EUSEM LISBON 2021 27-31 OCTOBER
THE EUROPEAN EMERGENCY MEDICINE CONGRESS www.eusem.org

REUSABLE SUTURE KITS FOR THE FUTURE

DR HANNAH WEBB, DR DONNA PEEL
UNIVERISTY SUSSEX HOSPITAL NHS TRUST, RCEM ENVIRONMENTAL SPECIALIST INTEREST GROUP

Background: In UK Emergency Departments single-use suture kits have become commonplace, whilst surgical theatres have maintained reusable instruments and sterilizing processes.
As part of Greener NHS goals, we are aiming to reduce the environmental impact of our services and one of our largest hotspots in the acute setting is medical instruments and equipment.
Procurement of products often focusses soley on the purchasing costs, but not the cost of disposal or the working conditions of those manufacturing them. Contaminated sharps are one of the highest carbon contributors, they are incinerated at >1100 degrees and therefore produce 1074 Kg CO2e per tonne.
We compared our single use suture kits with a potential product switch to reusables, considering their cost, environmental impact, and quality. And have created a staff engagement for the change from single use to reusables.

Methods: This is an sustainable product switch case report carried out in a Major Trauma Centre in the south east coast of the UK starting in August 2021 with ongoing interventions. We conducted baseline assessments of the procurement and disposal of the current single use suture kits used in the department. We then compared the financial costs, carbon costs and quality against the reusable kits made up by our sterile services department. We canvassed staff opinion of the product switch and what staff would like included in the reusable kits, or any problems they foresaw. With this quantitative and qualitative data we approached our Emergency Department Management to make the case for a product switch. We then developed a multi-pronged staff education program before the roll-out of the new reusable kit.

Results:

Staff opinion

We designed a 6 question survey to canvas staff opinion. 26 members of staff responded, 24 of them agreed or strongly agreed that this was a necessary project and they supported it, one was neutral, one disagreed. 23 didn't want any extra tools added and general comments were positive, but highlighted the concern that staff might accidentally throw reusable kits away.

Cost of Single use Kits

Between April-June 2021 our department used 560 suture packs. Estimating a similar use across the year we totaled 2240 kits used at a cost of £5893.44 to buy and £963.2 to dispose. Disposal data was modelled in a collaborative project between Unity Insights, our NHS trust and KSS Academic Health Science Network. the cost of disposal of sharps being £854 per tonne. This calculation estimates £0.55 per use to dispose, and therefore total cost per use is £3.061.

Reusable Kits

Procuring one reusable set of instruments would cost £188.17 (incl. VAT), however per use over a 15 year life span the cost would be £0.25 per use. We use approximately 6 sets a day, so 30 sets with a turn around time of 48 hours for sterilisation would allow for a buffer of variation of demand.
Our Emergency Department is not charged for sterilisation processing, but the estimated cost per sterilisation is £3.17, repair and final disposal per use is 0.261, therefore total cost per use is £3.68. The biggest risk to this switch would be losing the stock by accidental disposal, so we decided to invest in mini-containers as a way of limiting the risk. Each box is sterilisable and costs £235.70 If used 1825 times (every 3 days) over a 15 year cycle, this would be £0.13 per use. Total cost with the boxes would be £3.68 +0.13 = £3.8)

Carbon footprint

Unity Insights Carbon Savings report on suture kits concluded that disposable kits emit 1.02kg of carbon more than the reusable kit per use.
Using conversion factors, if we continued to use single use kits, this would be the equivalent of driving 8,277.5 miles in a medium petrol car over a year period, compared to 818 miles by switching to reusables.

Quality comparison

The quality of the reusable kit is demonstrated in photographs. And we intend to gather qualitative feedback from staff on the comparative quality once we have introduced the kits.

Table 8: Suture kit carbon dioxide equivalents per use (Rizan, Re: Carbon Savings project, 2021; GOV.UK, 2021).

Type	CO_2 equivalents per use	£ (£/tCO2e = £245)
Single use	1.14kg	£0.28
Reusable	0.11kg	£0.03
Difference	**1.02kg**	**£0.25**

Discussion & Conclusions: Ending throwaway culture in healthcare will inevitably help reduce our carbon footprint, improve patient care and staff satisfaction.
Conducting life cycle analysis of each carbon intensive process is time intensive and inevitably includes assumptions. But the precedent is being set that reusables are less carbon intensive and often similar in cost when looking at per use data. Buy in costs may be more expensive, but with uncertainty in supply chains and shortages of some medical equipment, these greener investments may have greater benefit in the future.
We hope that this project encourages other emergency departments to look at their single use instruments and drive the medical procurement market towards high quality, reusable instruments.

Acknowledgements: