National Green Theatres Programme Action for Adoption

Patient Self-Removal of Urinary Catheters
October 2024

About

This information raises awareness about this carbon-saving action. There is no formal requirement to report on this action through the National Green Theatres Programme, however Boards are encouraged to consider how they are adopting this action and ensuring they are connected with any relevant initiatives or national work streams.

Background

Traditionally, catheter removal is performed in clinical settings by nurses. However, there is a growing body of evidence suggesting that some patients can successfully remove their own catheters at home[1]. This practice offers benefits to the patient and the healthcare system, including resource optimisation and patient-centred care.

A urinary catheter is a flexible tube inserted into the bladder through the urethra to drain urine. It is used when a patient cannot urinate naturally, either temporarily or permanently. The catheter allows urine to pass from the bladder into a collection bag, which can be emptied regularly. Reasons why patients may be discharged with a catheter in place include, but is not limited to, urinary retention, post-surgery care and, managing chronic conditions.

Between 1 August 2023 and 31 July 2024, 132,299 urethral catheters and associated equipment were ordered nationally[2]. When catheter removal is performed it is common practice to use an orange clinical waste bag, disposable gloves, disposable apron and plastic syringe. Comparatively, home removal would consist of 1 pair of home scissors only, allowing the balloon to drain before discarding the catheter into home waste.

The majority of catheters are composed of 80-90% silicone and 10% polyvinyl chloride (PVC), with a small number of catheters composed of latex. Whilst silicone is generally regarded as a more eco-friendly material compared to other plastics, this will not fully decompose in landfill[3]. In a hospital setting, catheters often end up being disposed through clinical waste streams. Currently, urinary catheter disposal, including the associated materials, results in 58 tonnes of carbon emissions for NHS Scotland annually.

Another contributing factor to the carbon footprint of this action is the road miles undertaken by District Nurses to and from patient homes to remove catheters. This is more common in remote health boards, but also takes place across a large number of boards in NHS Scotland.

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[1] Patient Removal of Urinary Catheters After Surgery: A Randomized Controlled Trial
[2] Obtained from National Procurement ordering data between 01/08/2023 – 31/07/2024
[3] Treehugger | Is Silicone Biodegradable?

NHS Highland Pilot

In an effort to reduce their carbon footprint locally, NHS Highland began reviewing their catheter removal process and how this could be amended. All community catheter removals in NHS Highland are currently carried out by District Nurses, traveling up to 100 miles for a single patient visit. Based on evidence from NHS England, self-removal of catheters can provide a sustainable alternative in suitable patients[4]. This was the first trial of its kind in NHS Scotland. NHS Highland currently discharge approximately 100 patients per year who require a subsequent catheter removal.

Using quality improvement methodology, key stakeholders were identified and an online questionnaire was completed by hospital and community nurses. In addition, an online meeting was arranged between the Urology team and District Nurses to discuss the pilot project.

- 9 ward nurses completed the questionnaire: 100% were happy to educate and discharge patients for self-removal of catheters
- 22 District Nurses completed the questionnaire: all were happy to phone patients to assess success of self-removal of catheters.

Suitable patients were identified by the Urology Consultant during the pre-operative assessment process. The consultant assessed feasibility and clarity of patient information, along with the patient's cognitive ability and willingness to undertake the action at home.

A patient information leaflet (see Appendix 1), instructional video[5] and post self-removal of catheter patient questionnaires (see Appendix 2) were created to assist with the self-removal and gather feedback on the process. Patients were shown how to cut off the balloon port of their catheter to allow the balloon to fully deflate and the catheter to fall out by itself. Following this, the catheter and balloon port should be disposed of in general waste at home.

NHS Highland's pilot involved 11 patients, 2 of whom underwent self-removal of catheters in hospital and the remaining 9 in the community. 1 patient changed their mind prior to self-removal and their catheter was removed by a District Nurse.

Patients who underwent self-removal in the community had catheters following surgery for:

- transurethral resection of the prostate – 3 patients
- nephroureterectomy – 1 patient
- pyeloplasty – 1 patient
- small transurethral resection of bladder tumour – 2 patients
- retention following a hernia repair – 1 patient
- contrast leak during stent insertion – 1 patient

All patients were contacted by a member of the urology team on the afternoon of self-removal. The success rate was 100%. All patients found the process easy and no complications were encountered.

[4] NHS Royal Surrey Foundation Trust: Self-removal of Catheter after Robot-assisted Radical Prostatectomy: A Feasibility Study
[5] YouTube | NHS Royal Surrey - Self-Removal of catheter at home following a radical prostatectomy

NHS Royal Surrey Foundation Trust pilot

A larger pilot study was held in NHS Royal Surrey Foundation Trust[4] which included 112 male patients who underwent Robotic Assisted Radical Prostatectomy.

