rinsed again to remove residue disinfectant before casting.
- 2.2 In case the impression will be casted in the dental laboratory it must be wrapped in a paper towel or napkin impregnated with a disinfectant (Table 2).
3. and placed in a (sealed) plastic bag for mailing to the dental laboratory.

Precautions to be taken in the dental laboratory

All incoming material from dental surgeries should be unpacked on an allocated place in the laboratory by a technician who is specially in charge to deal with incoming material. This technician should wear gloves since he is exposed to probably infected material.

The following procedures must be carried out:

1. Material which has been well prepared for infection control in the dental surgery must be unpacked and then rinsed under running water to remove residue of disinfectant which may cause tissue irritations or produce poor detail on the cast surface.
2. Material which has not been well prepared for infection control in the dental surgery must undergo the procedures mentioned under 'Precautions to be taken in the dental surgery'. The responsible technician in charge has to carry out this routine before

any further processing of the material in the dental laboratory.

3. Incoming packing material from dental surgeries must be discarded.

Barrier protection of the dental laboratory personnel

Dental laboratory personnel should practice good personal hygiene:

1. They should wear uniforms which are regularly washed.
2. They should refrain from touching their mouth, nose and eyes during working.
3. They should not consume drinks and food in the laboratory.
4. They should wash their hands regularly.
5. They should use protective eye wear and face mask during polishing, trimming and grinding procedures to avoid injuries and irritations on eyes, skin and throat caused by the material.
6. Cuts and sores on the skin should always be covered.

Aseptic measures in the dental laboratory

The receipt bench being the most contaminated place in the laboratory must be cleaned and disinfected regularly during the day. A surface disinfectant eg. sodiumhypochlorite 0.1%, chlorhexidine 0.5% in 70% alcohol, savlon 3.3% in 70% alcohol or iodophor solution can be applied for that purpose (4). Clean the surface first with water and soap and then apply the disinfectant with a paper towel. Wear heavy duty gloves during cleaning and disinfecting.

The floor of the laboratory must be mopped

Table 2. Disinfection of alginate and elastomeric impressions

Disinfectant	Exposure time	Draw back
Sodiumhypochlorite 0.5%	20 minutes	Longer exposure time may cause dimensional changes
Glutaraldehyde 2%	20 minutes	Longer exposure time may cause dimensional changes
Iodophors spray	20 minutes	not available in Tanzania
Chlorhexidine 0.5% in 70% alcohol	20 minutes	Inadequate information regarding dimensional changes
Savlon 3.3% in 70%alcohol	20 minutes	Inadequate information regarding dimensional changes

From literature (1-4).

daily with water and soap or with a lysol solution (4).

Polishing and grinding should be performed under a suction system to minimize creation of dust in the laboratory.

References

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