

Infection Control

Lec. 14

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An infectious disease is an illness caused due to a particular infectious (biological) agent or its toxic products which are capable of being directly or indirectly spread from man to man, from animal to man, from animal to animal, or from the environment

(Through air, water, food, etc...) to man.

- **Invasion is the process in which micro-organism enter the host cell**
- **Virulence is the ability of an agent (micro-organisms) to cause disease after it has invaded the host.**

The acquisition means of pathogens

- Direct contacts: skin to skin or skin to mucous membrane
- Indirect contact: droplets or body secretions
- Air born mechanisms: inhalation of pathogens
- Vehicle borne mechanisms: contaminated food, water, drugs
- Vectors: animals or insects

Transmission of infectious diseases

- Transmission of infection from infected patient to dental health workers
- Transmission of infection from infected workers to the general public.
- Transmission of infection from infected patient to another.

The chain of infection

- Virulence
- Number of micro-organism
- Susceptible host
- Portal of entry

The common infectious conditions

- Dental patients and Dental Health care Workers may be exposed to a variety of micro-organisms via blood or oral or respiratory secretion

*** Including:**

- 1- Viral hepatitis: hepatitis B&C are the more prevalent to dental health workers
- 2- Herpes virus infections: herpes simplex is the more prevalent to dental health workers
- 3- Syphilis
- 4- Acquired Immune Deficiency (AIDS) caused by human immunodeficiency virus HIV
- 5- Tuberculosis (TB) caused by bacteria (*Mycobacterium tuberculosis*)

Control of infectious disease

The effective procedures of infection control are designed to kill or to protect against contamination by using the proper equipment and supplies.

Basic infection control procedures or later named by the centre for disease control (CDC) as Universal Precaution

Personal barrier techniques:

- a. Hand washing
- b. Gloves

***.Face masks should be:**

- 1- Provide a minimum filtration particles and should have the ability to block aerosols as well as larger particles of blood, saliva and oral debris
- 2- Changed once per hour

- Hand washing is necessary before wearing gloves
- Gloves are discarded after each patient
- Double gloves are recommended for patients with HIV, HBV, HCV infection
- The outside of the mask should not be touched significantly decrease the filtration quality of the mask.
- Masks should be properly disposed of after each use and not left hanging around the neck
- Eye wear
- Mask, glasses and head cover
- Masks and eye protectors enhance dentist and patient safety

Dental clothing & Surface coverings

Blouses should cover a big part of the dentist's body and hands. They must be changed on a daily basis and definitely as soon as they get stained.

If the operation is expected to involve a large amount of bleeding or the patient is likely to be seropositive, it is highly recommended that specially designed single-use clothing be used.

Reusable clothing must be washed in a machine washer at an appropriate temperature, using a detergent and always separately from domestic and non-medical clothing.

Surface coverings

- Any surfaces, devices, electric switches, door handles, drawer knobs, taps, handles and device tubes not able to be sterilised or disinfected, should be meticulously covered with appropriate materials, such as:

- *special rollers and plasticized paper sheets,

- *cellulose film,

- *aluminum foil,

- *self-adhesive films,

*nylon cases,

*latex and vinyl cases

- **These protective coverings should be replaced after every contact and every patient**
- **Dental blouses are changed daily and washed separately**
- **Surfaces not being able to be sterilized are covered with appropriate material**

Cleaning and Sterilization of dental instruments

- Any dental hand instrument used during a dental incident must undergo a cleaning and sterilization procedure:

Right after the completion of the incident (examination, restoration, surgery) the instruments must be discarded in a special plastic container filled with an appropriate disinfectant solution or enzyme solution with a proteolytic action.

- After the instruments have been cleaned, they are packaged in special bags or perforated cassettes and they are taken to the autoclaves to be sterilized.
- The autoclave is programmed to operate depending on the packaging of the instruments and according to the default parameters set by the manufacturer, e.g. 134 Co for 3 minutes or 121 Co for 20 minutes or 121 Co for 13 minutes, etc. it should be noted that the above times do not include warm up or air removal. The completion of the cycle and the sterilization process is confirmed through electronic instrument indications as well as changes in the colour or shape of the indicators.

Use and care of sharp instruments and needles

*Sharp instruments, having been in contact with blood and saliva, should be used with special care so that injuries are prevented.

*Place any surgical blade and needle within a solid, hard plastic container for sharp instruments. Do not cap, bend or destroy the needles before you discard them. Do not overfill the plastic container, close tightly and, finally, discard.

*Used needles must not be recapped with both hands or any other technique and care must be taken so that the needle does not point towards the body. The 'one hand' technique to recap the needle or a mechanical means designed to hold the cap should always be used. Recently,

the use of needle destroyers which melt the metallic edge of the instrument has been suggested.

*Mechanical means

*One-hand technique to recap the needle

* Dental instruments must undergo a cleaning and sterilization procedure

* Sharp instruments and needles must be managed with special care.

Sterilization of hand pieces and burrs

• Low and high speed hand pieces as well as various burrs used in everyday clinical

• Practice should be sterilized before use so that all conditions ensuring harmless

• Dental care provided to all population groups are met.

The most common methods of asepsis control are the following

* Protection from any contact with the fluids existent in the oral environment

*Chemical disinfection

*Thermal sterilization

*Disinfection using microwaves

*Disinfection via irrigation

*Single use hand pieces

• Among the above techniques, moist heat using saturated water vapours (autoclave) offers the best results as regards the sterilization of hand pieces in a very short time.