



Savings & Sustainability in Wolverhampton EP Lab

The National Health Service (NHS) is making considerable advances in improving its carbon footprint and reducing the environmental impact of its services.

In 2020, the NHS launched its campaign 'For a Greener NHS' and set out a practical, evidence-based and quantified path to a 'net zero NHS'. Underpinning this work is an understanding that climate change undermines the core foundations of good health, contributing to cardiovascular disease, asthma, and cancer. Furthermore, action to tackle climate change

also reduces the burden of disease from air pollution, obesity, and poor diet whilst directly addressing health inequalities experienced across the country.¹⁻³

The cardiac cath lab (CCL) has not been immune to this trend with standard practice employing single use items including drapes, gowns, gloves, plastic

References:

1. NHS England and NHS Improvement. Greener NHS campaign to tackle climate 'health emergency'. 2020.
2. Salas RN, Shultz JM, Solomon CG. The Climate Crisis and Covid-19 - A Major Threat to the Pandemic Response. N Engl J Med 2020; 383(110): e70.
3. Belesova K, Heymann DL, Haines A. Integrating climate action for health into covid-19 recovery plans. BMJ 2020; 370: m316

bowls, syringes, manifolds, catheters and angioplasty balloons as well as the single use plastic many of these items are packaged. Medicine is well known to have a massive carbon footprint, attributable to all of the above, most of these items – both used and unused – are either incinerated or destined for landfill.

In March at the American College of Cardiology/World Congress of Cardiology meeting, researchers found that a single cardiac catheterization laboratory produced more than 115 lbs of uncontaminated, potentially recyclable materials in a week. They

estimated that this amounts to nearly 3 million lbs of paper and plastic that ends up in landfills each year.

Cardiologists have been urged to take a leadership role in improving sustainability in the health system, with experts arguing cardiac catheter laboratories are major culprits when it comes to pollution given the volume of waste generated by the sheer numbers of cardiac procedures performed every year. In 2020, around 371,000 heart procedures and operations were performed in England alone.

Making a Change

at New Cross Hospital

The Royal Wolverhampton NHS Trust developed its own Green Plan to help steer its commitment to sustainability and to build upon previous work undertaken to reduce the environmental impact of its operational activities whilst supporting the NHS aim to sustainable healthcare delivery and becoming a Net Zero Carbon organisation.

In 2009, the Trust successfully implemented a Carbon Management Plan (CMP), which delivered more than the key 10% reduction in Carbon emissions targeted by the Sustainable Development Unit to comply with the requirements of the Climate Change Act.

Wolverhampton EP Lab is playing a pivotal role in this objective, one of our actions was to review the number of Single Used Devices used in the department and explore this opportunity further understanding what environmental impact this could have, also considering the safety, functionality, effectiveness and cost.

One study suggested, “The use of remanufactured circular mapping catheters is safe, efficient and reliable. Widespread use of remanufactured SUDs offers the possibility of significant economic benefit” Further adding, “No complication occurred in association with the remanufactured device.

There was satisfactory communication with the electro-anatomic mapping system. Ease of use of the remanufactured catheter was reported to be similar to a newly manufactured device. Procedural duration was similar with remanufactured devices and matched controls. With 100 cases using the remanufactured device, cost savings amounted to £30,444.”⁴

We found further publications supporting the evidence and experience of Single Use Devices on the Association of Medical Device Reprocessors (AMDR) website (www.amdr.org), dating back to October 1987. We also discovered that Remanufacturing is common practice in other parts of the world.

Many of the USA, Germany and Israeli hospitals have seen excellent results regarding clinical efficacy, cost reduction and waste reduction by using certified, reprocessed single use medical devices.

