How hospitals can swap single-use medical devices for reusables

Submitted by: BlueSky Education
Thursday, 1 August 2024

Making the switch from single-use medical devices to tools that are reprocessed, repaired and recycled will help to reduce hospital expenditure, solve common operational challenges and decrease the damage done to the environment through their safe disposal, according to new research from Rotterdam School of Management Erasmus University (https://www.rsm.nl/).

The study, conducted by Masters graduate Mels Arnoldy (https://www.linkedin.com/in/mels-arnoldy-428b01175/) analyses over 500 common single-use devices and provides comprehensive and structured evidence that reusable medical devices have lower environmental impact and costs than single use tools.

However, to create such circular hospitals, the industry's material logistics infrastructure must be adapted.

"Over the past 30 years, hospitals have become more reliant on single use medical devices with linear value chains that start with manufacture and end with disposal. Many of these medical devices are made of complicated combinations of materials that make it difficult to deal with the waste they produce, so they contribute to environmental pollution. Ultimately, they negatively affect global health, which is a big paradox as this is what the healthcare sector should protect. And in addition to this paradox, linear value supply chains are expensive and vulnerable to disruptions – which can be disastrous for hospitals," says Arnoldy.

The study identifies 70 such problems experienced by hospitals in relying on, and disposing of single-use tools.

By also consulting with businesses and other experts, the study goes on to provide a step-by-step blueprint for hospitals to follow in order to become circular, greener and more efficient.

Arnoldy sets out four main concerns and benefits for healthcare decision-makers;

1. Track and Trace: The study identifies this as a vital first step, and the most important material logistics element as monitoring the use of each type of item can indicate to healthcare providers which devices can be swapped for reusable versions. This is key to ensuring a hospital can become more circular.
2. Life cycle analysis and costing: The research advises that further study for life cycle analysis and life cycle costing can be powerful methods for advocating a change in mindset amongst decision makers in the sector. Further studies, Arnoldy says, are needed.
3. Monetisation: Monetising a device's environmental and social impact can help to illustrate which options for device production and disposal are more sustainable.
4. Investment: Acknowledging that changing to reusable medical devices will need investment, the study points out that costs can be recouped in two ways – from expenditure, and through costs associated with their lower environmental impact.

“I was able to conclude that tracking and tracing is the most important element in the material logistics infrastructure, and it’s related to the first solution step that hospitals should start with: they need to identify the current locations of their unique medical devices. They could do this using perhaps more frequent barcode scanning, orRFID-technology, or low energy Bluetooth. Tracking and tracing would directly solve most of the problems. It would also allow automation of parts of the material logistics infrastructure,” says Arnoldy.

The study has won four thesis awards; the Professor Jo van Nunen Award (MSc Supply Chain Management), Vereniging Walhalla thesis award (RSC/RVSV), Nevi thesis award (Procurement, Contract- and Supply Chain Management), International Phillipe de Woot Award (Corporate Social Responsibility).

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