

# MAKING A GREEN AND LEAN CHOICE: EVALUATING THE ENVIRONMENTAL AND ECONOMIC IMPACTS OF REPROCESSABLE AND SINGLE-USE MEDICAL DEVICES IN HOSPITAL SETTINGS


Samantha HUYNH<sup>1</sup>, Olivia MAZZASCHI<sup>2</sup>, Valérie TALON<sup>1</sup>, Emilie MOREAU<sup>1</sup>

<sup>1</sup> Pharmacy department, Saint-Joseph Hospital, Paris, France  
<sup>2</sup> Ear, Nose and Throat department, Saint-Joseph Hospital, Paris, France



## WHAT WAS DONE?

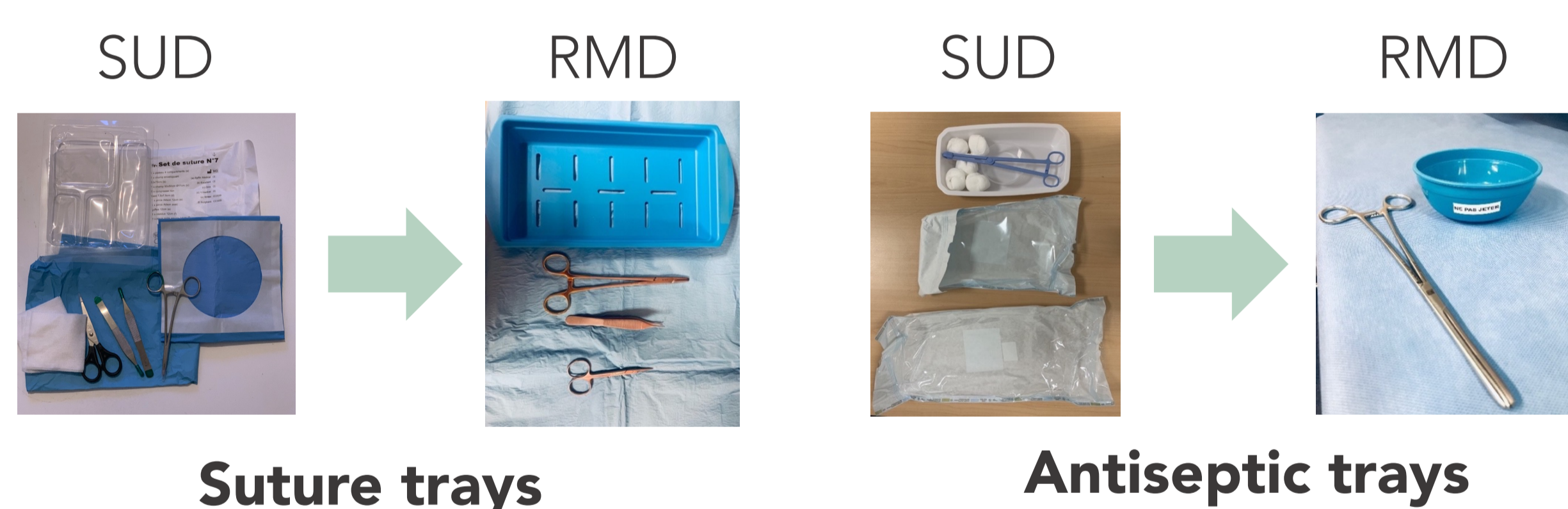
A comprehensive analysis of the potential **benefits** and **challenges** associated with the substitution of single-use medical devices (SUDs) with reprocessable medical devices (RMDs) within a hospital setting.

 One-criterion life cycle analysis through assessment of CO<sub>2</sub> emissions

## WHY WAS IT DONE?

- ✓ Healthcare systems face a growing need to balance patient care with environmental responsibility.
- ✓ This approach was initiated at the request of surgeons and was proposed during institutional committees addressing environmental issues.

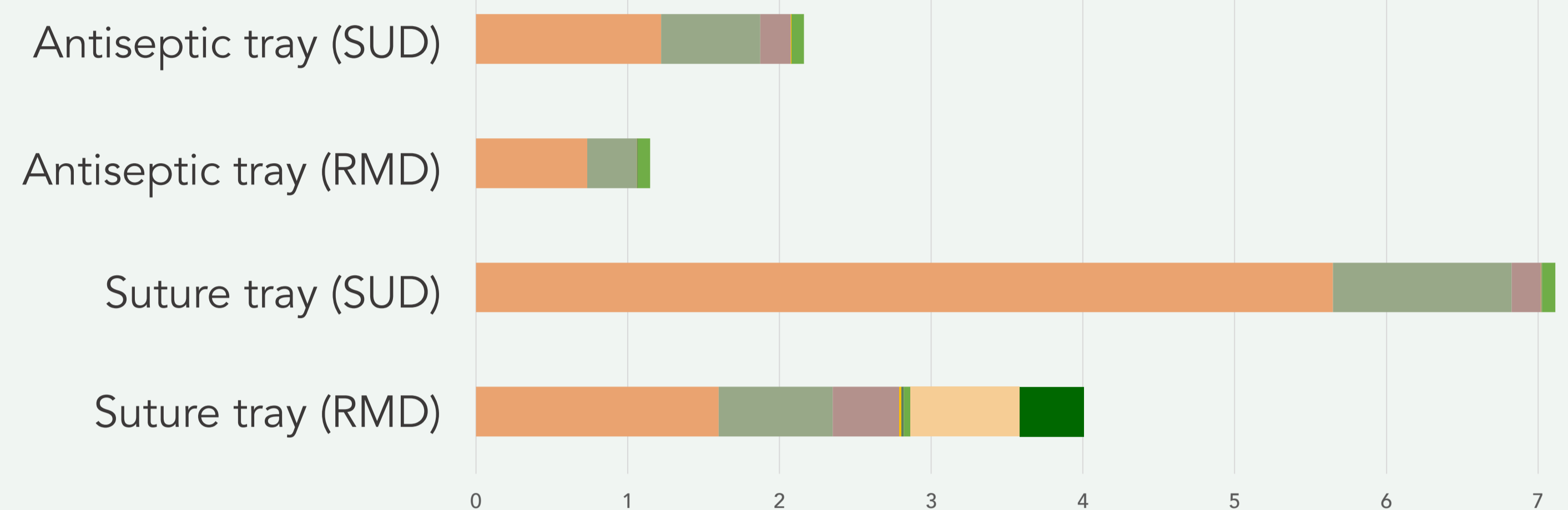
## HOW WAS IT DONE?



ENVIRONMENTAL IMPACT	ECONOMIC IMPACT	ORGANISATIONAL IMPACT
<b>Carbon footprint of SUD and RMD</b>	<b>Cost associated with the substitution of SUD with RMD</b>	<b>Acceptance by healthcare professionals</b>
<ul style="list-style-type: none"> <li>Manufacturing origin</li> <li>Transportation</li> <li>Material composition</li> <li>Energy and water consumption (RMDs)</li> <li>Carbon equivalence based on weight</li> </ul>	<ul style="list-style-type: none"> <li>Purchasing and management costs (SUDs and RMDs)</li> <li>Acquisition and sterilization costs (RMDs)</li> </ul>	<ul style="list-style-type: none"> <li>Observational audits (n=30)</li> <li>User satisfaction surveys (n=7)</li> </ul>

## WHAT HAS BEEN ACHIEVED?

ENVIRONMENTAL



Emissions per category and per medical device (in CO<sub>2</sub> equivalent)

- Manufacturing energy
- Materials and packaging
- Ethylene oxide sterilization
- Steam sterilization
- Waste
- Transportation
- Storage energy
- Manufacturing of single-use consumables (gauze pads, surgical drape)

