

Scottish Health Technologies Group

Advice Statement

8 March 2011

Benchtop steam sterilisers in primary care dental services

Advice Statement 003/11

Question:

Would the provision of vacuum sterilisers to dental practices in Scotland provide sufficient benefit in terms of increased patient safety to justify the financial outlay and ongoing revenue costs?

Advice:

Following an assessment of the current literature, SHTG has determined that there is lack of evidence to conclude that the provision of benchtop steam vacuum sterilisers in primary care dental practices in Scotland would increase patient safety and thereby justify the cost.

Advice context:

No part of this advice may be used without the whole of the advice being quoted in full.

This advice represents the view of SHTG at the date noted. It is provided to inform NHS boards in Scotland when determining the place of health technologies for local use. The content of this Advice Statement was accurate and based upon the most up-to-date evidence available at the time of publication. Readers are asked to consider that new trials and technologies may have emerged since first publication and the evidence presented may no longer be current.

SHTG Advice Statement will be reviewed on a 2-yearly basis. The evidence will be updated if requested by the clinical community, dependent on new published reports.

This advice does not override the individual responsibility of health professionals to make decisions in the exercise of their clinical judgment in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

**Chairman
Scottish Health Technologies Group**



National
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SUMMARY OF EVIDENCE

Benchtop steam sterilisers in primary care dental services

January 2011

Question

Would the provision of vacuum sterilisers to dental practices in Scotland provide sufficient benefit in terms of increased patient safety to justify the financial outlay and ongoing revenue costs?

Background

All dental practitioners in Scotland have been instructed to make provision for appropriate decontamination (cleaning, disinfection and sterilisation) of dental instruments. Many dentists have now installed local decontamination units (LDUs) to meet these requirements but are uncertain whether to install relatively expensive vacuum (Type B cycle) benchtop sterilisers. Most dental practices currently use non-vacuum (Type N cycle) benchtop sterilisers.

Instruments sterilised in non-vacuum sterilisers are sterile at the end of the sterilisation process, but not sterile at the point of use following storage or transport. In order to be sterile at the point of use, instruments must be packaged prior to sterilisation and sterilised in a vacuum steriliser. There is a lack of consensus on whether or not vacuum sterilisers should be used for sterilising instruments used in routine dentistry.

The Scottish Health Technical Memorandum 2010 (Sterilisation) (SHTM 2010) provides technical guidance for Scotland on steriliser use within the NHS in general, rather than dentistry specifically¹. It states that certain instruments should be sterilised in vacuum sterilisers (porous items, instruments wrapped in porous loads, and instruments with narrow lumens), while other instruments can be sterilised in non-vacuum sterilisers (unwrapped, solid instruments). More recent technical guidance on decontamination in primary care dental practices introduced in England and Wales (Health Technical Memorandum (HTM) 01–05), but not yet adopted in Scotland, contains similar statements on the appropriate use of vacuum and non vacuum sterilisers for different types of instruments².

The capital and recurring cost impact of installing and operating vacuum sterilisers across NHSScotland primary care dental practices to sterilise instruments used in routine dentistry would be extremely high.

Evidence review

Literature search

A systematic search was conducted in September 2010 to identify secondary and primary literature including reviews, guidelines, policy documents, primary research studies, economic evaluations and ongoing research comparing vacuum with non-vacuum sterilisers to sterilise instruments used in routine dentistry. The search also covered online sources of information from several dentistry professional bodies. No secondary or primary research comparing vacuum with non-vacuum sterilisation of routine dental instruments was identified. Furthermore no research evidence was found on the clinical effectiveness of vacuum sterilisers in routine dentistry.

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The guidance statements on the use of vacuum and non-vacuum sterilisers contained in SHTM 2010¹ and HTM 01–05² were not linked to evidence from research.

Six records of potentially relevant primary studies on the effectiveness of non-vacuum sterilisers were retrieved. The full text for two of these studies was obtained and found to be of insufficient quality to inform this work. It was not possible to obtain the full text of the other studies, which all dated from the early 1990s, within the time constraints of this scoping process. The outcomes measured in all of these studies appeared to relate to biological measures of contamination following the sterilisation process rather than patient outcomes.

The clinical advisors contacted were not aware of any additional published research evidence.

A PhD project is currently underway at the Glasgow Dental School looking at levels of decontamination in dental handpieces following clinical use (J Bagg, Head of Glasgow Dental School; Professor of Clinical Microbiology University of Glasgow. Personal communication, 29 October 2010), but there are no data to inform the current question.

Cost effectiveness

No published economic evaluation data were identified. Annual costs for vacuum and nonvacuum sterilisers are shown in Table 1 below (I Black, Assistant Director, NHS Education for Scotland. Personal communication, 28 October 2010). Vacuum sterilisers are larger pieces of equipment but may have lower capacity than non-vacuum sterilisers. The capacity of vacuum sterilisers can be less than half so the number of sterilisers required could be double.

Table 1: Annual costs for vacuum and non-vacuum sterilisers

Equipment	Costs including VAT (£)
Vacuum steriliser	6,600
Printer	500
Annual validation and testing	1,200
Quarterly testing	2,000
Printer rolls	50
Bowie Dick daily tests per year	1,000
Helix tests	275
Total	11,525
Non-vacuum steriliser	3,200
Printer	200
Annual testing and revalidation	275
Quarterly testing	514
Paper rolls	50
Total	4,139

Conclusion

No research evidence to answer this question was identified. While research could be undertaken to investigate sterilisation failures, linking sterilisation failure to actual patient safety outcomes is likely to be difficult given that sterilisation is only one part of the decontamination process. Additionally, patient safety may be difficult to investigate

in the routine dentistry setting due to potentially long incubation periods following dentally-transmitted infection. Current UK policy recognises that thorough cleaning of dental instruments prior to disinfection and sterilisation is vital to ensure successful decontamination.

References

1. Scottish Health Technical Memorandum 2010 Health Facilities Scotland. 2001 <http://www.hfs.scot.nhs.uk/online-services/publications/engineering/shtm-2010/>
2. Health Technical Memorandum 01-05: Decontamination in primary care dental practices. 2009

People contacted for further information

Professor Jeremy Bagg, Head of Glasgow Dental School; Professor of Clinical Microbiology University of Glasgow; SDcep Guidance Development Group.

Irene Black, Assistant Director, NHS Education for Scotland.

Peter Christie, Consultant in Public Health Medicine – Healthcare Associated Infection (HAI), NHS QIS.

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