Cleaning for Infection Control

"Let's Get It Right"

This article is a precis of a series of notes by Michael Keogh of Majac Medical Products. This information is designed to assist with the cleaning procedures and are the result of many enquiries received from clinics and medical centres throughout Australia and New Zealand. To ensure that the sterilisation and cleaning processes are 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 4th Ed. Give recommendations for cleaning procedures and cleaning agents*

Inadequate cleaning can compromise sterilisation and therefore is 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 surfaces may protect micro-organisms from steam contact during sterilisation.

The most commonly encountered soils in the medical area are:

Water Soluble Materials	Water INSOLUBLE Materials
Generally easier to wash away	Generally difficult to wash away
Proteins	Proteins (structural proteins)
Sugars	Fats
Inorganic salts (NaCl, KCl, Phosphates, etc)	Particulate Materials (suture materials, tissue debris, precipitated proteins)

Soil removal involves a number of contributing factors, with the 3 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 aides in the cleaning process. If the surface is clean and dry then micro-organisms cannot proliferate.
At this point it is important to emphasis the difference between a detergent and a disinfectant.

Detergents are formulated to clean surfaces consisting of specific ingredients whose functions are to aide in the removal of soil; the most significant being surfactants and alkaline builders.

Disinfectants are agents for inactivation of non-sporing micro-organisms.

Surfactants

- Accelerate contact between the cleaning solution and the soils
- Emulsify fats and lipids, suspending them in a solution to be washed away
- Aid in the solubilisation of proteins

Alkaline Builders have a number of functions, including -

- 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 as most metals are stable in these conditions, but 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 Protocols

Rinse contamination off instruments under warm running water
Dismantle instruments and immerse in warm detergent solution
Scrub with a firm bristle brush, preferably under water
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

do NOT use hot water - it "sets" organic matter onto the surface
do NOT use abrasive cleaners or steel wool

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.	1) The Clinical Detergent will solubilise & suspend the bio-soil; 2) The wipe then removes 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, leaving 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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