BASIC GUIDE TO DENTAL INSTRUMENTS
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Second Edition

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To my dear husband, Padraig, and sweet daughter, Abigail,
for all of their love and support.
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As the dental profession evolves, there is an increasing demand for supplementary material that can keep up with advancing trends. ‘Hands on’ practical experience is essential for anyone in the dental profession, and this needs to be supplemented with written information to reinforce our practical experiences.

This illustrated manual has been prepared for students working and studying in the dental profession. It may be used as a study aid or kept in the dental surgery as a reference guide. This manual is intended to complement other methods of learning, i.e. textbooks, lecture notes, etc., and is not meant to be a comprehensive resource.

Because many dental instruments look similar, and can be confusing to a student, the ‘false friends’ sub-sections identify instruments that may resemble the particular instrument. This manual is not intended to be a complete representation of all dental instruments, but it does include examples from each dental discipline. As many dental instruments are multi-functional and are referred to by more than one name, where possible, these are given beside the name of the instrument. Complete set-ups have been included at the end of most sections for various procedures. The dental professional may have to modify these lists depending on the operator’s preference.

Each section is dedicated to a specific discipline or division of dentistry. Some instruments feature in many sections, and these have been included in the set-up sub-sections of the relevant sections. Infection control is a fundamental requirement in the dental surgery, and as such the first section is dedicated to this area. This section aims to introduce the principles of health and safety, which must always be at the forefront of a dental professional’s mind. Contact the legislative bodies for appropriate regulations and legislation relevant to your workplace.

The instruments in this guide are not to scale, and during photography some colours may have been altered.
SECTION 1

INFECTION CONTROL IN THE DENTAL SURGERY

It is the responsibility of the dental team to ensure that the appropriate and correct procedures are carried out in relation to infection control to protect the patients, the public and themselves.
Figure 1.1

INFECTION CONTROL IN THE DENTAL SURGERY
PROTECTIVE WEAR

FIGURE 1.1a, b, c

Name
(a) Mask (b) Safety glasses (c) Face shields

Function, precautions and directions for use
• To protect the dental team from micro-organisms, debris, splatter and chemicals
• A mask is worn to protect the mucous membranes of the nose and mouth. It filters out small particles
  • Should always be changed between each patient or before if it is visibly soiled
  • Should be worn during patient care, sterilisation, disinfection, cleaning procedures and during laboratory work
• Safety glasses and/or face shields are worn to protect the mucous membranes of the eyes
  • Should be disinfected between patients
  • A face shield can be used instead of safety glasses, but a mask must still be worn
  • Should be large enough to cover the eye area completely and provide protection from the top and side. With some safety glasses additional top and side shields have to be added to be used for this purpose
• Safety glasses are available to fit over prescription eye wear
• Must be shatterproof

Varieties
Different types of masks and glasses available
4 Basic Guide to Dental Instruments

Figure 1.2

Figure 1.3
**FIGURE 1.2**

**Name**
Protective gloves

**Function and directions for use**
- To protect the dental team from direct contact with micro-organisms, debris, splatter and chemicals
- Worn during patient care when coming in contact with contaminated objects and chemicals, and when working intra- orally
- Always change between patients
- Do not wash gloves
- Replace damaged and ripped gloves immediately
- Always wash and dry hands thoroughly prior to donning gloves
- It is important to make sure gloves fit properly

**Varieties**
- Made from many different materials, i.e. latex, vinyl and nitrile
- Available packaged as sterile surgical gloves
- Rubber utility gloves/heavy duty gloves are used during sterilisation procedures

**WORK SURFACES**

**FIGURE 1.3a, b**

**Name**
Non-permeable barriers

**Function and features**
- Used to cover surfaces to prevent contamination
- Must be impermeable
- Single use; to be disposed of in the contaminated waste

**Varieties**
Many different types and sizes available
ITEMS USED FOR IDENTIFICATION AND ORGANISATION DURING STERILISATION

FIGURE 1.4

Name
Coloured identification rings

Function and feature
- Used to organise and identify instruments
- Autoclavable

Varieties
- Many different types and sizes available
- Coloured autoclavable tape can also be used

FIGURE 1.5a, b, c

Name
Instrument cassettes

Function(s)
- Used to organise and identify instruments during sterilisation and disinfection
- Can double as an instrument tray during procedures

