Chapter 4

Sterilisation and disinfection of instruments

Sterilisation is the complete destruction of all pathogenic macro organisms i.e. bacteria, viruses, fungi and spores. The word "sterile" means free from or the absence of all living organisms. An item is either sterile or not. There is nothing like at item being half sterile. Improper sterilisation would lead to intra-operative complications ultimately ending in blindness. Any item to be sterilized must be thoroughly cleaned mechanically or by hand, using soap or detergent and water. When cleaning by hand, apply friction to the item using a brush. After cleaning, thoroughly rinse the item with clean, running water before sterilisation. The appropriate sterilisation method is determined according to how the item will be used, the material from which the item is made, and the sterilisation methods available. The physical methods of sterilisation are moist heat and dry heat. Chemical methods include gas and liquid solutions.

In 1968, Spaulding proposed three categories of potential infection risk to serve as the basis for selecting the prevention practice or process to use (e.g. sterilisation of medical instruments, gloves and other items) when caring for patients. This classification has stood the test of time and still serves as a good basis for setting priorities for any infection prevention program. The Spaulding categories are summarized below:

Table - 1

Type of instrument	Level of infection	Categories	Method of disinfection
These come in contact with sterile tissues and blood system e.g. surgical instruments and gloves	Most serious	critical	Sterilisation Highest level of disinfection
These come in contact with mucous membrane and non intact skin e.g. scissors, cryoprobe, forceps, etc	Moderate	Semi critical	High level disinfection
These come in contact the intact skin e.g. hand hygiene	Mild	Non critical	Aseptic measures

Sterilisation of equipment is the most effective method of instruments. In case where sterilisation is not available or unsuitable, high level disinfection (HLD) can be undertaken .HLD kills the micro organisms but does not kill the spores.

Infected patients

- Theses patients should be scheduled for surgery in the end.
- The instruments used should be cleaned immediately. They are cleaned and soaked in disinfectant like chlorhexidine and then taken for sterilisation. While disinfecting, they should not be mixed with other instrument.

Parameters

Two parameters must be considered for all types of sterilisation

- Product Associated Considerations
  - Bio burden – degree of contamination
  - Bio resistance – heat or moisture sensitivity
  - Bio shielding - characteristics of packaging
  - Density – factors affecting penetration
- Process Associated Considerations
  - Time
  - Temperature
  - Purity of agent and air
  - Penetration
  - Capacity of sterilizer