Myths from the sterilisation room

By Deborah Thame, B.Pharm

"Myths, while quaint in some situations, can prove very dangerous in the sterilisation room..."

Many myths about sterilisation remain widely accepted and the following selection includes five that can seriously affect patient safety and practice costs.

Myth one

The steri-tape changed colour so the contents of the pack are sterile.

Reality: The chemical indicator found both on sterilisation tapes and printed onto sterilisation pouches is a Class One indicator (Figure 1). These are very simple indicators designed to change colour when exposed for just a very short time to steam and heat. These indicators are the simplest of the six classes of indicators and do not confirm that the package is sterile; merely that it has been subjected to some level of heat and steam. This is a simple but potentially very dangerous myth which in one case actually lead staff to ignore sterilisation process failures alarmed by the steriliser itself because the "package indicator changed colour".

Myth two

It doesn't matter if the packs come out of the steriliser a bit damp as long as I dry them thoroughly before I put them away.

Reality: Sterilisation pouches are manufactured with one clear laminated side enabling viewing of the contents and one 'paper' side. The clear side cannot be penetrated by steam or air. The specially designed 'paper' side cannot be penetrated by air when dry but becomes open to the passage of both air and steam when the paper is wet or damp. This allows penetration of the steam into the pack during the sterilisation process so that the steam can contact the surfaces to be sterilised. Once dry again, this 'paper' prevents contamination of the contents by airborne organisms when removed from the chamber and during storage. If the package is damp or wet when removed from the steriliser, this side is still 'open' to penetration by the air and subsequent contamination of the sterile contents. All packages should be completely dry when the steriliser door is opened; otherwise the packages should be re-packaged and processed again so that they are dry when removed for storage.

Myth three

Reusing water in my steriliser saves money

Reality: Waste water from steriliser steam condensate will contain traces of any materials remaining on instruments and other items placed in the steriliser. In dental practices, this commonly

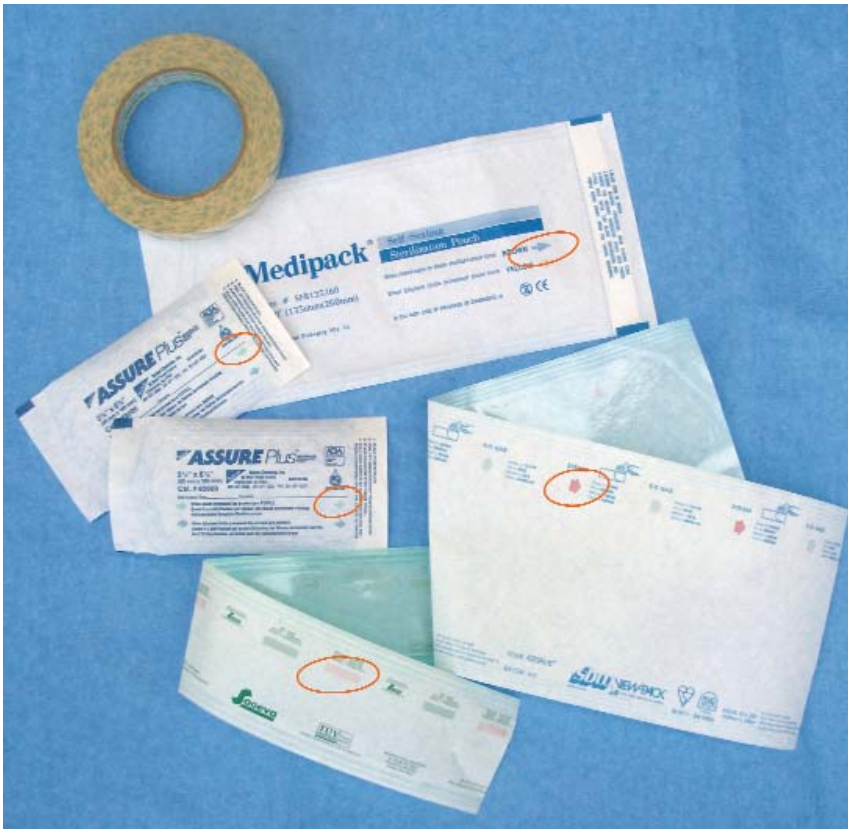

Figure 1. Examples of various packaging materials available showing the class one indicators (circled).

Figure 2. Classic example of the "brown water" syndrome. The water in the bucket was drained from the water reservoir of this steriliser. The build up of contamination that occurs when water is recycled is clearly visible.

Figure 3. The operator of this steriliser has been deliberately pouring the waste water back into the clean water reservoir. The discolouration of the white reservoir and waste tubing (left hand side) clearly show the effects of contaminant build up compared to the new tubing placed next to it.

includes lubricating oil and the solvents used as the propellants in lubricating oils, as well as other mineral and chemical contaminants and any physical debris not removed during cleaning. When this water is recycled, the contamination level rises with each reuse, eventually leading to the commonly seen "brown water" syndrome that occurs with old sterilisers that recycle water (Figure 2). New sterilisers are designed for 'single use only water' to reduce the damage to the internal components of the steriliser from the contaminant levels that build up when the water is reused, as well as minimising the introduction of contaminants from the 'dirty' water onto the items in the load. Pouring the waste water back into the clean tank may appear to save a few cents in the short term but the reality is that the eventual and inevitable long term cost of the increased servicing required and of repairing the damage caused to the steriliser by the contaminants is very high (Figure 3).

Myth four

Regular servicing of my steriliser guarantees that my load is sterile.

Reality: Servicing of sterilisers is carried out to ensure that they continue to function properly in accordance to the manufacturer's specifications. The sterility of the load is dependant not only on the functioning of the steriliser but also on a very large number of variables associated with the cleaning of the items to be sterilised, the packaging of these items and the loading of the chamber as well as the cycle selected for processing. To 'guarantee' the sterility of the load, all of these variables must be assessed and a standard protocol determined, validated and followed routinely. This process therefore requires both servicing of the steriliser and the completion of installation, operational and performance qualifications, which together with routine monitoring enable the operator to 'guarantee' that the load will be sterile.

Myth five

It is okay to squash packs together in the chamber so long as the print-out says 'sterilisation successful'.

Reality: All sterilisers are designed to work with a specific load capacity (Figure 4). If any steriliser is incorrectly loaded or overloaded beyond the manufacturer's specification, effective sterilisation may not occur, as reasonable space must be allowed between all items and packages in the load for the steam to circulate. Stacking multiple packs on top of each other on each tray does not allow proper circulation (Figure 5). The steriliser does not assess your loading pattern therefore when the printout reads 'sterilisation successful' this will only apply if you have loaded the steriliser correctly (Assuming you have also processed the items in the correct type of steriliser or steriliser cycle for the type of instruments being processed).

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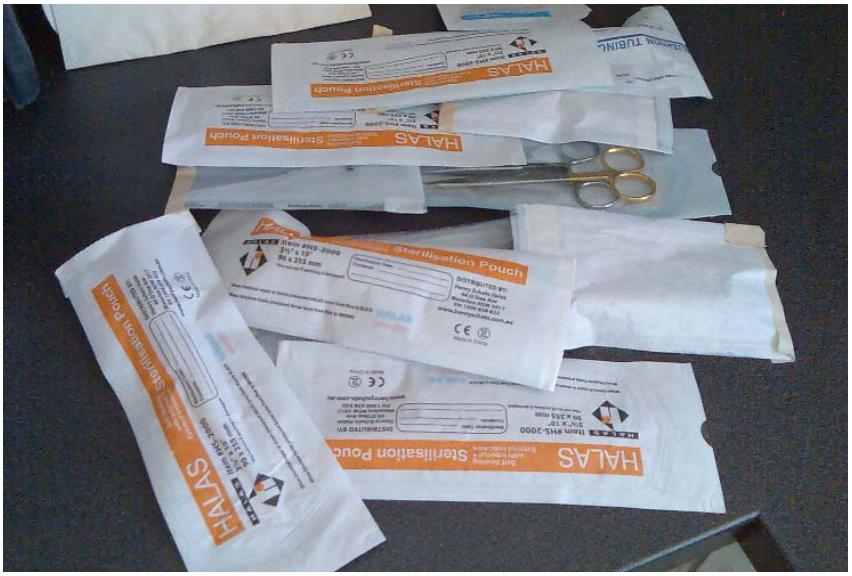
Myths, while quaint in some situations, can prove very dangerous in the sterilisation room. Ensuring all relevant practice staff have an accurate understanding of the points outlined here can assist in improving the quality of patient care and cost effectiveness of your sterilisation.

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

Figure 4. This illustrates a well-loaded steriliser. In this case, a vertical rack has been used for maximum sterilising and drying performance.



Figures 5a and b. All of these packs were loaded into the one tray. A classic and very common example of overloading. The printout may read 'sterilisation successful' but it is highly unlikely that steam was able to circulate and penetrate all areas of this load properly, so sterilisation of the entire may not have been achieved.