



Economic Burden from Reusable Scope Repairs: A Literature Review

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OBJECTIVES

- Repair costs are a hidden component of reusable scopes. True economic burden of maintaining and repairing these expensive and highly utilized devices is not well-described.
- To better understand ongoing repair expenses to a hospital's scope fleet, a literature search was conducted to review the published evidence.

METHODS

- Conducted Pubmed literature search for articles published globally between January 2010 and June 2021 that reported repair costs of reusable scopes including bronchoscopes, ureteroscopes, fiberscopes, duodenoscopes, colonoscopes, and gastroscopes.
- These scopes were selected as commonly used devices in diagnostic and interventional procedures.
- Articles excluded if repair costs weren't specified.

RESULTS

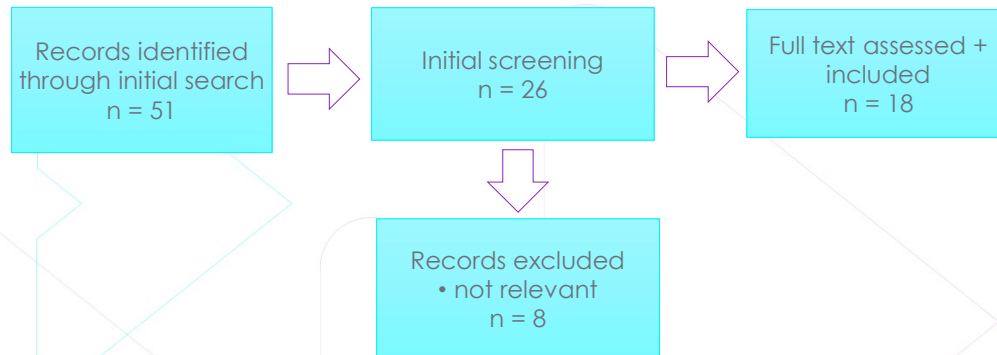
- Of 26 retrieved articles, 18 met inclusion criteria (11 bronchoscopy studies, 7 ureteroscopy studies).
- 17 publications were single-center analyses. 1 publication sent questionnaire about repair rates and costs for reusable bronchoscopes to US, German, and UK hospitals.
- Mean repair costs to the hospitals from the questionnaire were USD \$4275 per repair for US hospitals, USD \$4285 for German hospitals, and USD \$1757 in UK hospitals.
- Repair causes included failed leak tests, tears, cloudy lens, and broken optic fibers.
- Costs per case of repair ranges: USD \$148 - \$7521 in US hospitals, €213 - €5956 in EU hospitals.

CONCLUSIONS

- Ongoing repair costs of reusable scopes are often opaque to hospital administrators, yet significantly add to the economic burden of hospitals globally. This may be especially true at teaching hospitals and high-volume medical centers.
- Given pressure to improve cost efficiency in the healthcare system, these results indicate hospitals assess their repair costs and consider transitioning to single-use scopes to reduce future expense.

REFERENCES

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Highlighted Details of Repair Burden

Study	Repair Burden
Marshall et al, 2017	Indirect costs such as cost of scope repair, cart equipment repair, on-call technicians, and staff utilization in scope cleaning/maintenance led to higher costs than SUB for less benefit. EU study reported average repair cost/damage = €213 - 5956.
Isaacson et al, 2017	Ureteroscope repairs occur once every 10 cases, associated average cost = \$9,420 per repair, plus \$139 of labor per repair. Rate of repair and per-case value = \$956 align with other published results from large academic medical centers.
Kramolowsky et al, 2016	31 repairs on 4 flexible ureteroscopes over 3 years. Most common repair causes were clouded lens and broken fibers. Average length of time for repair = 11 days, average cost = \$7521/repair.
McCahon et al, 2014	Total cost of maintenance and repairs for fibrescopes averaged £19,927/year. Given 141 intubations annually, average cost of intubation with reusable fibrescope = £329/use. Cost of repairs and maintenance = largest proportion of that cost (43%).
Hennessey et al, 2018	234 ureteroscope procedures with 7 reusable scopes, 15 cases of damage (likely to recur). Total repair costs = \$162,628 AUD (£92,411), mean cost per case = \$692 (£395). Cheaper to use multiple single-use scopes during procedure than to repair reusable digital scope.

DISCLOSURES

Sonia Lee, Geri Cramer, and Sirikan Rojanasart are employees of Boston Scientific.