

Medical Device Reprocessing

in a Circular Economy - Onsite vs Offsite -

2022
CME WEBINARS
SERIES #3



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intro

THE PURPOSE OF THE CSSD ROLE IS TO GUARANTEE THE DELIVERY OF MEDICAL DEVICES IN A STERILE STATE TO THE OPERATING ROOM AND THE CLINICAL CARE UNITS. THE MEDICAL DEVICES STERILIZED VARY IN COMPLEXITY, FROM SIMPLE KOCHER FORCEPS OR FROBOT OPTICS AND INSTRUMENTS TO ORTHOPEDIC MOTORS, OR FLEXIBLE UROLOGICAL ENDOSCOPES, ETC.

HEALTHCARE FACILITIES CAN CHOOSE TO HAVE AN ON-SITE CSSD OR TO OUTSOURCE THIS SERVICE TO AN EXTERNAL STRUCTURE. THE CHOICE IS NOT SIMPLE BECAUSE MANY FACTORS COME INTO PLAY, WHICH ARE ECONOMIC AND ORGANIZATIONAL. EACH CHOICE HAS ITS ADVANTAGES AND DISADVANTAGES.¹

MD Reprocessing: its importance for patient safety and how are we proceeding today

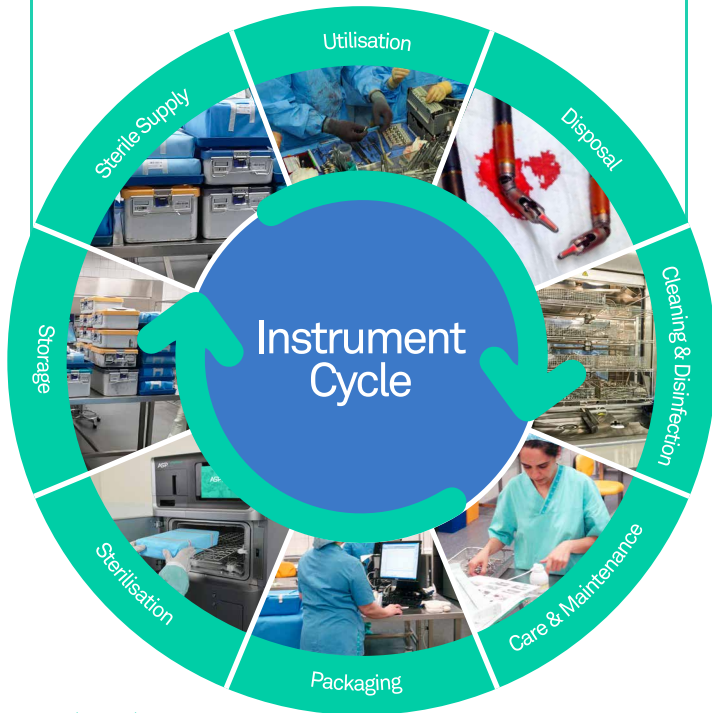
Nowadays, all CSSDs are organized everywhere according to the same principle defined by the good practice guidelines, based on the analysis of the needs specific of the healthcare facility to be provided. The activity of a CSSD therefore varies according to the size of the health establishment and its activity. It should be noted that most of the work of the CSSD is provided by the operating rooms.



Old times...



Nowadays...



The CSSD has 3 areas: washing area, control and packaging area and sterile output area.

Each of these areas will allow to follow the evolution of a M.D. within the CSSD, making it progress from "contaminated" to "sterile conditioned".²

Without the expertise of the CSSD skilled personnel, operating rooms would not be able to function.

This is known as the science of sterilization. Mastery of skills is necessary at all levels of the process to achieve the goals set, the most important of which is patient safety. This means having qualified personnel and regularly updated procedures.³

The CSSD responds to the needs of the operating rooms and therefore, the patient. Its organisation is based on the latest Quality Standards of ISO 13485 on the processing of reusable medical devices (RMDs) and maintaining quality system.⁴

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In CSSD, mastery of skills is necessary at all levels of the process to achieve the goals set, the most important of which is patient safety. This means having qualified personnel and regularly updated procedures.”



Without the expertise of the CSSD skilled personnel, operating rooms would not be able to function.

On-site sterilization: advantages and disadvantages

In large hospitals, the CSSD is an on-site department. Having an on-site CSSD allows a quick service, less transportation for reprocessed MD. Communication is facilitated between operating rooms and CSSD especially in case of emergencies. Quick and easy responses allow to have less inventory in ORs which is less cost.¹

At the same time CSSD is also an expensive unit and requires skilled and committed personnel paid by the hospital and a lot of infrastructure like being close to the operating rooms, with a large surface area, equipment, clean rooms with air treatment, water treatment, electricity, supplies for cleaning, reprocessing and sterilization. Maintenance and controls by manufacturers and biomedical engineers are necessary but expensive.⁵



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On-site CSSD allows to have less inventory in ORs which is less cost and also quick and easy responses between the two teams.”



