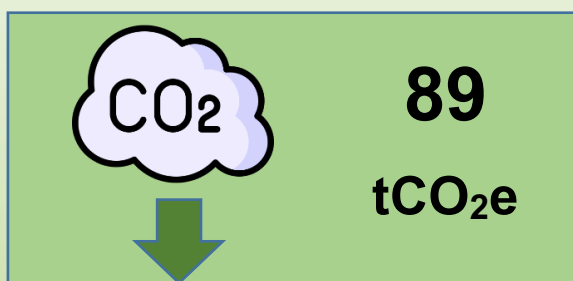


National Green Theatres Programme

Prògram Nàiseanta Lannsaireachd Uaine

Reducing Linen Use Opportunity for Change

June 2026



1. Description of action

- 1.1 This action aims to support renal services across NHS Scotland to reduce unnecessary resource use by implementing 2 changes to current practice:
- ending the routine use of sheets on dialysis chairs and beds
 - encouraging patients to bring their own blankets, with blankets provided on request where required.

2. Background

- 2.1 Linen use contributes to the environmental impact of renal services through the resources required for its manufacture, transportation, laundering and disposal. Reducing unnecessary linen use therefore presents an opportunity to lower the greenhouse gas emissions associated with delivering renal care.
- 2.2 According to the Scottish Renal Registry Annual Report 2024 [1], there are 2,025 renal patients in Scotland, of whom 1,964 receive hospital-based haemodialysis. The majority attend for treatment 3 times per week. Across many dialysis units, chairs and beds are routinely dressed with sheets, blankets are made available, and in some areas pillowcases are used on armrests.
- 2.3 While the routine use of linen has historically been standard practice, it is not required from an Infection Prevention and Control perspective. At the same time, laundry services are experiencing increasing pressures relating to capacity, financial sustainability and net-zero commitments.
- 2.4 Reducing the number of linen items used within dialysis services offers a practical opportunity to decrease both resource consumption and associated carbon emissions. A life cycle assessment by John et al. (2024) [2] estimated that each kilogram of laundry processed generates 0.508 kgCO₂e, demonstrating the environmental benefits that can be achieved through reducing unnecessary linen use.

3. Who needs to be involved in this change locally?

- 3.1 Early engagement with relevant stakeholders is essential to build understanding, secure support and support successful implementation of this change. Key stakeholders include:
- Patients
 - Clinical Staff working within the dialysis units
 - Service managers
 - Admin/booking colleagues
 - Laundry colleagues
 - Infection Prevention and Control (IPC) colleagues
 - Finance colleagues (if there is a desire to track financial spend/savings)
- 3.2 The How-to guide in Appendix 1 provides further information and practical considerations to support discussions and communications with stakeholders throughout the planning and implementation process.

4. Boundaries

4.1 The table below identifies the boundaries for this action.

In scope	Out of scope
- The embedded greenhouse gasses GHG from manufacture, freight, and disposal of the sheets and pillowcases. - Carbon cost of laundry (all items). - Financial cost of laundry (all items).	- Linen usage on wards. - Embedded GHG from manufacture, freight, and disposal of blankets*. - Embedded GHG from manufacture and freight of detergents.

5. What is the change and how will it be implemented?

5.1 The change involves 2 changes to practice to consider:

1. Renal services should consider discounting the routine use of sheets on dialysis chairs and beds, offering a sheet to only those requested by the patient.
2. Patients should be encouraged to bring their own blankets where appropriate, while ensuring hospital blankets remain available on request. Where practical, services may consider providing on-site storage for patient-owned blankets, with appropriate arrangements in place to prevent loss and ensure responsibility for laundering remains with the patient.

5.2 How the change will be implemented:

- 5.2.1 Discuss the proposed changes with the local IPC team to confirm suitability
- 5.2.2 Liaise with laundry services to agree implementation arrangements and timelines.
- 5.2.3 Communicate the changes and its rationale to the Renal Dialysis Unit (RDU).
- 5.2.4 Engage with patients to explain the proposed approach and the environmental and operational benefits associated with the changes.
- 5.2.5 Embed the new procedures into routine practice in collaboration with nursing colleagues and the wider multidisciplinary team (MDT).

6. What are the potential co-benefits of this change?

6.1 The estimated carbon and financial savings will require validation at a future measurement meeting. The detailed estimated savings data breakdown per health board is shown under Appendix 1.

