IN BRIEF

- Provides the results of a national survey investigating the use of benchtop steam sterilisers in dental practice.
- Highlights shortcomings in the operation of sterilisers.
- Highlights the testing of sterilisers in dental practice.

VERIFIABLE CPD PAPER ONLINE

# Use of benchtop steam sterilisers

Sterilisation of re-usable instruments in general dental practice

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## ABSTRACT

**Objective**

To examine the methods used for sterilisation of re-usable instruments in general dental practice, including the installation, commissioning and testing of benchtop steam sterilisers.

**Materials and methods**

This was an observational study in which the policies and procedures for sterilising instruments were viewed directly by trained surveyors at practice premises. Information relating to the installation, commissioning and testing of benchtop steam sterilisers was also collected by interview and observation of records. Data were recorded onto a standardised data collection form prepared for automated reading.

**Results**

Data were available from 179 surgeries surveyed. Dental practices reprocess a range of instruments from critical to non-critical. The most common type of benchtop steam steriliser is a type N, or bowl and instrument (B&I) steriliser (88%). The remainder were type B, or vacuum sterilisers, though one surgery had access to a hot air steriliser. Sterilisers were usually installed by manufacturers or suppliers (69%). Only 51% of sterilisers were tested on installation and 26% were commissioned, of which 38% were tested to SHTM 2010 standard. In most cases it was difficult to determine from the documentation available whether daily, weekly, quarterly or annual testing was undertaken in accordance with recognised standards. Written instructions for the operation of the steriliser were unavailable in 61% of practices. Insurance cover for pressure vessels was available in 79% of surgeries with a B&I steriliser. In many instances there was inadequate separation of clean and dirty areas for segregating processed from unprocessed instruments. Ninety-six percent of surgeries did not have a procedure for the identification and traceability of instruments used on patients. There was no documentation of staff training in the use of sterilisers in 90% of surgeries.

**Conclusion**

There has been significant uptake of the use of steam sterilisation to reprocess used dental instruments. However, there are significant shortcomings at various stages of the process, including installation, commissioning and periodic testing of sterilisers. These potentially compromise safety and the time, money and effort currently put into sterilising dental instruments. Complicit in these deficiencies are the manufacturers and suppliers of equipment that is inadequately installed and tested. There is a need for enhanced education and training in the use of sterilisers and the management of the process at all levels, from supplier to user. Improved access to appropriate technical advice on decontamination would also be a major benefit for the profession.

## EDITOR'S SUMMARY

Sterilisation and decontamination are incredibly important and very topical subjects. This paper, based as it is in the setting of general dental practices is therefore both significant and timely. However, its findings and conclusions are not entirely the ones that we as a profession might wish to have brought to our attention since they outline a story of shortcomings that involve many branches and areas of professional lives.

As with so many aspects of the complex modern world, the devil is in the detail and although the overwhelming majority of practices now have steam sterilisation the matter doesn't rest there. The process of commissioning, operating, processing and maintaining the equipment and the associated routines requires knowledge, time (which also means money) and effort. The authors point out the need for greater investment in all these aspects if we are to be able to hold our individual and collective heads as high as we should on infection control.

There is no question that the highest standards of infection control, sterilisation and decontamination should be adhered to. However, if, demonstrably these rightly exacting, evidence-based standards are not being universally upheld when might we, very embarrassingly, start to see the evidence-base of this and its effects? .

**The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 203 issue 8.**

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Editor-in-Chief

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**FULL PAPER DETAILS**

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## AUTHOR QUESTIONS AND ANSWERS

**1. Why did you undertake this research?**
This paper is part of a larger series of work examining all the elements of the decontamination cycle as it relates to the reprocessing of re-usable dental instruments. The work was undertaken to obtain an evidence base for current practice in order to inform risk assessments on the potential for transmission of vCJD via dental procedures. The unique attraction to undertake this particular project was having the opportunity to directly observe and interview staff undertaking sterilisation of instruments in general dental practice. Not only did this provide for robust data collection, but also provided an opportunity to view life in the 'front line' and provide a deeper understanding of the challenges facing the dental team. The result is the largest observational study ever undertaken, to our knowledge, of the policies, procedures and equipment relating to instrument sterilisation in dental practice.

**2. What would you like to do next in this area to follow on from this work?**
If we are provided with appropriate funding, we would in order of priority undertake the following:

1. Train the trainers: there is a very alarming deficiency of staff trained and competent to teach the decontamination of dental instruments to the dental team. Many of the shortcomings identified in this survey can be traced directly back to undergraduate education. A national priority should be given to the training of teachers in this field using compliant equipment in an appropriate training environment.
2. Undertake an independent assessment of decontamination equipment: our survey detected worrying deficiencies in the commissioning data and periodic testing of sterilisers by manufacturers and suppliers. We would like to see a 'Which' report outlining those machines that are compliant with European and British standards and which are suitable for use in general dental practice, alongside pilot data indicating the revenue costs associated with the use of the newer equipment.
3. Increase the cadre of independent technical support available to general dental practitioners: more surgical instruments are reprocessed in primary dental care than those in sterile service departments, yet the technical back-up to dental practitioners is woeful. A clear national strategy is required to help practitioners in a technical field for which they are not qualified. General dental practitioners wish to use clean and sterile instruments to undertake clinical care of their patients and not be burdened with the increasing technical details of decontamination equipment; help must be provided to facilitate this.

## COMMENT

**This observational study on the policies and procedures for sterilising dental instruments reinforces the importance of on-site studies where information relating to the process taking place is collected by personal interview. With the appearance of vCJD in the UK population and elsewhere, there is a greater emphasis on ensuring that medical devices such as dental instruments are effectively cleaned and sterilised to further reduce the risk of onward transmission of vCJD and other infectious units. Whilst all the dental practices visited had steam sterilisers, they are obviously not being validated, tested or maintained to the required standards. Perhaps, as is suggested in this manuscript, consideration should be given to a scheme of independent accreditation for suppliers, audited by an Authorised Person to ensure that the relevant regulatory procedures are followed.**

**There also appears to be a lack of periodic and daily testing of sterilizers, which is a fundamental lapse in quality control. Such lapses reflect gaps in training and the need for formal recording of not just periodic tests that are undertaken, but also of the training itself. It is clear from this study that many dental team members lack the required training and are not supported sufficiently by appropriately qualified experts in the field of decontamination sciences. In the area of steam sterilisation this manuscript provides evidence that regulators, manufacturers, suppliers and the dental team all have an important role to play to ensure that instruments are decontaminated effectively to avoid adverse incidents.**

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