Varieties
Many different types and sizes available, including plastic and metal types

Figure 1.5 (Continued)
INFECTION CONTROL IN THE DENTAL SURGERY

Figure 1.6

(a) (b)

Figure 1.7

Figure 1.8
FIGURE 1.6

Name
Autoclave tape

Function and features
- Used to secure instrument wrap or pouches prior to sterilisation
- Will change colour once exposed to a certain temperature, but this does not indicate whether sterilisation has occurred
- Can be written on to indicate the contents of the package

Varieties
Many different types and sizes available

FIGURE 1.7a, b

Name
Sterilisation pouch

Functions and features
- Used to wrap instruments prior to sterilisation
- Aids in organisation of instruments
- One side may be transparent to allow for viewing of the pouch contents (Figure 1.7a, b)
- Coloured markings indicate that a certain temperature has been reached during the sterilisation cycle
- Instruments will remain sterile in pouch until it is punctured or opened

Varieties
Many different types and sizes available

STERILISATION EQUIPMENT

FIGURE 1.8

Name
Autoclave

Function and directions for use
- Uses steam under high pressure to achieve sterilisation
- Follow manufacturer’s directions for use
- Consult local legislation and guidelines in regard to appropriate sterilisation procedures

Varieties
Many different types and sizes available
Figure 1.9

Figure 1.10
MANUAL CLEANING AIDS

FIGURE 1.9

Name
Bottle brushes

Functions, features and precautions
- Manual cleaning is never recommended except when ultrasonic cleaning is not effective in removing debris
- Used along with a soapy cleaner to remove debris prior to sterilisation
- Allows cleaning inside suction tubes
- Long handle allows a greater distance between the operator and the contaminated object
- Should always be used submersed in water to reduce splatter
- Always wear heavy duty utility gloves while using bottle brushes

Varieties
Many different types and sizes available

FIGURE 1.10a, b

Name
Bur brushes

Function and precautions
- Manual cleaning is only recommended when ultrasonic cleaning is not effective in removing debris
- Used along with cleaner to remove debris prior to sterilisation
- Allows for the cleaning of burs with small, hard-to-clean flutes
- Always wear rubber utility gloves/heavy duty gloves while using bur brushes

Varieties
Many different types and sizes available
Figure 1.11

Figure 1.12
FIGURE 1.11

**Name**
Ultrasonic cleaner

**Function(s) and directions for use**
- Used along with a soapy cleaner
- Uses sound waves to reduce bioburden and debris from instruments prior to sterilisation
- Follow manufacturer’s instructions for solution types and length of time needed for cleaning

**Varieties**
Many different types and sizes available

FIGURE 1.12

**Name**
Assistina

**Function(s) and directions for use**
- Uses air to run cleaning fluid solution and oil through handpieces
- Used to expel debris from handpieces
- Plastic cover over handpiece attachment is used to reduce aerosol
- Follow manufacturer’s instructions for use

**Varieties**
Many different types available
Radiographs are important tools in the diagnosing of dental disease. There are many types of radiographs available, all of which are used for different purposes. There are two main types of dental radiographic films: intra-oral and extra-oral.
Film holder and X-ray tube placed in position to expose an anterior peri-apical radiograph

**Figure 2.1**

X-ray unit tube head

XCP film holder

Thyroid collar

Lead apron

**Figure 2.2**
Dental Radiography

FIGURE 2.1a, b

Name
(a) Intra-oral X-ray machine (b) Extra-oral X-ray machine

Functions
- Intra-oral X-ray machines are used for exposing occlusal, peri-apical and bite-wing radiographs
- Extra-oral X-ray machines are used for exposing panoramic/OPG (orthopantomograph) radiographs and cephalometric radiographs

Varieties
Machines from different manufacturers may vary in design

FIGURE 2.2

Name
Lead apron and thyroid collar

Function and precautions
- A lead apron and thyroid collar must be used to protect the patient from radiation during X-ray procedures
- The lead apron is used with a thyroid collar that must cover the radio-sensitive tissues (from the thyroid downwards and including the lap area)
- The lead apron must be hung up, not folded because folding the apron will cause the lead inside to crack, causing radiation to pass through

Varieties
Different styles available from various manufacturers
Figure 2.3

Figure 2.4