Outcome	Potential benefits
Carbon savings	45 kgCO ₂ e per patient year
Cost savings	£73.32 per patient year
Staff experience	Less manual handling of laundry, increased efficiency
Patient experience	No impact on patient outcomes

6.2 Additional co-benefits from the implementation of this action may include:

- Frees up storage space otherwise occupied by linen
- Increases capacity in laundry services

7. Risks and Issues

Description of risk or issue	Mitigation / Action Plan
There is a risk that patients don't have and/or can't afford to purchase a suitable personal blanket.	Hospital blankets will still be available on request.
There is a risk that patients are unwilling to bring their own personal blanket.	Hospital blankets will still be available on request.
There is a risk that patients might find the texture of the chairs and beds unpleasant.	Sheets will still be available on request.
There is a risk that patients may find the armrests uncomfortable.	The patients can use the blanket they're using to cover the armrests.

8. Implementation Guidance

8.1 This document highlights how the opportunity for change will help each site and NHS Scotland achieve net-zero emissions by 2040, as stated in NHS Scotland's Climate Emergency & Sustainability Strategy 2022-2026.

8.2 The National Green Renal Programme has provided guidance on how to implement this change.

8.3 For further information or guidance, please contact the National Green Renal programme team: cfsdghs@nhs.scot.

Local Sustainability or Green Renal Group:
Review opportunity for change and validate what this means locally.
Provides National Green Renal Programme Team with validated information / local targets.
Convene a discussion with the staff who need to implement it and those who are involved in the action.
Understand what the opportunity is for implementing the action locally: work already undertaken and challenges.
Agree a local implementation plan.
Implement local plan.
Provide data in line with the measurement plan.

9. Measurement

- 9.1 Weight or volume of linen sent to laundry, or financial spend on laundry services for the RDU, depending what information is most readily accessible. Shown below are the calculations outlining the methodology and data used to estimate the potential savings.

Calculation example

Figures:

- Weight blanket, 100% polyester, 1.305 kg [2]
- Weight sheet, 70% cotton, 30% polyester, 0.573 kg [2]
- Weight pillow case, 70% cotton, 30% polyester, 0.119 kg [2]
- Average load of laundry: 55kg (provided by Hillington Laundry)
- CO₂e per kg of laundry: 0.508 kgCO₂e [2]
- water use per load of laundry: 276.5 Liters average per load (provided by Hillington Laundry)
- Financial cost per item of £0.47 [3] (also provided by Hillington Laundry)
- Manufacture, freight, and disposal of sheets: 0.0503 kgCO₂e [2]
- Manufacture, freight, and disposal of blankets: 0.0695 kgCO₂e [2]
- Manufacture, freight, and disposal of pillowcases: 0.0104 kgCO₂e [2]

Assumptions:

For this example we are considering only sheets and assuming all patients on hospital HD are receiving 3 dialysis sessions per week, setting aside the effect of incremental haemodialysis, and setting aside the possibility that some sites may not dress their bed and chairs with sheets. So although the use of sheets is likely less than 3 per week for all patients on hospital HD, this overestimate will be offset by the absence of an estimate for blankets and pillow cases.

- HD sessions x 52 weeks = 156 sheets used per patient
- Annually, 156 x 2,025 patients = 306,384 sheets used per year

Embedded CO₂ in sheets from manufacture, freight, and disposal.

In their paper, John et al [2], assumed a conservative estimate of 100 uses per item before it is recycled.

- 306,384 sheets / 100 uses = 3,063 sheets per year.
- 3,063 x 0.0503 CO₂e embedded = 154.069 kgCO₂e or **0.154 tCO₂e**.

Carbon cost of laundry

- 156 sheets weighing 0.573 kg = 89.388 kg per patient year.
- 89.388 kilos of laundry at 0.508 kgCO₂e per kilo = **45.409 kgCO₂e per patient year**.
- 45,409 x 1,964 patients = 89,183 kgCO₂e or **89.183 tCO₂e**.

Financial cost of laundry

- 156 sheets per patient year x £0.47 = **£73.32 per patient year**.
- £73.32 x 1964 patients = **£144,000**.

10. Appendix

Appendix 1: How-to Guide: Reducing Unnecessary Linen Use in Dialysis Centres.

How-to Guide: Reducing Unnecessary Linen Use in Dialysis Centres

Collaboration: UK Kidney Association, Centre for Sustainable Healthcare, and Centre for Sustainable Development.

Although this guide has been developed by experts in sustainability and sustainable kidney care, local teams should use their discretion in its implementation according to local context and requirements.