Over 8,000 hospitals and surgical centres in the United States partnered up with remanufacturers and saved their hospitals and surgical centre partners more than \$20 million in 1999, the number grew to \$471 million by 2018 – more than doubling savings every year for 20 years.⁵



References:

4. Leung LW, Evranos B, Grimster A, Li A, Norman M, Bajpai A, Zuberi Z, Sohal M, Gallagher MM. Remanufactured circular mapping catheters: safety, effectiveness and cost. *J Interv Card Electrophysiol*. 2019 Nov;56(2):205-211. doi: 10.1007/s10840-018-0497-x. Epub 2018 Dec 26. PMID: 30588568; PMCID: PMC6848800.
5. <http://amdr.org/reprocessing-by-the-numbers/>



Method and Results

The Royal Wolverhampton NHS Trust partnered with Vanguard AG starting with the collections of used electrophysiology catheters. This process involves Vanguard collecting the used items and sending them to their plant to be remanufactured. The collections service is a major contributor to our sustainability drive and in 2023 we successfully diverted approximately 55,12 kg of waste and earned the trust around £6,531 for those collected devices.

To further support our Green Plan initiative the physicians in Wolverhampton's EP Labs trialled a range of remanufactured diagnostic catheters from Vanguard. The trial was successful which resulted in the department routinely using remanufactured diagnos-

tic catheters during our procedures. In doing so, substantial benefits have been delivered in terms of a significant cost saving versus using new, and a reduction in the trusts CO₂ footprint.⁶ If we were to use remanufactured devices over a period of 12 months in 50% of AF cases there could be significant savings of approximately £15,433. Furthermore around 130.67 KGs of CO₂ were avoided via usage of remanufactured devices. As well as savings and environmental gains, using remanufactured devices also provides financial income to the trust via the gain-share set up by NHSEI whereby 80% of the value of any savings made from the use of remanufactured devices are paid back to the hospital. Therefore, for every £1000 saved, £800 will be paid back into the hospitals CIPS.

References:

6. Anna Schulte, Daniel Maga & Nils Thonemann. Combining Life Cycle Assessment and Circularity Assessment to Analyze Environmental Impacts of the Medical Remanufacturing of Electrophysiology Catheters. Sustainability. 2021; 13, 2, 1-22

Conclusion

A study by R. Szirt, et al., stated, "Despite the growing volume of cardiac procedures world-wide, initiatives to reduce waste from CCLs have received limited attention, overlooking opportunities for significant reduction in operational costs and carbon footprint.

The study also went on to say, "Those working in the cardiac catheter lab need not look far to see the

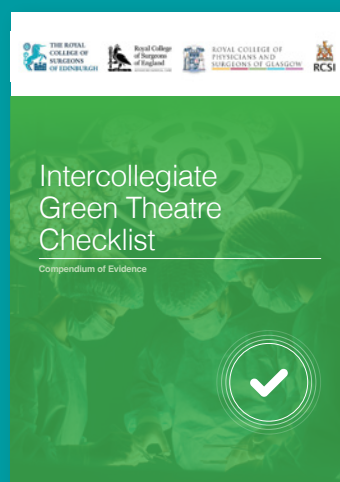
It is important for us to recognise and actively work towards reducing the impact of our services on the environment.

amount of waste created during each procedure. Despite this, a search of PubMed until 1 April 2022 yielded no results. It is similarly telling that, as far we know, no major interventional cardiology conference scheduled in 2020 or 2021 had waste management or sustainability on its agenda. As health care professionals, it is important for us to recognise and actively work towards reducing the impact of our services on the environment as the

consequences of climate change on individual and population health are becoming increasingly more apparent.⁷

Wolverhampton EP Lab is becoming a pioneer in reducing the impact of our service and plans to further reduce its Carbon Footprint whilst enhancing savings opportunities and waste reduction by extending the use of Remanufactured products such as diagnostic catheters, ablation catheters, 3D Mapping catheters, etc.

The trust also wants to explore the opportunity of improving the use of Single Use Devices in the Theatres, an initiative that has been document in the 'Intercollegiate Green Theatre Check List' produced by the Royal College of Surgeons (Qr-Code). By having our used Energy Devices collected and using the Remanufactured versions, we anticipate savings of approximately £20,640 per annum, waste diversion of approx. 33.79 Kgs.



www.rcsed.ac.uk/media/1332830/green-theatre-compdium-of-evidence-rcsed.pdf

References:

7. Richard Szirt, Mohammad R. Monjur, Lorna McGovern, Kate Charlesworth, Stephen O'Connor, James Crofton Weaver, J.J. Coughlan. Environmental Sustainability in the Cardiac Catheter Laboratory, Heart, Lung and Circulation, Volume 32, Issue 1, 2023, ISSN 1443-9506