A Quality Improvement Project in reducing carbon footprint in carpal tunnel surgery

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Project Background:

Specific information on estimation of carbon footprint of a routinely performed surgical procedure such as CTR is lacking.

This study sets out to not only estimate the carbon footprint of CTR, but also to demonstrate environmental, financial and social impact of introducing changes applying sustainable healthcare principles.

Project Aims/Objectives:

1. To define the carbon footprint of CTR operation as performed under standard patient pathway
2. To reduce the carbon footprint of CTR by changing to a “lean and green theatre set up” by:
    a. Using smaller trays with fewer surgical instruments & smaller drapes.
    b. Reducing use of single-use items.
3. To assess the financial costs of traditional and ‘lean and green’ pathways for CTR

Project Approach:

1. Carbon mapping of hotspots
2. Calculation of clinical waste per case
3. Calculation of carbon footprint
4. Estimating savings made by “lean and green” theatre set up and “Green pathways”

Project Outcome(s):

Total of 43 patients from June – Dec 2021

80% reduction in carbon footprint

Reduction by 22.14 Kg Co2 per case

2/3 economic savings

Cheaper by £34.72 per CTR

No complications

Project Impact:

Lean and Green theatre set up alone would create annual UK savings of

1. Environmental – 12 tonnes of Co2
2. Financial - £1.33 millions
3. Social – less time spent in hospital
4. Indirect savings through less buildings energy

Key Conclusions:

1. “Lean and green” theatre setup and an environmentally friendly patient pathway can deliver a safe, efficient, cost-effective and sustainable service for CTR.
2. It would be possible to consider a similar exercise for a variety of other hand surgery procedures.

Next Steps:

1. Wider applicability to other surgical procedures
2. Moving outside main theatres for minor hand surgeries
3. Scaling up to other patient pathways and deliver a “greener” service