Photo: AdobeStock_117983737



On-site CSSD facilitates communication with ORs and allows a quicker service for the patients.

Off-site sterilization: advantages and disadvantages

Hospitals can choose to outsource this service to an external structure. The choice is not simple neither because many factors come into play, which are economic and organizational. This choice has its advantages and disadvantages.

Off-site CSSD provides the service to healthcare facilities that do not have the necessary space or to allow them to use several square meters efficiently for other departments. Off-site CSSD allows also to optimize costs (equipment, salaries, maintenance, etc.) and reduce idle time by better organization of the activity.

However, this organization also has disadvantages starting with the transport of medical devices which can be expensive and polluting and the cause of delays. This means that the supply to operating rooms will be slower, which will force them to have more MDs on their shelves. The risk of errors during reprocessing trays and the loss of instruments must be considered.^{1,5}

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Off-site CSSD allows also to optimize costs (equipment, salaries, maintenance, etc.) and reduce idle time by better organization of the activity.”



An objective evaluation of the needs is necessary for outsourcing the CSSD activity.



Photo: courtesy from www.aspuniversity.com

Suggestions for the Planet on MD Reprocessing strategies

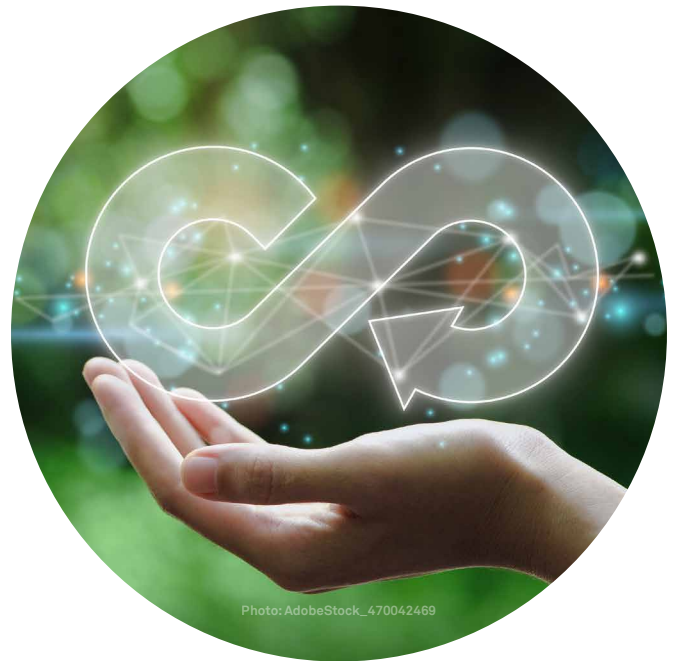


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More and more often manufacturers of MD are keen to improve their environmental impact. Their strategies to respect the planet begin with their commitment to ISO 14001 certification⁶, which means that they are committed to a sustainable development approach by implementing actions to improve their environmental performance.

Let us be aware that caring of the environment and reducing the CO₂ footprint is not just the concern of technical services and customer services. Each of us

who work in CSSD and use the equipment, can participate to reduce the carbon footprint by respecting the instructions for use provided by the manufacturer and the schedule established for maintenance. Two basic details to think about are to avoid using the washers or the sterilizers for just a few MD and to turn off the light, the electric and electronic devices when possible. This helps saving water and electricity.⁷

If the suppliers or the outsourced CSSD are nearby, this therefore makes possible to reduce CO₂ emissions by reducing transports time, either for supplies or for the MD to be reprocessed. This also takes less time, helps to control deadlines while ensuring a quality service.

The repair of CSSD equipment is another example: when possible, having customer service nearby and good support for good maintenance is very helpful. Well-maintained devices have a longer lifespan and optimized performance.

Waste management is essential.⁷ In hospitals, we produce millions of tons, hazardous waste, and general, non-hazardous waste. We can recycle to reduce the amount of waste, principle of the circular economy. We do it in our homes trying to reduce waste as much as possible. This is applicable in healthcare facilities and also in the CSSD where there is no hazardous waste. The packaging boxes, the wrapping and the paper/plastic peel packages can be sorted for recycling. Use reusable containers instead of soft wrapping packaging.



Caring for the environment, and reducing the CO₂ footprint should be each one's concern wherever we work, especially in healthcare facilities where are produced million of tons of waste.

Computerized reports help reducing printed documents.

Multiple use MD should be preferred to single use MD. Damaged multiple used MD can be repaired and if not repairable anymore, can be recycled.⁸

Recycled packaging, paper, plastic, and steel can be brought into a high-quality raw material to be manufactured again.⁸

CSSD equipment can be recovered by manufacturers and refurbished and resold.⁸

Let's privilege the quality of MD: a good quality MD or medical equipment is more expensive to buy but last longer.

