Reliable instrument reprocessing - minimising human error

By Deborah Thame, B.Pharm

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Reprocessing of reusable dental instruments and equipment is a process carried out many times every day in every dental practice in Australia. Each step is in itself quite simple but collectively the process can become quite complex with numerous opportunities for errors. This makes it important for every dental practice to have a documented sterilisation "process" or "system" in place. By defining, documenting and actively working with such a system, each dental practice can have full confidence in the reliability of their instrument reprocessing and the subsequent safety of their patients.

The fundamental cycle of instrument reprocessing is outlined in Figure 1. Most practice staff will be familiar with this cycle and each stage is fairly self-explanatory:

- **Pre-cleaning** relates to the way the contaminated instruments are treated immediately after use and before being cleaned. This can be done at the point of use to remove gross contamination and is generally carried out by wiping, rinsing and/or soaking the instruments.
- **Cleaning** is carried out in the reprocessing/sterilisation area. Cleaning to remove all visible contamination can be carried out manually or using an ultrasonic cleaner or using an automatic instrument washer.
- **Inspection** of the instruments is carried out to ensure that they are completely clean and that they continue to be fit for purpose, in other words that they have not become damaged, excessively worn or faulty in any way that would make them hazardous or ineffective.
- **Packaging** the instruments correctly for sterilisation involves selection of appropriate packaging, correct packing, sealing and labelling of the package. It may also mean the choice not to package items that can be sterilised without being wrapped.
- **Loading** the packages and loose instruments into the steriliser is done in a particular way that ensures sterilisation of every item loaded.
- **Sterilisation** is carried out by running the appropriate cycle on the steriliser and monitoring the cycle for correct function.
- **Unloading** is done in a way that ensures the safety of the person unloading the steriliser as well as the integrity of the load, preventing potential recontamination due to damp packages or contact with the dirty area, etc.
- **Storage** of both packaged and unwrapped items is then done correctly to ensure that sterility (packaged) and cleanliness (unwrapped) are maintained until the instrument is re-used, when the entire cycle starts again.

Each step is easy but each is critical, since ALL of the steps must be carried out correctly for sterilisation to be effective.

Dental practices are busy environments and often there are numerous staff (or changes in staff) involved in reprocessing. *How do you minimise the potential for human error in such a critical process?* Small errors during any step of the process can significantly affect the outcome, potentially resulting in failure of sterilisation. For example, if the item is not cleaned correctly there is physical contamination shielding the organisms from contact with the steam and the item will not be sterile at the end of the process. Unloading onto a wet contaminated surface or accepting torn or damp packages will mean the items are not sterile. How do you ensure that *all steps* are carried out correctly *every time?* In other words, *how do you make your system reliable?*

This starts with everyone's least favourite job - documentation. It's the job most of us don't enjoy and usually don't have time for but it is the foundation of a reliable reprocessing system. Document how each of the steps in the cycle is to be

