TOPIC 8: 
DENTAL LABORATORY HYGIENE

Introduction

Now that we have learned about Universal/Standard Precautions and NHMRC guidelines, we are going to learn how to put these into practice in a dental laboratory.

Laboratory Design

All materials transported into and out of the dental laboratory should be decontaminated, disinfected and placed into a sealed container.

The method of disinfection should be noted on the lab sheet.

Receiving Area

Standard precautions should apply when handling dental materials.

An area should be set aside to receive incoming jobs. Check lab sheet for any decontamination process. When opening work, gloves, mask, glasses and apron should be worn. If required, impressions or jobs need to be decontaminated and disinfected. The procedure involves:

1. Rinse job under running water
2. Apply detergent (neutral detergent) and leave. Soak for 1 minute.
3. Rinse again under running water.
OR

1. Rinse job under running water.
2. Immerse in 1:10 sodium hypochlorite (miltons).
3. Rinse again under running water.

All packing materials and waste should be discarded. Re-usable containers should be cleaned and disinfected. The receiving area should be cleaned with detergent between cases.

Working Areas

Jobs which have already been inserted into the mouth require special attention e.g. wax bites, try-ins, metal copings, repairs. Any instruments or materials which have been into contact with jobs need to be cleaned and disinfected.

Other features to be considered

- Sufficient space – there needs to be enough to divide the lab into specific work areas e.g. work areas, receiving areas, wet areas etc.

- Adequate water – there needs to be an adequate water supply, with preferably automatically operating taps.

- Natural light.

- Ventilation – according to NHMRC recommendations, there should be a constant inflow of fresh air. Also, air conditioners, which can harbour dangerous micro-organisms, need to be regularly cleaned.

- Covered bins – for the receiving of waste material.

- Impervious flooring – floors should be covered in impervious, moisture resistant material, such as continuous vinyl.

- Workbench areas should be of a similar quality. That is hard, smooth and easy to clean. Stainless steel is a good choice.
• All fixtures and fittings should be designed to allow for easy cleaning and to discourage the accumulation of dust.

• If possible, separate or individual work areas within the laboratory could be partitioned into compartments – this would “localise” any potential harmful situation – both a hygiene and safety consideration.

• The plaster trap should be inspected and cleaned as often as is necessary. You will recall from the section on disinfecting of incoming work, that a great deal of potentially contaminated material gets washed down the sink. If the sink is fitted with a plaster trap, then this contaminated material ends up either in or passing through the trap. Therefore, when cleaning a plaster trap, great care has to be taken, with special attention given to the wearing of barrier clothing and post-cleaning disinfection.

• If possible, it would be good design practice to have a separate utility or equipment room that housed air compressors, suction and ventilation motors.

• Separate areas for staff changing rooms should be available. Separate hanging or storage space should be provided for laboratory wear and street wear.

• Food and eating areas must be separate from the changing room.

Staff Preventive Measures

For any infection control or safety policy in a work place to be effective, it is of utmost importance that the staff works towards achieving the goals of the policy. That means that all members of staff must be committed to working in an infection free and safe working environment. This can be achieved in a number of ways:

• Personal hygiene – staff should be encourage by management and each other to maintain high standards of personal hygiene and health.
- Staff training – there should be an ongoing program of staff training in matters relating to health and safety, it is as important as training in the use of equipment and techniques.

- Staff should have a perfect understanding of what is required of them to see that cross-contamination is minimised and that the workplace is safe.

- The employer should ensure that all necessary safety equipment and barrier clothing is supplied to staff, and that it is used properly.

- Staff should not eat or smoke at work benches.

- It should be encouraged that all staff be inoculated against Hep B and influenza.

**Activity 8.1**

**Question 1:**

How can you, as a dental technician, aid infection control in a laboratory?

**Sterilising and control measures**

Because infection control generally requires either the use of heat (autoclave) or chemicals, this places restrictions on how certain materials and instruments can be treated.

Do you remember the principles of Universal/Standard precautions? (Read them again!). Dental impressions are contaminated with saliva and sometimes blood. Dentures are usually “tried-in” in the process of their construction and thus travel from laboratory to clinic and back again. Dentures requiring laboratory repairs are often grossly contaminated. All of these items are potentially infectious and must be disinfected or sterilised before handling in the laboratory.
**Dental Impressions**

Immersion, spraying and short-term submission have all been recommended for disinfection of impressions. A suggested technique for impression disinfection is as follows:

1. All food, mucous, visible blood to be rinsed off under running water.

2. Spray with neutral detergent and leave for 1 minute

OR

Soak for 2 minutes in 1:10 sodium hypochlorite solution.

3. Rinse again under running water.

Impressions should not be dried with an ‘air-blast’ as this creates an ‘aerosol’ effect of possible micro-organism spread. Of course, gloves, mask, apron and glasses should be worn during this procedure. The solution being used to disinfect should be kept fresh and in an enclosed container.

Acrylic dentures can be disinfected by the methods described previously for impressions, however it is recommended that soaking time in hypochlorite be kept to a minimum owing to the absorption of the acrylic. Before being sent back to the clinic or dental surgery, the denture should be thoroughly rinsed in water.

Cast cobalt-chrome dentures should not be exposed to hypochlorite because of the corrosive effect on the metal. Instead, a neutral detergent should be used. Wax bites, rims and custom trays should be disinfected by the rinse, spray, rinse technique with neutral detergent, or 1:10 hypochlorite.

It is recommended that gypsum products (casts) be disinfected by spraying until wet with neutral detergent, or short-term dunking in hypochlorite.
Other items

We have just covered materials used in impressions, bites, try-ins and finished dentures. Other items that could require sterilising could be:

- Spatulas
- Wax knives and carvers
- Tweezers
- Face-bow parts

Generally, the basic rule of thumb is that anything that can be heat sterilised must be, and anything that cannot, must be chemically treated.

Polishing

All polishing of acrylic dentures should be done with single dose pumice, which is wet with hypochlorite solution, and then discarded after use. The mops are disinfected between uses.

Common Dental Laboratory Items to be Disinfected or Sterilised

Clean and Heat Sterilise

- All burs
- Bristle brushes (not plastic centred)
- Articulator mounting plates (metal only)
- Face bow fork
- Metal handled spatulas
- Stock metal impression trays
- Rag wheels (not plastic centred)
Clean and Chemically Disinfect

- Articulator
- Casts
- Wax knives (wooden handled)
- Mixing bowls
- Mixing spatulas (wooden or plastic handled)
- Mould and shade guides
- Impressions
- Bites, processed bases, dentures (including repairs)

Activity 8.2

During a laboratory walk through, make a list of the items you can see that would be:

a) heat sterilised

a) chemically treated (disinfected)