

# Cleaning For Infection Control

## “Let’s Get It Right”

“Cleaning for Infection Control” is a précis of a series of notes by Mike Keogh of Majac Healthcare and Dr Kim Gaul of Quality Medical Innovations. This information is designed to assist with infection control within healthcare facilities. These content is based on Australia and New Zealand Standards, European Standards, Best-Practice Guidelines and the latest Biochemistry Science.

To ensure that the sterilisation and cleaning process is carried out adequately and reliably one of the most important things to be aware of is not to under rate or take the cleaning process for granted. Good cleaning procedures are fundamental to proper sterilisation and infection control.

### Cleaning of Instruments must be taken very seriously and should include;

- Dedicated staff with a good knowledge of the cleaning process and the operation of mechanical washers.
- A high quality cleaning agent
- Documented procedures. *The Standards AS/NZS 4815, AS/NZS 4187 & the RACGP Infection Control Standards for Office Based Practices 4<sup>th</sup> edition give recommendations for cleaning procedures and cleaning agents.*

**Inadequate cleaning can compromise sterilisation** and is therefore essential before the sterilisation process can be performed. It is important to ensure that biological soils are not allowed to dry prior to washing. Drying tends to “set”

biological soils, making them difficult to remove. A thin film of bio-soil left on surfaces may protect micro-organisms from steam contact during sterilisation.

### The most commonly encountered soils in the medical area are:

1. Water soluble materials (*Generally easier to wash away*)
  - Sugars
  - Inorganic salts (NaCl, KCl, Phosphates etc)
  - Proteins
2. Water insoluble materials (*Generally difficult to wash away*)
  - Fats
  - Proteins (structural proteins)
  - Particulate Material (e.g. suture materials, tissue debris, precipitated proteins etc.)

Soil removal involves a number of contributing factors, the three most important being:

- chemical activity
- time in contact with the cleaning solution
- mechanical activity.

**Chemical activity** involves the cleaning agents such as Clinical detergents which are essential

aids in the cleaning process. A detergent is a formulated solution designed for cleaning. At this point it is important to emphasize the difference between a detergent and a disinfectant. Disinfectants are agents for inactivation of non-spore forming micro-organisms. Disinfectants are not usually designed for cleaning. Detergents are not formulated to kill or inactivate micro-organisms. Detergents are formulated to clean surfaces. If the surface is clean and dry then micro organisms can not proliferate.

Detergents contain a number of ingredients with specific functions to aid in the removal of soil. The most important of these ingredients are surfactants and alkaline builders.

### Surfactants play a major role in the cleaning process in three main ways:

- Surfactants wet surfaces more efficiently - accelerate contact between the cleaning solution and the soils (“*They make water wetter*”).
- Emulsify fats and lipids, suspending them in solution to be washed away.
- Aid in the solubilisation of proteins.

## Alkaline Builders have a number of functions:

- Bind with calcium and magnesium to “soften water” and improve performance of surfactants.
- Help keep soil particles suspended in solution, & prevent re-deposition of soil onto the cleaned instrument or surface.
- Help prevent corrosion of metals
- Contribute to maintaining an alkaline pH and as a pH buffer. (Bio-soils have the potential to alter the pH of a solution towards acidic. (It is important that washing solutions remain mildly alkaline or at the very least not acidic as most metals are very stable in alkaline conditions but are very easily attacked by acidic solutions.)

**Contact times** between soil and the cleaning solution improve the removal of soil. However, instruments should NOT be soaked in aqueous solutions for excessive periods of time. Because water and oxygen corrode metal. Prolonged soaking or leaving instruments wet, will cause corrosion (even clean rinse water). Ideally instruments should be washed immediately after use. If necessary instruments may be soaked for a maximum of 30 minutes until time permits proper cleaning.

It is also best practice to change contaminated detergent solutions used for manual or ultrasonic cleaning regularly throughout the day. This will ensure minimal bacterial and

soil contamination with maximum detergent efficiency. Solutions contaminated with biological soils are capable of supporting bacterial growth that can contaminate instruments (eg pseudomonas). *Alkaline detergents tend to show less bacterial growth compared to neutral/acidic detergents.*

Dry instruments immediately after washing.

An ultrasonic cleaner is potentially the most cost effective and time efficient method of cleaning instruments. The ultrasonic implosions clean the instruments more thoroughly than manually. They prolong the life of the instruments and free the staff to attend to patients or other tasks.

### Manual Cleaning Protocol:

- Rinse contamination off instruments under warm running water - NOT hot (rinse as soon as possible after use)
- Dismantle instruments and immerse in warm detergent solution.
- NOT hot water - it will “set” organic matter onto the surface.
- Scrub with a firm bristle brush, preferably under water.
- Do NOT use abrasive cleaners or steel wool
- Rinse clean in warm/hot running water.
- (Hot water is preferable at this stage)
- Inspect for cleanliness.
- Dry in a cabinet or with a lint free cloth before packaging.

- Wipe or shake off excess water if not packaging before sterilising. Replace contaminated detergent solution with fresh solution as often as possible. This ensures maximum cleaning and minimises bioburden.

### Some Hints on Effective Surface Cleaning:

- All surfaces in the medical practice should be cleaned by wetting the surface with a Clinical Detergent and then wipe clean and dry with an absorbent “low lint” disposable towel.
- The Clinical Detergent will solubilise & suspend the bio-soil and the wipe will remove it.
- Pre-wet detergent wipes are not as effective as wetting the surface first then wiping dry to clean. Pre-wet wipes are designed to transfer some liquid to the surface, as a result the surface is not dry after cleaning, this leaves a thin layer of contaminated moisture on the surface.

### Wipe Dry = Wipe Clean

Extensive Testing carried out by Du Pont on the “Wet Particle Removal Ability” Published in their Technical Information states:

“Clinical and Laboratory wipes made from fabrics that have an exceptional ability to ‘wipe the surface dry’ leave the surface cleaner than those which do not, since the residual contamination resulting from a spill always lies suspended in the liquid phase left behind on the wiped surface.”



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