

CARE AND STERILIZATION

CARE: It is a serious attention or consideration applied to doing something carefully or avoid damage or risk.

STERILIZATION: is the process by which an object becomes free of all micro-organisms by sterilization, both the pathogenic & non-pathogenic organisms are destroyed. There are various methods used in the sterilization of articles. The methods chosen must insure the destruction of all micro-organisms including the spores.

Methods of sterilization are:

1. Boiling
2. Cold Ster. (or) disinfection by using disinfectants
3. Fumigation or gas sterilization
4. Ultra violet light sterilization or radiation
5. Dry heat Ster. (or) hot air Ster.
6. Steam under pressure or autoclaving.

1. Boiling

Total immersion in boiling water (100°C) for 10 min will kill most of the pathogenic organisms & is the common and reliable method of disinfecting (not sterilizing) instruments.

Advantages: Boiling can be used in the home environment & other situations

when other methods are not available, it is one of the economic ways of sterilizing articles.

Disadvantages: Some bacteria & viruses & all spores are resistant to boiling. This boiling becomes ineffective in sterilizing articles. Boiling method cannot be used for the articles which are destroyed by moisture and heat.

2. Cold Sterilization

A chemical disinfectant acts by coagulating the bacterial protein or by changing the composition of protein so that it no longer exists in the same form.

Advantages: This is the method used to sterilize the articles that are destroyed by heat and the metallic objects prone to corrosion. This is the most easy method of disinfecting articles.

Disadvantages: This method does not ensure sterilization because the disinfectants does not destroy the spores. Some disinfectants are inferior to the skin of articles.

Commonly used disinfectants: Savlon soln. Hydrogen peroxide, spirit (alcohol).

Fumigation or Gas Sterilization

Total surface exposure to formaldehyde gas under conditions of controlled humidity, temperature and time exposure will destroy all vegetative forms of bacteria, viruses & most of the spores. The best results can be obtained with high concentrations of gas, humidity above 60% and temperature of not less than 18°C. The exposure time varies 1 to 16 hours. The agents that are commonly used for the fumigation are formalin tablets, ethylene oxide liquids etc.

The disadvantage of the gas are that it has a pungent smell, is irritant to the eyes, skin and mucus membrane.

Ultra violet Light Sterilization or Radiation

Ultra violet light sterilization is effective for disinfecting working surfaces and air inside the room.

Disadvantages:

- 1) Light travels in straight lines & does not penetrate. Only the surface of an object in direct line with

the ultraviolet source is irradiated. Any bacteria line with the ultraviolet that are in shadows are unaffected. All surfaces should be exposed to the rays. Ultraviolet rays does not penetrate the liquids.

2) Prolonged exposure to the ultraviolet rays causes conjunctival damage. To prevent this, dark glasses should be worn.

3) It is expensive. The cheap form of ultraviolet radiation is obtained free from the sun. Gamma rays have the greater power of penetration and is used for the sterilization of plastic items such as disposable syringes and catheters which will not withstand heat sterilization and sharp instruments such as hypodermic needles, and scalpel blades. The greatest advantage of this method is that articles can be packed before sterilization in individual sealed plastic pack or aluminium foils which avoids any handling and possible re-contamination after sterilization.