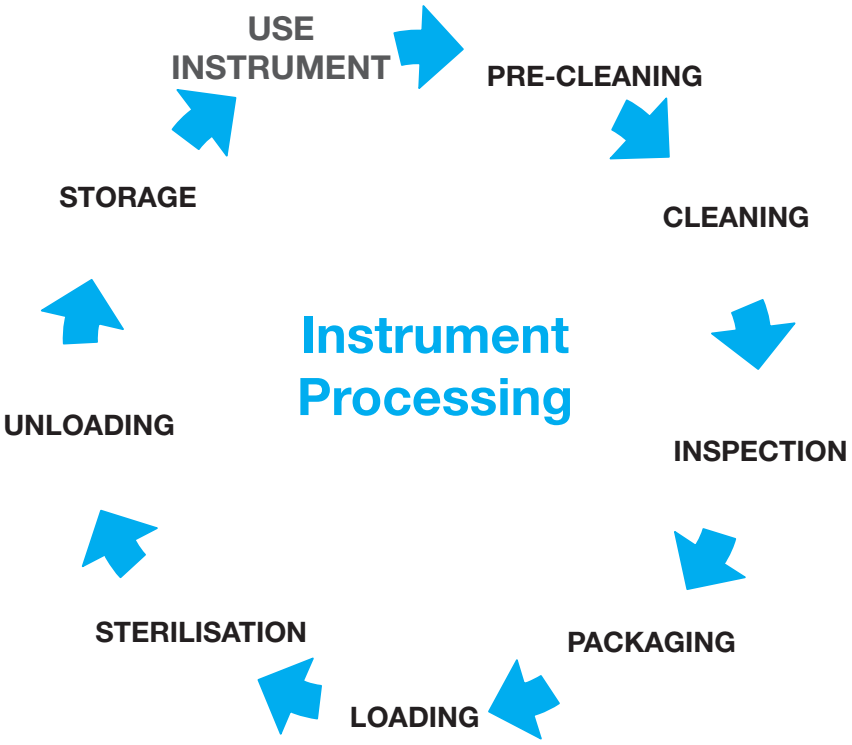

Figure 1. The fundamental cycle of instrument reprocessing.

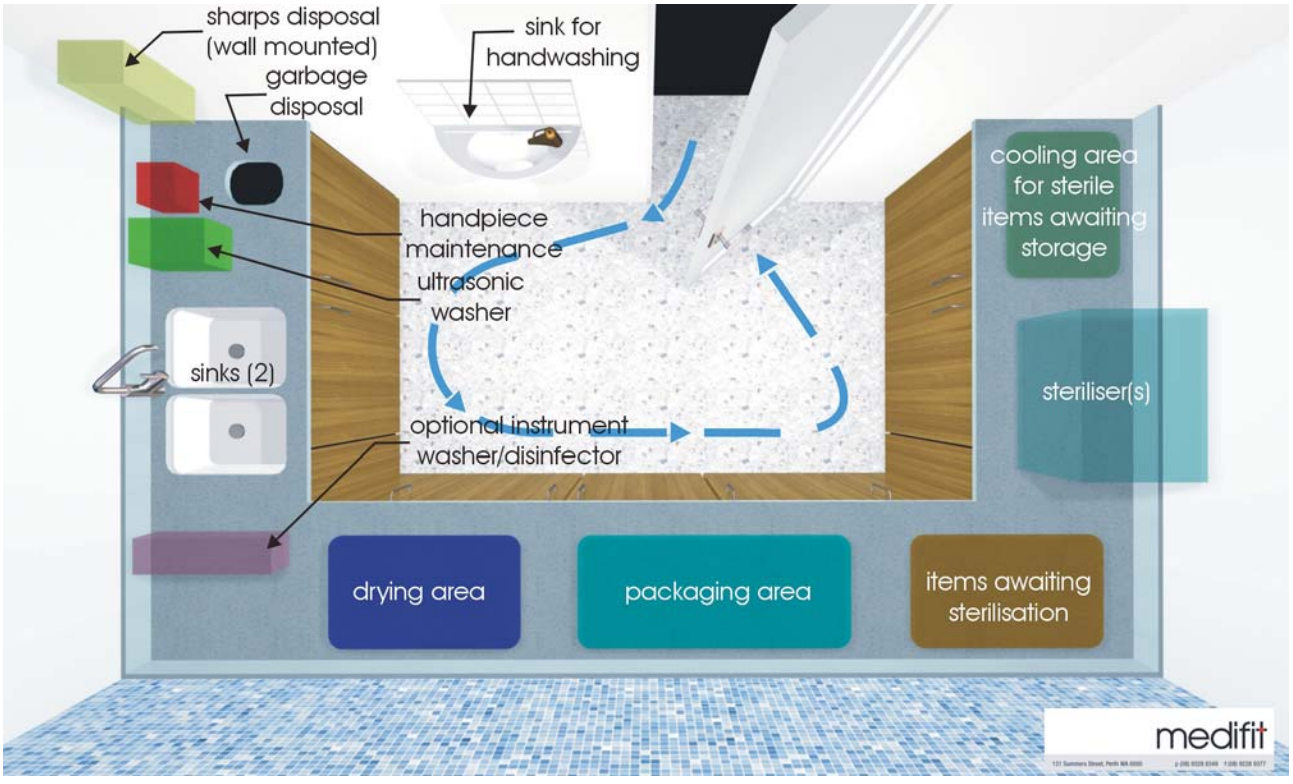

Figure 2. This shows the layout recommended for the correct flow (arrows) of instruments from dirty to clean to sterile in your reprocessing area. Existing areas can be modified to follow this as closely as possible (note: flow can be clockwise or anti-clockwise so long as it is in a single direction).