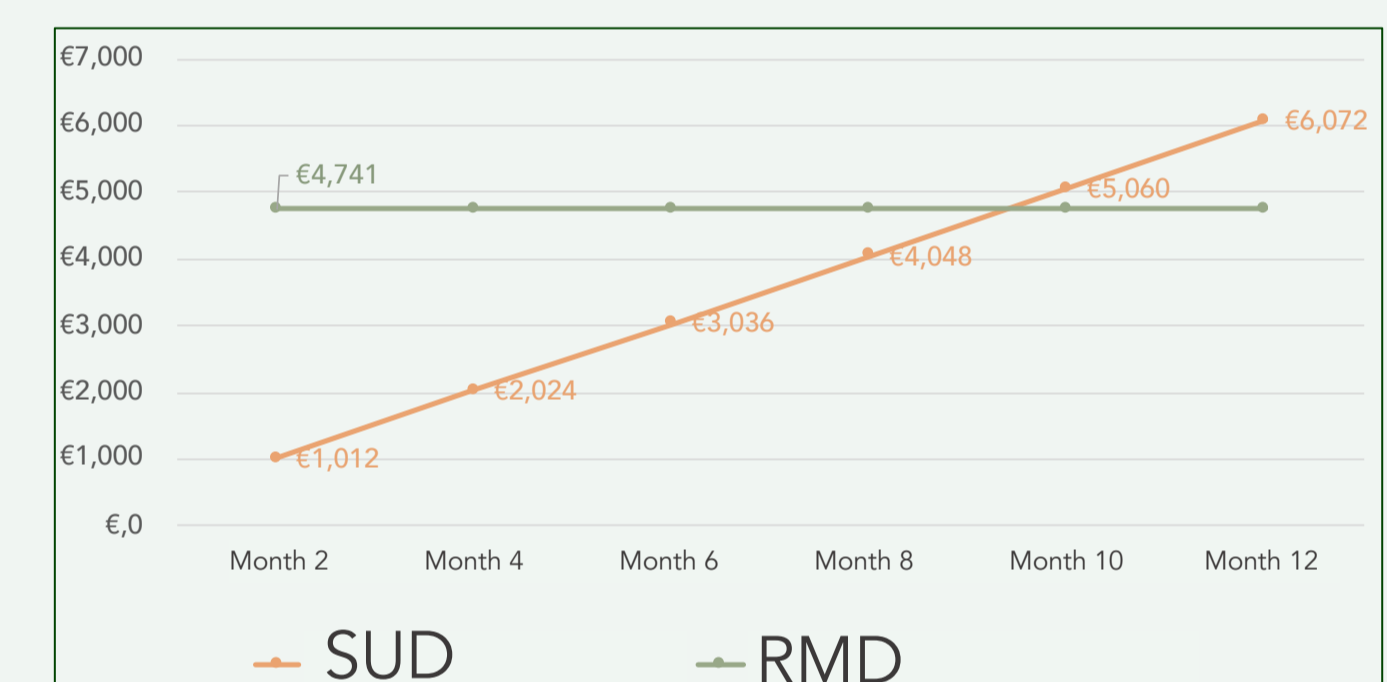
RMDs led to a significant reduction in the carbon footprint.

The potential annual reduction of CO<sub>2</sub> emissions is 5.2 tons per year.

ECONOMIC



Comparison of total costs of single-use and reprocessable suture trays over 10 years



Comparison of total costs of single-use and reprocessable antiseptic trays over 1 year

The initial investment in RMDs could be recovered within a remarkably short timeframe (10 months to 5 years), making it a viable long-term cost-saving strategy.

ORGANISATIONAL



User feedback showed a preference for RMDs despite slight inconveniences, with 71% of respondents supporting the reduction of SUDs and 83% perceiving RMDs as of superior quality.



50% reduction in single-use suture and wiping trays, one year after the introduction of their reusable equivalent.

## WHAT NEXT?

- ✓ Feasibility and benefits of transitioning to RMDs.
- ✓ Significant reduction in carbon footprint and economic viability.
- ✓ A balanced approach prioritizing sustainability without compromising the quality of care is possible.
- ✓ This approach will be replicated in diverse healthcare settings, contributing to a more sustainable future management.