Introduction

The NHS is committed to achieving net-zero carbon emissions by 2045. Textiles are a priority area in the Scottish Government's circular economy strategy [1]. This guide focuses on reducing routine linen use through countering the automatic use of sheets and blankets on dialysis chairs, instead having them available 'on demand' and encouraging patients to 'Bring-your-own-blanket' (BYOB). This easy to implement change has already been adopted by some units in Scotland and elsewhere, for example, Yorkshire and Humber's TRUNC HD [2], demonstrating real-world impact.

Step-by-step implementation

1. Engage the nursing team

- Host a staff meeting or discuss through existing forums to review current linen usage, purposes, and alternatives.
- Generate an estimate of baseline linen use.
- Discuss benefits, risks, and operational constraints
- Consider implementation approach of regional collaboration with local ownership [2].

2. Consult with patients

- Open discussion on current practice and patient comfort without linen.
- Explore willingness to bring and launder personal blankets.

3. Develop patient communication

- Co-design messaging with patient involvement.
- Explain rationale, environmental benefits, alignment with national strategies.
- May use posters or leaflets.

4. Prepare for the change

- Update any relevant Standard Operating Procedures (SOPs), policies, and staff guidance to reflect optional linen use.
- If offering to store personal blankets on-site, prepare storage facilities (lockers or drawstring bags) and include these in the relevant SOPs. Patients' own blankets should not be kept in the clean linen area.

5. Revise linen practices

- Stop default placement of linen on chairs.
- Provide linen only on request or if clinically indicated.
- Maintain routine cleaning/disinfection of chairs and/or beds as per IPC standards.

6. Provide patient laundering advice (IPC-aligned)

Advise patients to:

1. Launder blankets weekly or when soiled
2. Wash at 65 °C for at least 10 minutes, to ensure disinfection [3,4]
3. Use tumble drying or ironing to further reduce microbes [3]
4. Handle used blankets carefully - avoid shaking, handle and bag with clean hands [3,4]
5. Launder separately from others' clothing [3]
6. Perform hand hygiene after laundering or handling blankets [3]

7. Set patient guidelines

- Encourage clean, personal blankets as per laundering advice. Soiled blankets are not permitted in the dialysis unit

8. Monitor and evaluate

- Liaise with laundry services to compare linen use before and after implementation.
- Estimate environmental and cost savings.
- Collect feedback from patients and staff to refine practices.

Conclusion

Reducing linen use in dialysis through patient-sourced blankets aligns closely with the NHS's environmental strategy [1]. Ensuring home laundering practices comply with IPC standards safeguards patient safety. This guide offers a structured, sustainable approach that combines clinical diligence, patient empowerment, and environmental responsibility - offering a replicable model for dialysis units across the NHS.

[PDSA Turas Linen.docx](#)

References

- [1] [Scotland's circular economy and waste route map to 2030 - gov.scot](#)
- [2] Yorkshire & Humber Kidney Network (2025) *TRUNC HD QI Initiative Summary Report: Reducing Unnecessary Carbon in HaemoDialysis*. Sheffield: YHKN Newsletter, Jan 2025.

11. Acknowledgements

- Green Healthcare Scotland Programme Team
- National Green Renal Programme Specialty Delivery Group Members
- Marta Arias, Nephrologist, Hospital Clinic de Barcelona
- Stephanie Choo, Specialty Trainee, Hull University Teaching Hospitals NHS Trust
- Suren Kanagasundaram, Renal Consultant, The Newcastle upon Tyne NHS Foundation Trust
- Kate McVey, Head of Linen & Catering Services, NHS Greater Glasgow and Clyde

12. References

1. Scottish Renal Registry <https://publichealthscotland.scot/publications/scottish-renal-registry/scottish-renal-registry-annual-report-2025/> [accessed 13 May 2026] / Dashboard <https://scotland.shinyapps.io/phs-srr-annual-report-2025/> [accessed 25 May 2026]
2. John, J., Collins, M., and O'Flynn, K. Carbon footprint of hospital laundry: a life-cycle assessment. *BMJ Open* 2024;14:e080838. doi:10.1136/bmjopen-2023-080838 [e080838.full.pdf](#) [accessed 18 February 2026]
3. NHS England <https://www.england.nhs.uk/long-read/delivering-productivity-through-the-nhs-estate/> [accessed 13 May 2026]

13. Version Control

Version	Date (YYYY MM DD)	Amendment	Author
0.1	2026 01 12	Opportunity for Change structure drafted	EM
0.2	2026 02 18	Expanded background and added calculations	DZ
0.3	2026 05 13	Editing, removing duplications, etc.	DZ
0.3	2026 05 19	reviewed	LB
0.4	2026 06 10	Amended following comments at SDG	DZ