

Disinfection Policy

1. AIM

It is the aim of this policy to implement safe systems of work to protect patients and staff from the transmission of infection from medical equipment and devices.

The aim of disinfection is the reduction in the numbers of pathogenic organisms to below that required to cause infection.

2. DEFINITIONS

Cleaning

Cleaning is the removal of dirt and organic matter. Cleaning removes up to 80% of micro-organisms and is an essential part of an infection control programme. Given that organic matter will inactivate disinfectants, all items must be cleaned before disinfection or sterilization can be achieved.

The item must be cleaned thoroughly using neutral detergent and hot water, rinsed and dried. Alternatively, detergent wipes may be used.

Disinfection

Disinfection is the removal or destruction of adequate numbers of potentially harmful micro-organisms to allow the item to be handled or used safely. The most effective method of disinfection is heat disinfection. However the most common method used is with liquid chemicals, for example alcohol.

Sterilisation

Sterilisation is the total destruction and removal of all micro-organisms including spores.

3. RISK ASSESSMENT

Infection Risk to Patient from Contact with an Item

RISK	USE OF ITEM	MINIMUM DECONTAMINATION REQUIRED
HIGH	<ul style="list-style-type: none">In close contact with a break in the skin or mucous membraneFor introduction into sterile body areas	STERILIZATION
MEDIUM	<ul style="list-style-type: none">In contact with intact mucous membraneContaminated with particularly virulent or readily transmissible organismsPrior to use on immunocompromised patients	DISINFECTION
LOW	<ul style="list-style-type: none">In contact with healthy skin, orNot in direct contact with patient	CLEANING

Disinfection policy

Chemicals to be used:

1- Chlorine Preparations (e.g. Haztab, Chlor-clean)

Most commonly used as sodium hypochlorite. Very cheap and effective disinfectant, it is active against bacteria, fungi and viruses, hence its use against potential HIV/HBV infection in blood spillages.

However, chlorine-releasing agents are inactivated by organic matter. They should not be mixed with other chemicals, unless directed by the manufacturer. An advantage of products such as 'Chlor-clean' is that they combined a disinfectant with a foaming anionic surfactant. Hence the solution will disinfect and clean at the same time.

Care is necessary with metal as chlorine is corrosive.

2- Alcohol

Most commonly used as Isopropyl alcohol 70%. Alcohol is rapidly active against most bacteria and viruses but has poor penetration; therefore its main uses are for rapid disinfection of clean surfaces, e.g. dressing trolleys. Its other advantage is that it evaporates rapidly and leaves surfaces dry and can be used for some equipment that is damaged by other methods. Examples are Isopropyl alcohol 70%, Sterets 70%, and Alco-wipe 70%.

3- Savlon

This solution contains chlorhexidine and cetrimide. Its main uses are for cleaning dirty wounds or for skin preparation. It is totally inactivated by soap and has no action as a disinfectant for medical devices or the environment.

4- Glutaraldehyde

Glutaraldehyde is effective against most micro-organisms but it is only recommended for use when alternatives are unsuitable. It must only be used by trained personnel using personal protective equipment in a well-ventilated area, and away from patients. If used, follow supplier's instructions and Department of Health guidelines.

5- Hydrogen peroxide (e.g. Virkon)

Peroxide compounds such as Virkon have a variable viricidal activity. They are less corrosive than hypochlorites, making them commonly use in the disinfection of laboratory equipment and environmental cleaning.

Disinfectants and their uses:

- a) Disinfection of the skin and mucous membranes
- b) Disinfection of equipment and the environment.
- c) Disinfection of spillages of blood / other body fluids.

Disinfectants for endoscopes

The ideal disinfectant should be:

- 1-Effective against a wide range of organisms including blood-borne viruses and prion proteins.
- 2-Compatible with endoscopes, accessories and endoscope reprocessors.
- 3-Non-irritant and safe for users.
- 4-Environmentally friendly for disposal.

The disinfectants include:

- 1- 2% glutaraldehyde (Cidex, Asep, Totacide 28)
- 2- Peracetic acid (Nu-Cidex and Steris)
- 3- Chlorine dioxide (Tristel, Dexit, Medicide)
- 4- Alcohols (Ethanol, Isopropanol)
- 5- Superoxidised water (Sterilox)

Glutaraldehyde:

Advantages:

1-kill most bacteria and viruses (including human immunodeficiency virus and hepatitis B) in less than five minutes. Mycobacteria are more resistant to 2% glutaraldehyde.

Disadvantages:

- 1- Toxic effects on skin and mucous membranes, chemical colitis.
- 2-Glutaraldehyde cross-link residual protein material, resulting in amalgam which is very difficult to remove from working channels.

Peracetic acid:

Advantages:

- 1- Broad spectrum of activity against viruses, bacteria, mycobacteria, fungi and spores.
- 2- Its mycobactericidal activity is superior to that of glutaraldehyde within 10 minutes
- 3- It is more effective than glutaraldehyde at removing organic matter such as biofilms.

Disadvantages:

- 1-Bactericidal activity diminishes after 24 hours
- 2-Skin reactions, and upper respiratory irritation.

Chlorine dioxide:

Advantages:

- 1- Broad spectrum agent with rapid activity against vegetative bacteria including mycobacteria, viruses and spores

Disadvantages:

- 1- Chlorine is a well-recognized respiratory irritant.
- 2-Chlorine dioxide is potentially corrosive.

Alcohols:

Advantages:

- 1-Active against vegetative bacteria including mycobacteria and against viruses.
- 2-Alcohol-based disinfectants are effective against resistant *Pseudomonas*.

Disadvantages:

- 1- Non sporicidal & slow active against enteroviruses.
- 2- Prolonged exposure to 70% alcohol disrupts adhesives, denatures plastics in endoscopes.
- 3-Alcohol is flammable.

Disinfectant (conc)	Endoscope category	Contact time
Glutaraldehyde (2%)	Fexible bronchoscope	10 min. between patients
		20 min. end of sessions
		60-120 min. in case of T.B- AIDS- Immunocompromised
	Gastrointestinal	10 min. between patients
		20 min. end of sessions
		60-120 min. in case of T.B- AIDS- Immunocompromised
	Cystoscope	10 min. at the beginning- end or between sessions
		60 min incase of T.B
	Arthroscope	10 min. at the beginning- end or between sessions
	Laparoscope	10 min. at the beginning- end or between sessions
Peracetic acid (0.35%)	Gastrointestinal	10 min
Chlorine dioxide	Gastrointestinal	10 min
Orthophenaldehyde (0.55%)	Endoscopes	12 min.
Hydrogen peroxide (7.5%)	Endoscopes	30 min