Study Summary Report

Reusable versus Single-use Anaesthetic Equipment
Life Cycle Cost and Environmental Savings

Financial and environmental costs of reusable and single-use anaesthetic equipment.
McGain F, Story D, Lim T, McAlister S. Br J Anaesth. 2017;118(6):862-869.

Life Cycle Assessement is an internationally, standardized, science based approach to **quantify multiple environmental and public health impacts of a product and/or process over its entire life span**, from raw material extraction, device production, transport, use and reusable and end of life disposable. Life Cycle Assessment should **support procurement in decision making** on the **real costs** and **environmental burden** of a product.

This study aims to assess in two Australian hospital with 6 operating rooms (OR) real costs from changing from reusable to disposable anaesthetic equipment, including various different multi-use vs single-use anaesthetic equipment combinations scenarios*

Significant life cycle and environmental savings of re-usable vs. mainly single-use anaesthetic equipment.

Environmental Savings:
Greenhouse Gas Emissions (GHG) measured in CO2 equivalents
Depends on energy source, up to 50 % (US) p.a. or similar in Australia due to mainly coal sourced energy used

~85% p.a.

Annual Operating Cost Savings:
All multi-use vs. mainly single-use in 2015 with 6 operating rooms

~46% p.a.
- 32.033 AU$

"In all five scenarios the financial cost to process single-use anaesthetic equipment was more than for reusable anaesthetic equipment."

Important quotes:

> "If all UK hospitals had single use anaesthetics and would convert to reusables this would be the equivalent of **taking >1000 cars off UK roads".**

> "Given that **reusable direct laryngoscope blades could be washed with surgical equipment in surgical-type washer loads,** the **consequences of replacing them with single-use variants would not lead to any measureable reduction in the number of washer loads** required".

> "We did **not include washer and sterilizer maintenance and depreciation as these are fixed annual costs.** These costs would be unaltered by the presence or absence of reusable anaesthetic equipment, owing to the much larger number of surgical items that would require cleaning regardless".

> **"Labour costs to process all reusable equipment were modest.** Most **environmental impacts to process anaesthetic equipment were small,** with only CO2 emissions and water use being relatively important".

*Scenario 1 All Multi-use (MU) anaesthetic circuits/ face masks and Laryngeal mask airways (LMA), direct and videolaryngoscope blades and handles Scenario 2: Mainly Single Use (SU) anaesthetic circuits/ face masks/ LMA/Blades, but MU handles & videolaryngoscopes, Scenario 3 All SU (Model), Secnario 4 Mainly MU, only SU. https://www.greenhospitals.net/wp-content/uploads/2017/09/Comparing-Reusable-to-Single-use-Anesthetic-Equipment-Australia.pdf, accessed on Oct 18th 2017 face masks (Model), Scenario 5 Mainly MU, only SU blades (Model).

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