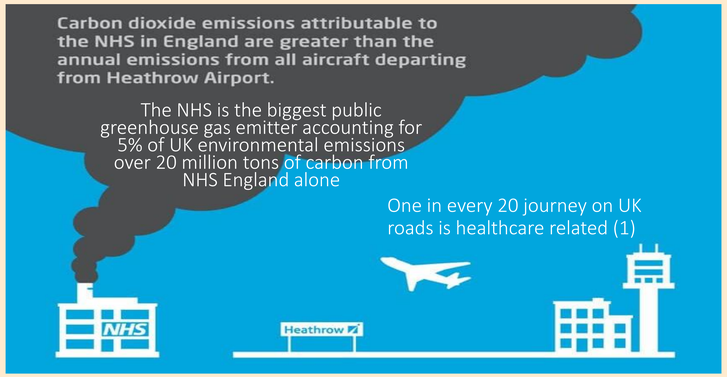
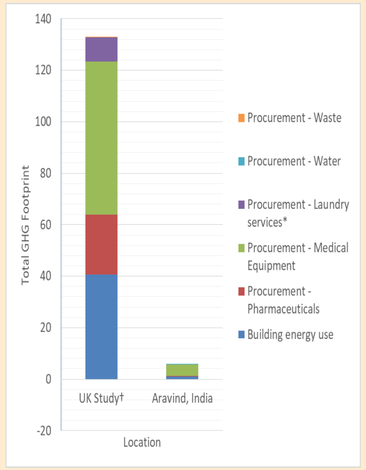
Using technology to understand the carbon footprint of cataract surgery: The climate is changing, can we?

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Introduction



Operating theaters are known for high waste and high spend areas within healthcare. Cataract is the most common surgery in the world accounting for over 8 million operations worldwide and over 400,000 in the UK. Despite this, the carbon footprint vary massively around the world. This is captured in studies from India compared to the UK (2-3); where the carbon footprint of a single cataract surgery differ from more than 13 times. This is shown in the graph below:



Calculating carbon footprint from a component analysis study requires a lot of carbon knowledge and can become difficult to engage staff and hospitals despite their will. Therefore, we attempt to use a carbon footprint benchmarking tool to assess 5 units across Wales, UK illustrating carbon footprint of cataract surgery.

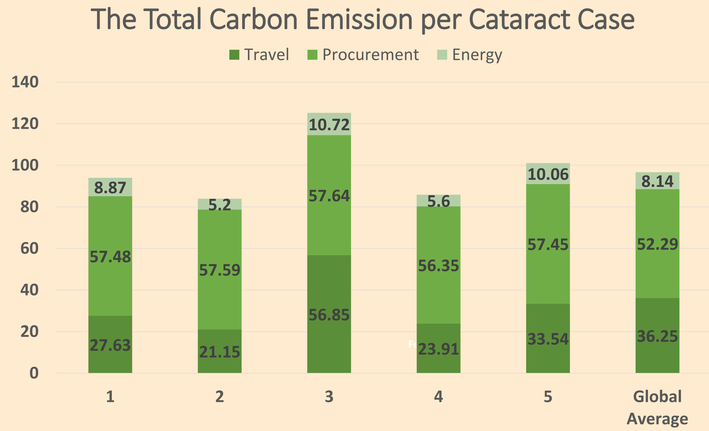
Method

We engaged with 5 units across wales to pilot the eyefficiency app for a minimum of 30 cases over a 2-month period. The app contains 2 sections:

1. The website- where facility level data is entered including number of cases annually, size of operating theatre, electricity use and cost of supplies.

2. Eyefficiency app- follows each patient's journey through a cataract operation list with documentation of the waste generated per case.

Both these data combined allows the system to perform an estimate component analysis of carbon footprint per case in carbon dioxide equivalents (CO2eq).



Results

Over 5 sites the average carbon footprint for one cataract operation was 98.01kg CO2eq. This is comparable with a previous UK study. Procurement is the biggest contributor to carbon footprint of a single cataract surgery.





Reduce

- Explore with the suppliers about reducing packaging, getting rid of plastic in their packs, or make the supplier responsible for taking the packaging away
- Waste - eRecords: Move to complete computerising documentation

Discussion

In comparison to the world the UK is average in terms of carbon footprint in between Chile and Swaziland. This is still double the amount of other countries such as India. Looking at a worldwide prospective, despite a low carbon footprint the number of cataract surgeries per year is greatest in India and UK amounting to the top 2 countries leading carbon footprint per year from cataract surgery. UK is the biggest carbon footprint emitter for cataract surgery in Europe. This highlights the importance to reducing the carbon emissions.

Conclusion

This study demonstrates that the eyefficiency tool should be encouraged to enable staff and hospitals to be more aware of their own carbon footprint. In doing so this is the first step towards changing pathways, procedures and engagement with supplier. There is no reason why cataract surgery cannot be more sustainable

Feedback

The feedback has been hugely positive:

- "It was horrifying to see the amount of waste we made"
- "For the first time I now know that cataract surgery affects the environment, and we need to change that."
- "The tool encouraged us to think about what we could do better."

Intervention

We have continued to engage with staff and hospitals to improve carbon foot printing. Some interventions have been:

Recycle: Three bins in theatre: 1 for clinical waste, 1 for recycling and 1 for landfill

References

1. Source: Naylor C, Appleby J (2012). Report. Sustainable health and social care: Connecting environmental and financial performance
2. Thiel, C., et. al (2017). Cataract surgery and environmental sustainability: Waste and lifecycle assessment of phacoemulsification at a private healthcare facility. Journal of Cataract & Refractive Surgery, 43(11), 1391-1398. doi: https://doi.org/10.1016/j.jcrs.2017.08.017
3. Modified to match system boundaries, from Morris, D. S., T. Wright, J. E. A. Somner and A. Connor (2013). "The carbon footprint of cataract surgery." Eye(27): 495-501.