

2022 Best Research Poster Award



Are Single-Use Flexible Cystoscopes Environmentally Sustainable?

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INTRODUCTION

Evolving science and technology has led to advances in the flexible cystoscopes used in practice today. It has been demonstrated that single-use cystoscopes may provide a safe and cost-effective way to perform flexible cystoscopy^{1,2,3}. However, the environmental impact of single-use scopes has not been fully investigated. The carbon footprint of the healthcare industry is coming under greater scrutiny as the world becomes more aware of the climate change crisis.

OBJECTIVES

Currently, the healthcare industry is responsible for 7% of Australia's carbon emissions⁴. Therefore, the sustainability of single-use scopes is an important consideration for hospitals prior to purchasing these for clinical practice. We have conducted a simplified lifecycle analysis to compare the carbon footprint of the Ambu[®] aScope™ 4 Cysto System vs Olympus CYF-VH reusable flexible cystoscope.

METHOD

A simplified lifecycle analysis was performed to compare the carbon footprint of the Ambu[®] and Olympus cystoscopes. The manufacturing cost of both cystoscopes was calculated, and the average lifecycle of the reusable cystoscope was included in the manufacturing footprint calculation for the Olympus reusable cystoscope. Transportation costs were calculated for the Ambu cystoscope from the manufacturing plant to the Australian destination. Reprocessing costs were calculated using the Soluscope 3 automatic endoscope reprocessor that is used for cystoscope reprocessing in our centre. This included the use of one extra set of personal protective equipment (PPE), that would need to be worn by the technician sterilising the equipment.

RESULTS

Interestingly, the results demonstrate that the Ambu[®] cystoscopes are an environmentally friendly alternative to the reusable Olympus scopes, with a 36% lower carbon footprint. The carbon footprint of the Ambu[®] scope is 1.43kg CO₂ compared to 2.22kg CO₂ for the reusable Olympus cystoscope. These results may vary from centre-to-centre depending on the cystoscope reprocessor used by individual centres.

Lifecycle Stage	Carbon Footprint (kg CO ₂)	
	Ambu [®] aScope™ 4 Cysto System	Olympus CYF-VH
Manufacturing	1.18	0.02
Transportation	0.09	-
Sterilisation + repair cost	-	2.20
Waste	0.16	0.003
TOTAL	1.43	2.22

Table 1. Breakdown of the carbon footprint of single-use vs reusable cystoscopes.

DISCUSSION

The environmental benefit of switching to single-use cystoscopes is something that should be considered by urology centres. The willingness of the urologist performing the cystoscopy to use a single-use cystoscope is also something that needs to be considered, however, studies demonstrated a preparedness by urologists to switch to single-use devices, this mimics a similar trend that is occurring in bronchoscopy^{5,6}.

CONCLUSION

New, single use flexible cystoscopes such as the Ambu[®] aScope™ 4 Cysto System are a safe and carbon efficient evolution to current cystoscopy practice. Thereby, hospitals may want to consider switching to single-use cystoscopes to improve their environmental emissions.

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