Self-removal of subsequent catheters was successful in all 112 (100%) men in the study. 99.1% of men were satisfied with self-removal at home. NHS Royal Surrey managed to avoid 116.32km of travel, equivalent to 77 minutes of travel time for every self-removal. This also saved £85 per patient on clinic expenses.

A further saving of between £9.87 and £15.99 per patient was realised on fuel savings, depending on car engine size/type. The carbon footprint calculated was 20kg CO2, assuming average engine sized diesel/petrol cars and 10kg CO2 for an average UK petrol hybrid car. This is the vehicle emissions based on all 112 male patients.

Areas to consider when implementing self-removal of catheters

Self-removal of catheters can be considered as an option for patients (following completion of self-removal suitability questionnaire) when a: short term catheter is required, there is a low risk of retention post catheter removal, and a post-void bladder scan is not required.

The following provides other areas that are important to consider.

Patient Selection	Not all patients are suitable for self-removal of catheters. Criteria should include the patient's physical ability, cognitive function, and willingness to perform the procedure. Patients should be thoroughly assessed before being given the option to remove their catheter at home. No exclusions should be made on age.
Comprehensive Patient Support	Provide patients with clear, easy-to-understand instructions (see Appendix A) and adequate training on how to safely remove their catheters. This can be done through leaflets, instructional videos, and written guides. Additionally, a contact number for a District Nurse should be provided for patients who need assistance during the procedure.
Monitoring and Follow-Up	After the catheter is removed, patients should be monitored for any complications, which may include the following: • Bleeding – Mild bleeding or blood in urine may occur. • Pain or Discomfort – Discomfort during or after removal. • Urinary Retention – Difficulty urinating after removal. (The patient should contact their District Nursing Team urgently if, 4 hours after the removal, they have not passed urine, or have discomfort in the abdomen and have not yet received a call from their District Nurse). • Infection – Risk of developing a Urinary Tract Infection (UTI). • Bladder Spasms – Cramping or spasms in the bladder.

	• Incomplete Removal – Part of the catheter remains in the body. • Swelling or Irritation – Redness or swelling at the catheter site. • Leakage – Involuntary urine leakage after removal. A follow-up system must be in place to ensure that any issues are promptly addressed. This could be scheduled phone calls or virtual consultations within a few days post-removal.
Development of Educational Materials	Appendix C contains NHS Highland's Standard Operating Procedure (SOP) and staff guidance for self-removal of catheters

Potential Carbon Savings and other benefits

Self-removal of catheters can save time for both patients (if they would usually travel to their health centre for removal of catheter) and healthcare professionals and reduces the environmental burden of travel.

Outcome	Potential Benefits
Carbon savings	• Reduced vehicle emissions from associated travel • Reduced Personal Protective Equipment use and its associated waste into clinical waste streams • Reduced number of catheters and associated plastic waste into clinical waste streams. (Although it is important to acknowledge that catheters disposed by patients will still be going into domestic waste.)
Patient experience[4]	• Improved patient satisfaction and comfort. • Reduced anxiety. • Enhanced patient autonomy to managing own care. • Reduced risk of healthcare associated infections (HAIs).
Staff experience	• Reduced nursing time required • Saving clinical space within hospitals

Based on the NHS Highland pilot, patient self-removal of catheters has the potential to save **2.8 tCO2e:**

2.8 tCO2e

Savings are calculated from associated travel and are based on the following assumptions:

- 700 patients per year across NHS Scotland[6]
- 13.8 miles return trip[7]
- 0.28676kg CO2e associated with medium petrol car[8]

In addition, indicative calculations highlight a potential saving in district nursing time across NHS Scotland of **12 weeks**. This is based on:

- 700 patients per year across NHS Scotland[6]
- 40 minutes of associated time per patient[9]
- 40-hour working week (8 hours a day, 5 days a week)

Next steps

The NHS Highland pilot work provides a good foundation for further trialling and subsequent implementation of patient self-removal of catheters across NHS Scotland.

The National Green Theatres Programme (NGTP) is keen to connect with such initiatives to build and consolidate the supporting evidence base and learning from this action. This is with an intent to revisit this action in the future to develop into an Opportunity for Change for implementation across NHS Scotland.

Acknowledgements

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- The Centre for Sustainable Delivery's Urology Speciality Delivery Group
- Dr Charlotte Gunner, Urology Speciality Trainee, for sharing the work of NHS Highland and for the ongoing support with the development of this action.