Figure 3. This shows what can be achieved with the design of a new, purpose-built reprocessing area. The room is well-designed with plenty of room to work, good lighting and most importantly, it allows for the correct workflow (photo courtesy of Medifit).

carried out in your practice. Be methodical; go through each of the steps and decide how you want things done and write up a procedure. To complement your written procedure, write lists, be creative - use a digital camera to photograph how you want the steriliser loaded and post the picture next to the steriliser. Make a chart to show which packaging material should be used on which instruments (more photos), including how many in each bag. Write checklists, label things, do whatever you think would help your staff to remember how to do each part of the process correctly. This is a big job and not something that can be completed in one sitting. Use the headings in Figure 1 as your master list and work through documenting each step as a longer term project.

You may need to check some good references to ensure that the processes that you are developing and putting into place at each step are 'acceptable practice'. The Australian Standard (AS/NZS 4815:2006) is the definitive document for this in the dental environment and would be your primary reference. The *ADA Practical Guides*, which references the Australian Standards, provides some information specific to the dental environment and it is anticipated that the ADA will shortly be publishing some comprehensive Guidelines on Infection Control that build on the Practical Guide information. In addition to these, I highly recommend the *Royal Australian College of General Practitioners Infection Control Guidelines*. These guidelines are written in a very practical way which is very easy to follow, with good illustrations and detailed, accurate information about every step. These guidelines follow the Australian Standards quite closely and are a very useful tool to assist in developing and documenting the fundamentals of your system, since the fundamentals are standard across all areas of health.

Review the reprocessing/sterilisation room to ensure that the workflow in this area matches the flow of the reprocessing cycle. No step should move physically backwards in the room layout. It is critical that there are distinct 'dirty' and 'clean' areas to reduce the risk of clean instruments being re-contaminated by dirty instruments or surfaces (Figures 2 and 3). (This is so important that hospitals now have entire 'clean' and 'dirty' rooms with the instruments passing from one room to the other through large automatic instrument washers.)

Once you have completed documentation of each step, train all staff involved in the process. Having visual reminders, checklists and charts can make this much easier and the likelihood of compliance much higher. It will also make it much easier to train new staff.

Developing, documenting and implementing a systematic approach to instrument reprocessing specifically for your practice is one of the requirements of AS/NZS 4815:2006. It is also a very practical and professional way to ensure that your sterilisation is always reliable.

Useful Resources

- Australian Standard AS/NZS 4815:2006 Office-based health care facilities - Reprocessing of reusable medical and surgical instruments and equipment, and maintenance of the associated environment. (PDF version $84.15; Hardcopy $93.50). Available from SAI Global, Publication Sales; Tel: 131-242; Fax: 1300-654-949; sales@saiglobal.com; http://infostore.saiglobal.com/store/
- The Practical Guides, 7th Edition (Members $50 Non-members $100). Available from your Local branch of the Australian Dental Association - www.ada.org.au/Publications/pracguide.aspx
- RACGP Infection Control Standards for Office-based Practices 4th Edition (Hardcopy $132.00). Available from RACGP Tel: (03) 8699-0414; www.racgp.org.au/publications/standards

About the author

Deborah Thame is the co-founder and Managing Director of STS Health, an Australian company specialising in the sale and maintenance of steam sterilisation equipment. STS Health imports the Mocom range of Millennium sterilisers available through Henry Schein Halas nationwide. For more information, call (08) 9244-4628 or visit www.stshealth.com.au