

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Flash Sterilization of Implants and Surgical Instruments: Clinical Effectiveness and Guidelines

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Questions or requests for information about this report can be directed to requests@cadth.ca

Research Questions

1. What is the clinical effectiveness of flash sterilization for implants and/or surgical instruments in a hospital setting?
2. What are the evidence-based guidelines for the use of flash sterilization for implants and/or surgical instruments in a hospital setting?

Key Findings

No relevant literature was identified regarding flash sterilization for implants or surgical instruments in a hospital setting.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline via OVID, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were flash sterilization and surgical instruments or implantable devices. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014 and June 27, 2019. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Patients undergoing surgery in a hospital setting
Intervention	Flash sterilization of contaminated non-dental implantable devices or surgical instruments
Comparator	Q1: No comparator; Any comparator Q2: Not applicable
Outcomes	Q1: Safety (e.g., surgical site infections, harm, risk, adverse events, surgical site infections) Clinical effectiveness (efficacy of device implanted) Q2: Evidence-based guidelines
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized-controlled trials, non-randomized studies and evidence-based guidelines

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies and evidence-based guidelines.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized-controlled trials, non-randomized studies and evidence-based guidelines were identified regarding flash sterilization for implants and/or surgical instruments in a hospital setting

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Guidelines and Recommendations

No literature identified.

Appendix — Further Information

Related CADTH Reports

1. Reprocessing of surgical devices: safety and evidence-based guidelines. (*CADTH Rapid response report: reference list*). Ottawa (ON): CADTH; 2016: <https://www.cadth.ca/reprocessing-surgical-devices-safety-and-evidence-based-guidelines-0>. Accessed 2019 Jun 28.
2. Reprocessing of endoscopy devices: clinical effectiveness and guidelines. (*CADTH Rapid response report: reference list*). Ottawa (ON): CADTH; 2016: <https://www.cadth.ca/reprocessing-endoscopy-devices-clinical-effectiveness-and-guidelines-0>. Accessed 2019 Jun 28.
3. Steam sterilization air removal methods: guidelines. (*CADTH Rapid response report: reference list*). Ottawa (ON): CADTH; 2016. <https://www.cadth.ca/steam-sterilization-air-removal-methods-guidelines>. Accessed 2019 Jun 28.
4. Sterilization of gauze for surgical procedures: clinical effectiveness, harms, and guidelines. (*CADTH Rapid response report: reference list*). Ottawa (ON): CADTH; 2014: <https://www.cadth.ca/sterilization-gauze-surgical-procedures-clinical-effectiveness-harms-and-guidelines>. Accessed 2019 Jun 28.

Non-Randomized Studies

Flash Sterilization Not Specified in Abstract

5. Liu A, Lawrence N. Incidence of infection after Mohs micrographic and dermatologic surgery before and after implementation of new sterilization guidelines. *J Am Acad Dermatol*. 2014;70(6):1088-1091. [PubMed: PM24680104](#)

Clinical Practice Guidelines – Methodology Not Specified

6. Immediate use steam sterilization (IUSS) for emergency situations. Edmonton (AB): Alberta Health Services; 2017: <https://www.albertahealthservices.ca/assets/healthinfo/ipc/hi-ipc-sop-iuss-emergency-z0-res-topics-mdr.pdf>. Accessed 2019 Jun 28.
7. Decontamination of surgical instruments (HTM 01-01); 2013-2016. London (UK): Department of Health; 2016: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/545863/HTM0101PartC.pdf. Accessed 2019 Jun 28.
See: Section Steam Sterilization
8. Change in terminology and update of survey and certification (S&C) memorandum 09-55 regarding immediate use steam sterilization (IUSS) in surgical settings. Baltimore (MD): Centers for Medicare and Medicaid Services; 2014: <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-14-44.pdf>. Accessed 2019 Jun 28.

9. Advancing Safety in Medical Technology, Accreditation Association for Ambulatory Health Care Inc, Association of periOperative Registered Nurses, Association for Professionals in Infection Control and Epidemiology, et al. Immediate-use steam sterilization. [no date]; <https://www.aorn.org/-/media/aorn/guidelines/position-statements/posstat-endorsed-immediate-use-steam-sterilization.pdf>. Accessed 2019 Jun 28.
10. Infection prevention and control (IC) (critical access hospitals / critical access hospitals). Oakbrook Terrace (IL): The Joint Commission; 2019: https://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFAQId=1474&StandardsFAQChapterId=21&ProgramId=0&ChapterId=0&IsFeatured=False&IsNew=False&Keyword. Accessed 2019 Jun 28.

Review Articles

11. Tipnis NP, Burgess DJ. Sterilization of implantable polymer-based medical devices: a review. *Int J Pharm*. 2018;544(2):455-460. [PubMed: PM29274370](#)
12. Rutala WA, Weber DJ. Disinfection, sterilization, and antisepsis: an overview. *Am J Infect Control*. 2016;44(5 Suppl):e1-6. [PubMed: PM27131128](#)
13. Humphries RM, McDonnell G. Superbugs on duodenoscopes: the challenge of cleaning and disinfection of reusable devices. *J Clin Microbiol*. 2015;53(10):3118-3125. [PubMed: PM26202125](#)

Additional References

14. ASC Quality Collaboration. Sterilization and high-level disinfection toolkit. 2019; <http://www.ascquality.org/SterilizationHighLevelDisinfectionToolkit.cfm>. Accessed 2019 Jun 28.
15. Link T. Guideline implementation: sterilization. *AORN J*. 2019;109(6):772-782. [PubMed: PM31135984](#)
16. Gillespie E, Brown R, Treagus D, James A, Jackson C. Improving operating room cleaning results with microfiber and steam technology. *Am J Infect Control*. 2016;44(1):120-122. [PubMed: PM26476495](#)
17. Rutala WA, Weber DJ. Reprocessing semicritical items: current issues and new technologies. *Am J Infect Control*. 2016;44(5 Suppl):e53-62. [PubMed: PM27131136](#)
18. Foster S, Sullivan SC, Brandt J, et al. Code flash: how an interdisciplinary team eradicated immediate-use steam sterilization. *Infect Control Hosp Epidemiol*. 2015;36(1):112-113. [PubMed: PM25627770](#)
19. Sheffer J. Hospital takes hard look at immediate-use steam sterilization. *Biomed Instrum Technol*. 2015 Jul-Aug;49(4):273-276. [PubMed: PM26196916](#)

20. International Organization for Standardization. ISO 11140-1:2014: Sterilization of health care products — chemical indicators — part 1: general requirements. 2014; <https://www.iso.org/obp/ui/#iso:std:iso:11140:-1:ed-3:v1:en>. Accessed 2019 Jun 28.