Contact us

If you have any questions about this action, please contact the National Green Theatres Programme by emailing cfsdgreentheatres@gjnh.scot.nhs.uk.

[6] Extrapolated from number of patients seen in NHS Highland pilot to the population of Scotland.
[7] Figure obtained from Public Health Scotland – Median health miles for NHS Scotland associated with face to face outpatient appointment.
[8] Greenhouse gas reporting conversions 2023
[9] Assuming 20 minutes of travel there and back and 20 minutes for appointment and associated paperwork.

Supporting Appendices

Appendix 1 – Patient Information Leaflet

Self-Removal of Catheter (sROC) Patient Information

NHS Highland

[Patient name and CHI or attach patient label here]	Date for self-removal of catheter:	Telephone number for patient's District Nursing team in event of sROC issue:

You have been identified as a suitable patient for self-removal of catheter.

Only remove your catheter on the date advised by your surgeon, as indicated above. Early removal of catheter may result in complications.

You should remove your catheter first thing in the morning, before or by 0800 at the latest. This allows time for reinsertion of a catheter within working hours if you are not able to pass urine after the catheter has been removed.

When you are ready to remove your catheter, only on or after the date advised, please follow these steps:

1. Make sure you have recently moved your bowels. If you are constipated you may struggle to pass urine once your catheter has been removed. Drink plenty of water (around a glass per hour) on the day you remove your catheter.
2. Empty the catheter bag into the toilet and then either stand in the shower or on a towel. Using a pair of scissors, cut the coloured part of the catheter off, as shown below, and let go of the catheter.

Your catheter is held in your bladder with a fluid filled balloon

Cut off the coloured part to drain **the fluid and allow the catheter to** fall out

The fluid from the balloon that holds the catheter in the bladder will slowly trickle out of the cut tubing and the catheter will fall out by itself.

1. Put the catheter, tubing and drainage bag in your normal general waste bin.

If the catheter does not fall out, carry on with normal activities and it should fall out within the next few hours.

If you are unable to pass urine in the next 4 hours, if the catheter does not fall out within 4 hours or if you are passing only small amounts of urine and experience lower abdominal pain, please urgently contact your District Nursing team using the phone number at the top of this leaflet. You may need to have a catheter reinserted.

A video of the steps outlined above is available at tinyurl.com/catheterremoval or scan this QR code:

If you are happy to provide feedback on your experience we would be grateful if you could fill in an online questionnaire in order for us to improve our service. Please type this link into an internet browser to complete an anonymous questionnaire or scan the QR code: tinyurl.com/selfroc

Appendix 2 - Post self-removal of catheter patient questionnaires

Self-Removal of Catheter Patient Feedback

We have recently started selecting suitable patients to remove their own catheters and would be grateful for your feedback to help improve this service.

Did you receive a patient information leaflet about self-removal of catheter?

Yes No

If you received a leaflet, please rate how helpful you found this leaflet.

Not at all useful	1	2	3	4	5	Very useful

Did you watch the online video on self-removal of catheter via the link from the patient information leaflet?

Yes No

If you watched the online video on self-removal of catheter, on a scale of 1-5 how useful did you find this video?

Not at all useful	1	2	3	4	5	Very useful

Did you go ahead and remove your own catheter as planned?

Yes No

If you have selected 'no', please provide a reason:

If you proceeded to remove your catheter, how easy or difficult did you find the process?

Very easy	1	2	3	4	5	Very difficult

If you proceeded to remove your catheter, how painful did you find the process?

Not at all painful	1	2	3	4	5	Very painful

Please turn over

If you proceeded to remove your catheter, how satisfied were you with the process?

Very dissatisfied	1	2	3	4	5	Very satisfied

Would you have preferred to have your catheter removed by a healthcare professional? (Either in hospital or in the community)

Yes
No

Based on your experience, would you recommend self-removal of catheter as an alternative to having your catheter removed by a healthcare professional?

Yes
No

Did you need to have a catheter reinserted after self-removal of catheter?

Yes
No

If you needed to have a catheter reinserted after self-removal of catheter, how easy or difficult was it to arrange a review and insertion of catheter?

Very easy	1	2	3	4	5	Very difficult

What was the most significant problem you encountered? (E.g. pain, catheter didn't come out, seeking help from healthcare professional)

Do you have any other comments or feedback for the process of self-removal of catheter?

Online version available at:

tinyurl.com/selfroc

Please return this questionnaire to:

Mr Wilson's Secretary

Raigmore Hospital

Old Perth Road

Appendix 3 - Standard Operating Procedure (SOP) and staff guidance for self-removal of catheters

Self-Removal of catheter: standard operating procedure