The Royal Bournemouth and Christchurch Hospitals
NHS Foundation Trust

Royal Bournemouth Hospital

Reducing Unnecessary Single-Use IV Consumable Plastic Waste

The Issue:

As part of NHS England's drive to deliver a net zero national health service by 2045, there is a continued commitment to de-carbonising the NHS through reducing the use of single-use plastics[1].

In accordance with the waste stream hierarchy[2], the most effective way of minimising environmental impact is 'prevention' and this is something we have focussed on at the Royal Bournemouth Hospital in relation to preventing unnecessary use of IV consumables resulting in their disposal.

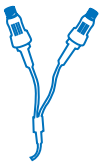
The CT department at the Royal Bournemouth Hospital receives approximately 18,285 inpatients per annum that require intravenous administration of contrast agents via a pressure injector. In order to ensure a successful scan and appropriate image quality, Radiographers require the delivery of precise volumes of contrast media at high flow rates which must be administered via devices specifically indicated for use with high pressures.

At the Royal Bournemouth Hospital, we were using a plastic needlefree extension that wasn't indicated for use with pressure injectors which was resulting in this being removed and disposed of once the patient presented in the scanning room. The pressure injector was then being connected directly to the patient's peripheral IV cannula and post-scan, a red cap was attached prior to returning the patient to the ward. For patients that then required further IV fluids or IV antibiotics, the red cap was then disposed of and a second needlefree extension primed and attached to the patient's peripheral IV cannula.

The Solution:

After a successful evaluation, Royal Bournemouth Hospital implemented the trust wide use of the Caresite® needlefree extension which is suitable for use with pressure injectors up to 300 psi, meaning that this could remain attached during the CT scan and remain suitable for use once the patient returned to the ward.

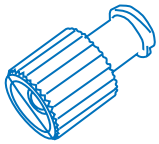
Previous Pathway



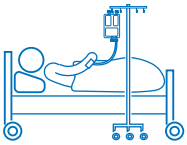
Patient cannulated and a needlefree extension attached that is not compatible with pressure injectors.

Patient sent for CT scan.

In CT Scan room, non-compatible needlefree extension is detached and discarded. Pressure injector is connected directly to the patient's IV cannula, scan completed and pressure injector detached.

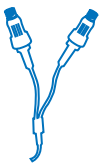


Post-scan, red cap is added.



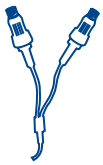
Post-scan, patient returned to ward and requires additional IV fluids or antibiotics.

Red cap is detached.



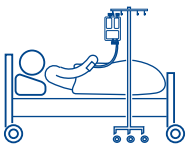
A new needlefree extension is primed (requiring; 10 ml syringe, drawing up needle and 10 ml saline) and attached enabling IV fluids or antibiotics to be administered.

New Pathway



Patient cannulated with pressure injection, compatible needlefree extension attached.

Patient sent for CT scan. Scan completed via the pre-attached needlefree extension.



Post-scan, patient returned to ward and any further IV fluids or antibiotics are administered via the pre-attached needlefree extension.

'Previously all ward patients at our hospital attended for CT scans with non-compatible needlefree extensions. We had no option but to remove and dispose of these which was very wasteful. Now all patients have Caresite® needlefree extensions instead, so we can connect these directly to the injector pumps, which is cleaner, simpler and saves a lot of expensive waste'.

Matthew Benbow, CT and MRI Superintendent Radiographer, Royal Bournemouth Hospital

Benefits:

- **A reduction of 111 kg in single use plastic waste,** with anticipated **cost savings of £99,823 per annum** and fewer products required to be ordered and stored[3]
- **12 days and 16 hours (1 minute per patient) in time efficiency** savings associated with streamlining the workflow steps and not needing to gather, prepare and reconnect additional add-on devices
- **No unnecessary opening** of the patient's peripheral IV access system **reducing the risk of infection**

References

1. NHS England. Delivering a 'net zero' National Health Service (2020) Greener NHS » Delivering a net zero NHS (england.nhs.uk). Available at: https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf (Accessed: 19 June 2024).

2. GOV.UK. Guidance on applying the waste hierarchy (2011) www.defra.gov.uk. Available at: https://assets.publishing.service.gov.uk/media/5a795abde5274a2acd18c223/pb13530-waste-hierarchy-guidance.pdf (Accessed: 19 June 2024).

3. Based on internal procurement data for the financial year 2021 – 2022.

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