



A Literature Review of UV-C Light Decontamination as an Alternative to Endoscope Washer Disinfectors in Flexible Nasoendoscopy

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Abstract

Introduction: Flexible nasoendoscopy is a critical diagnostic tool in ENT practice, with consultants performing up to 1,000 procedures annually. Endoscope Washer Disinfectors (EWDs) are the gold standard for decontamination, but their cycles take up to 45 minutes and consume 0.62–2.04 kWh of electricity. This highlights the need for sustainable and efficient alternatives.

Methodology: A literature review examined the use of UV-C light decontamination, focusing on efficacy, energy consumption, and practical application as an alternative to EWDs for nasoendoscopes.

Results: UV-C light decontamination is widely used in healthcare and commercial settings, including water treatment. Evidence shows that UV-C light cabinets are as effective as EWDs in eliminating microbial contaminants, with no difference in residual colony-forming units (CFUs). UV-C cabinets consume only 0.01 kWh per cycle, require no chemicals, and complete decontamination in one minute. This represents a 60- to 600-fold reduction in energy consumption compared to EWDs, with significant CO₂ emission reductions. For a department with six ENT consultants, UV-C decontamination could save 3,660–12,180 kWh annually. The faster turnaround also reduces the need for a large stock of nasoendoscopes, further cutting energy and material demands related to manufacturing.

Conclusion: UV-C light decontamination is a sustainable, efficient alternative to EWDs. It maintains decontamination standards while significantly reducing energy use and turnaround times. Implementing UV-C cabinets in ENT departments could streamline workflows, reduce environmental impact, and deliver cost savings, warranting further exploration of this innovative approach.

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