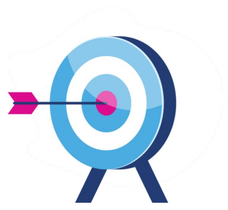
Reducing unnecessary carbon in a haemodialysis unit by reducing the number of machine heat disinfections

Authors: Ayesha Orlando[1], Liza Bajet[1], Julia McCarthy[1], Stephanie Choo[2], Leeanne Lockley[3], Dr John Stoves[1]
1 Bradford Renal Unit Sustainability Group, 2 Leeds Teaching Hospitals NHS Trust, 3 Kidney Quality Improvement Partnership

INTRODUCTION

As part of its ongoing efforts to promote environmental sustainability, the **Bradford Renal Sustainability Group** partnered with the **Trying to Reduce UnNecessary Carbon in Haemodialysis (TRUNC-HD)** project in Yorkshire and Humber, supported by **UK Kidney Association (UKKA) Kidney Quality Improvement Partnership (KQIP)** and the **Yorkshire and Humber Kidney Network (YHKN)**, to further reduce the carbon footprint of our haemodialysis units. Previously, single daily heat disinfection was practised in our unit without any reported hepatitis B seroconversions. Based on manufacturer guidelines, this practice was changed back to heat disinfection after every dialysis session.



The aim of this project was to **safely reintroduce single daily machine heat disinfections** in our unit and evaluate the impact on patients, staff, and the environment.

Jan – March 2024	March	April – June	June	July – Sept	Sept	Oct – Dec	May 2025
Unit face to face QI training and support	Y&H virtual sharing progress meeting	Unit face to face QI training and support	Y&H virtual sharing progress meeting	Unit face to face QI training and support	Y&H virtual sharing progress meeting	Unit face to face QI training and support	Y&H face to face celebration event

METHODS

The approach to reintroducing our previous practice is summarised below.

- **Extensive stakeholder engagement**
- **Collaboration with other units in the region**
- **Multiple team discussions at Q and S and IPC meetings**
- **A standard operating procedure (SOP) for machine disinfection was developed**

- We reintroduced our practice in a satellite unit without hepatitis B patients and subsequently in our main dialysis unit.
- The machines for patients with blood borne virus infection/ unknown viral serology were heat disinfected after each use, a practice that was supported by already having a dedicated dialysis space for such patients and clearly identifiable dedicated machines.
- Progress was tracked through surveys, staff feedback, machine turnaround times and patient outcomes.

RESULTS

There have been no reported adverse events

Patient transport services became more streamlined through avoidance of cumulative delays.

The preparation of machines was reduced from 42 minutes to 9 minutes, enabling patients to receive their full dialysis time and dialysis staff to keep to working schedules.

Constructive debate and open discussions regarding the process reinforced the culture of team inclusivity and learning.

RESULTS

- Switching one heat disinfection cycle to a rinse cycle is estimated to save 0.311kgCO2e and £0.48.
- The annual environmental and financial saving is estimated in Table 1

Table 1

	Unit A	Unit B1	Unit B2
Number of stations	44	5	5
Number of days per week	6	6	6
Number of shifts per day	3	3	2
Reduction of heat disinfection cycles	2	2	1
Cost saving per unit per year (£)	13,178.88	1,497.6	748.8
GHG saving per unit per year ($kgCO_2e$)	9,884.16	1,123.20	561.60

TOTAL FINANCIAL SAVINGS

£15, 425

TOTAL CARBON SAVINGS

11.57 TONNES kgCO2e

CONCLUSION

- The project demonstrates that **single heat disinfection safely reduces carbon emissions while enhancing operational efficiency.**
- The importance of **open communication, regional collaboration and senior leadership support** in achieving a return to the previous model of heat disinfection practice.
- Regular reviews of the protocol and **inclusion of patient and staff feedback have helped to ensure the future sustainability of single daily heat disinfection.**

Contact – Ayesha.Orlando@bthft.nhs.uk