

Carbon footprint in flexible ureteroscopy: a comparative study on the environmental impact of reusable and single-use ureteroscopes

Davis NF, et al. J Endourol. 2018 Mar;32(3):214-217



Analysis undertaken of typical life cycle and carbon footprint

- Single-use LithoVue™ flexible ureteroscope
- Reusable Olympus Flexible Video Ureteroscope (URV-F)



Carbon footprint for single-use LithoVue (kg of CO₂ per case)

Manufacturing	3.83 kg
Sterilisation	0.3 kg
Solid waste	0.3 kg



Carbon footprint for reusable URV-F* (kg of CO₂ per case)

Manufacturing	0.06 kg
Washing/sterilisation	3.95 kg
Repackaging	<0.005 kg
Repair	0.45 kg
Solid waste	0.005 kg

SINGLE USE

TOTAL

4.43 kg of

CO₂ per endourologic case



REUSABLE

TOTAL

4.47 kg of

CO₂ per endourologic case



The environmental impacts of the reusable flexible ureteroscope and the single-use flexible ureteroscope are comparable



Study overview – Davis et al, 2018

Authors: Davis NF, McGrath S, Quinlan M, Jack G, Lawrentschuk N, Bolton DM.

Published: J Endourol. 2018 Mar;32(3):214-217. doi: 10.1089/end.2018.0001. Epub 2018 Feb 21.

Study objectives: To compare the environmental impact of single-use flexible ureteroscopes (LithoVue™; Boston Scientific) with reusable flexible ureteroscopes (Olympus Flexible Video Ureteroscope; URV-F).

Methods:

- Analysis undertaken of the typical life cycle of the LithoVue single-use digital flexible ureteroscope and the reusable URV-F
- To assess carbon footprint, data obtained on:
 - **Manufacturing:** of both single-use and reusable flexible ureteroscopes
 - **Typical uses** of a reusable scope, including repairs and replacement instruments
 - **Disposal** of both types of ureteroscopes
- Carbon footprint calculated using standardised protocol guidelines:
 - For single-use and reusable flexible ureteroscopes: mass of CO₂/kg emitted during the manufacturing process was determined
 - For reusable flexible ureteroscopes: carbon footprint (kg of CO₂ per case) of was calculated using validated models

Key results:

- The reusable URV-F flexible ureteroscope and the LithoVue single-use flexible ureteroscope showed comparable environmental impacts.
- The total carbon footprint of the lifecycle of each device evaluated was <5 kg of CO₂ per case, which compares favourably with other medical equipment and surgical procedures.
- Research in the field of urology should focus on strategies to reduce the environmental effects of CO₂ emissions that occur during the course of patient treatment.



For more information about the LithoVue™ Single-Use Digital Flexible Ureteroscope, visit
<http://www.bostonscientific.com/en-EU/products/Ureteroscopes/LithoVue.htm>

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URO-583110-AA Nov 2018

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