

evidence | *note*

In response to an enquiry from the Scottish Dental Clinical Effectiveness Programme

Number 66 April -2017

After dental instruments have been sterilised unwrapped and are dry, is enclosure in lidded trays, suitable bags or containers (compared with immediate use or loose storage) sufficient to protect them from microbial recontamination relevant to patient safety outcomes?

What is an evidence note

Evidence notes are rapid reviews of published secondary clinical and cost-effectiveness evidence on health technologies under consideration by decision makers within NHSScotland. They are intended to provide information quickly to support time-sensitive decisions. Information is available to the topic referrer within a 6 month period and the process of peer review and final publication of the associated advice is usually complete within 6–12 months. Evidence notes are not comprehensive systematic reviews. They are based on the best evidence that Healthcare Improvement Scotland could identify and retrieve within the time available. The reports are subject to peer review. Evidence notes do not make recommendations for NHSScotland, however the Scottish Health Technologies Group (SHTG) produces an Advice Statement to accompany all evidence reviews.

Key points

- Best practice guidelines recommend that reusable dental instruments which have been sterilised can be stored for later use if sufficiently protected from recontamination.
- No research evidence was identified comparing the effectiveness of storage methods in relation to patient safety outcomes or time-dependent recontamination rates.

Literature search

A systematic search of the secondary literature was carried out between 9 and 15 December 2016 to identify systematic reviews, health technology assessments and other evidence-based reports.

The primary literature was systematically searched between 9 and 15 December 2016 using the following databases: Medline, Medline in process, Embase, and Cinahl. Results were limited to English language.

Key websites were searched for guidelines, policy documents, clinical summaries, economic studies and ongoing trials.

Concepts used in all searches included: dental instruments, sterilisation and wrapping/containers. A full list of resources searched and terms used are available on request.

Introduction and health technology description

The majority of reusable dental instruments in Scottish primary care dental practices are sterilised using a non-vacuum benchtop steam steriliser¹. Sterilisation in these devices requires that instruments be processed unwrapped.

This evidence note seeks to identify and examine any published evidence around the use of storage methods to prevent recontamination of dental instruments which have been sterilised unwrapped and to explore the clinical effectiveness, safety and cost effectiveness of instrument storage options.

Clinical effectiveness

No research evidence was identified. Scottish guidelines provide best practice recommendations.

The Scottish Dental Clinical Effectiveness Programme (SDCEP) decontamination guidelines indicate that it is currently acceptable for dental instruments which have been sterilised unwrapped to be kept for later use if they are dry, protected from contamination and stored correctly. The recommendations make clear that instruments should not be left exposed in the clinical environment or stored on open shelving or on work surfaces in clinical areas.

Recommended storage options to prevent recontamination of sterilised dental instruments include: placing in covered trays, cassettes or clip-in trays in enclosed boxes or cupboards in a rack system; or sealing within clean, single-use, sterilisation grade wrapping material or self-seal sterilisation bags/pouches. Although no recommended timeframe for storage is given, this guidance states that there should be a first-in, first-out stock rotation to minimise the duration of storage².

An unscheduled update in 2013 of the 2009 Technical Memorandum from the Department of Health (DoH) on decontamination in primary care dental practices, revised information on storage of dental instruments to reflect a move from a time-based approach to a risk-based approach³:

“This 2013 edition of Health Technical Memorandum 01-05 reflects the consensus on patient safety in the area of storage of dental instruments. It is recognised that potentially infectious recontamination of sterilized dental instruments is event-related rather than time-dependent. Within dental practices, there is a rapid turnaround of the most regularly used dental instruments. The 2009 edition was not helpful in the management of these frequently used instruments. The rationale for this change is that these dental instruments are used in contaminated body areas. Any environmental contamination that takes place would have a minimal impact on patient safety compared with contamination with another patient's blood or body fluid, which would be a significant hazard to patients. Thus, the emphasis is on ensuring effective decontamination and preventing contamination with another patient's blood and body fluid rather than on preventing environmental contamination of sterilized instruments.”

Updated DoH recommendations, based on consensus:

- wrapped instruments may be stored up to 1 year
- unwrapped instruments in the clinical area – maximum storage 1 day, and
- unwrapped instruments in a non-clinical area – maximum storage 1 week.

No evidence was presented to support the recommendations and this document is not formally recognised in Scotland.

Cost effectiveness

No relevant cost-effectiveness analyses were identified.

Conclusion

No research evidence was identified indicating the most effective or cost-effective packaging or storage method to protect sterilised reusable dental instruments from potentially infectious recontamination prior to use. Best practice guidelines provide recommendations for storage methods and durations.

Equality and diversity

Healthcare Improvement Scotland is committed to equality and diversity in respect of the nine equality groups defined by age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion, sex, and sexual orientation.

The process for producing evidence notes has been assessed and no adverse impact across any of these groups is expected. The completed equality and diversity checklist is available on www.healthcareimprovementscotland.org

About evidence notes

This evidence note will be considered for review 2 years post-publication, and at 2-yearly intervals thereafter. For further information about the evidence note process see

http://www.healthcareimprovementscotland.org/our_work/clinical_cost_effectiveness/shtg/standard_operating_procedures.aspx

To propose a topic for an evidence note, email shtg.hcis@nhs.net

References can be accessed via the internet (where addresses are provided), via the NHS Knowledge Network

<http://www.knowledge.scot.nhs.uk>, or by contacting your local library and information service.

Acknowledgements

Healthcare Improvement Scotland and the Scottish Health Technologies Group (SHTG) invited the following individuals and organisations to peer review the draft evidence note:

- Irene Black, Assistant Director of Postgraduate General Dental Practice, NHS Education for Scotland
- Professor Andrew Smith, Professor of Clinical Bacteriology, Glasgow Dental Hospital and School
- Margie Taylor, Chief Dental Officer, Scottish Government
- Christine Young, Infection Control Nurse Adviser, NHS Education for Scotland

Declarations of interest were sought from all peer reviewers. All contributions from peer reviewers were considered by the group. However the peer reviewers had no role in authorship or editorial control and the views expressed are those of Healthcare Improvement Scotland.

Healthcare Improvement Scotland development team:

- Lorna Thompson, Health Services Researcher
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- Members of the SHTG evidence review committee

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References

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2. Scottish Dental Clinical Effectiveness Programme (SDcep). Decontamination Into Practice [online]. 2016 [cited 2017 Mar 30]; Available from: <http://www.sdcep.org.uk/published-guidance/decontamination/>
3. Department of Health. Decontamination in primary care dental practices (HTM 01-05). 2013 [cited 2017 Mar 30]; Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/170689/HTM_01-05_2013.pdf