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It becomes imperative to adapt our methods in the operating room and in the CSSD and to work in a circular economy perspective, to reduce the carbon footprint for the patient, for the health system and to preserve our Planet.”

Photo: Freepik-front-view-plant-growing-from-golden-coins

Resume

WE HAVE TO BE AWARE OF THE IMPORTANCE OF HAVING TO PRESERVE OUR ENVIRONMENT.

It becomes imperative to adapt our methods in the operating room and in the CSSD and to work in a circular economy perspective, to reduce the carbon footprint for the patient, for the health system and to preserve our planet.

In general, large hospitals have their own sterilization department. There are also outside facilities that provide this service and work as a sterilization department.

Would it be interesting to have a sterilization service onsite, close to the operating room and the health care services, or to outsource this service to facilities far away from the hospital?

The question is not new and both solutions have advantages and disadvantages, because we should consider the economic aspect, the modalities to continue to ensure safe and quality patient care. But let's not forget that the issue is not only about money, organization and the place where the MD reprocessing will be done. Many other factors should be taken into account.

take home messages

- 01** CSSDs play an important role in patient care, patient safety and infection prevention: Reprocessing of MD is an indirect patient care that must be provided by skilled personnel. It is extremely important to provide a high quality and reliable process by applying validated and up-to-date procedures.
- 02** On-site CSSD has advantages, especially for large healthcare facilities with a large volume of MD to be processed. The proximity of the CSSD saves time for the MD processing since there are no transportation to consider. However, this entails enormous costs in terms of equipment, materials, personnel and maintenance.
- 03** Off-site CSSD is less costly for small health care facilities which have less volume of MD to be processed. However, it is important to organize it very carefully, considering all the steps of the process to avoid problems such as reprocessing errors, loss of MD or delays in delivery.
- 04** In a nutshell, either choice can be beneficial to a healthcare facility. The important thing is to adapt the best solution to the needs, to forget about prejudices and to be objective when taking decisions.
- 05** The health of the earth is deteriorating. It is becoming urgent to think and to act for a positive change in our way of life and in our workplace. We realize how important it is to "think green" in CSSDs by saving costs, stopping the waste and finding sustainable solutions for reprocessing RMD. Several examples in healthcare, showcase the impact of Circular Economy on this cost reduction (SUD, medical waste, water, energy, etc.). There is also literature and governmental directives (eg. ISO14001) to guide us, but what is important is that each of us becomes an actor in this change.

¹ Relocating Sterile Processing Activities to an Off-Site Facility: Cost, Design, and Project Management Considerations April Cardone; Carolyn A. Grous, - AORN Journal, July 2020, Vol. 112, No. 1, pp 30-38 ² Decontamination and Reprocessing of Medical Devices for Health-care Facilities, <https://apps.who.int/iris/bitstream/handle/10665/250232/9789241549851-eng.pdf;jsessionid=3D2B2C5446E0235F3AEEE6006D7EBA16?sequence=1> ³ SOCIÉTÉ FRANÇAISE DES SCIENCES DE LA STÉRILISATION, Guide Bonnes Pratiques de Stérilisation des Dispositifs Médicaux Réutilisables, <https://bonnespratiques.sf2s-sterilisation.fr/wp-content/uploads/2021/11/Guide-bonnes-pratiques-07-2021-VD.pdf>, access on 20221014 ⁴ ISO13485, <https://www.iso.org/obp/ui#iso:std:iso:13485:ed-2:v1:fr>, accessed 20221018 ⁵ Outsourcing or not outsourcing? stérilisation magazine, page 10 111 # Été 2019 https://www.mobius.eu/app/uploads/Sourcing_Stemag111.pdf, October 2022 ⁶ ISO 14000 Family Environmental Management <https://www.iso.org/iso-14001-environmental-management.html> October 2022 ⁷ European Association of Hospital Pharmacists (EAHP) - 23-28 March 2021; https://www.eahp.eu/sites/default/files/1isg-027_1.pdf ⁸ A Circular Healthcare Economy: a feasibility study to reduce surgical stainless-steel waste HYPERLINK "<https://www.sciencedirect.com/science/article/pii/S2352550920313701#!>" B.van HYPERLINK "<https://www.sciencedirect.com/science/article/pii/S2352550920313701#!>" HYPERLINK "<https://www.sciencedirect.com/science/article/pii/S2352550920313701#!>" HYPERLINK "<https://www.sciencedirect.com/journal/sustainable-production-and-consumption>" Sustainable Production and Consumption Journal, HYPERLINK "<https://www.sciencedirect.com/journal/sustainable-production-and-consumption/vol/27/suppl/C>" Volume 27, July 2021, Pages 169-175, <https://www.sciencedirect.com/science/article/pii/S2352550920313701>

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