



SUSQI PROJECT REPORT

Reducing low value testing in the Emergency Department

Start/End date of Project: 1.6.23-1.9.23

Date of Report: 18.9.23

Team Members:

- Emma Christmas & Sarah Noble – Consultants in Emergency Medicine
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Background:

Operational pressures in the Emergency department mean that in order to aid decision making and prevent delays further down the pathway, 'just in case' tests may be taken on arrival to support patient flow and timely care.

Unnecessary tests contribute to environmental impact through carbon footprint of the consumables, transport of those consumables, processing of tests and in waste disposal.

There were a number of tests and procedures that might be contributing to this waste, and we initially planned to work on reduction of unnecessary cannulation and coagulation blood samples as, anecdotally, these were areas for improvement. Led by data we were surprised to find that unnecessary cannulation was not as big a problem as we had imagined (e.g., In Basingstoke and North Hampshire Hospital (BNHH) majors chairs in one day 15/84 patients had cannulas and 11 were appropriate so low numbers of opportunity) and so we focused on the task of reducing unnecessary coagulation samples.

Specific Aims:

To reduce the number of unnecessary coagulation samples in both Basingstoke and Winchester Emergency Departments to reduce consumable waste and reduce carbon footprint.

Methods:

We worked with the lab teams to develop baseline data on numbers of samples. We coupled this with sample notes reviews on appropriateness of test. We calculated potential inappropriate sample numbers and percentages. We used this data as a driver for clinical staff in discussions, education and communications approach.

We worked to understand barriers to more accurate decision making on whether to take coagulation samples and, on realising that the parameters were actually poorly defined and often left to clinical acumen, developed more specific guidelines for when a sample is indicated to empower and give confidence to nursing staff involved in the initial contact and taking of tests.

This underwent multiple PDSA cycles as various clinical input was given from not only Emergency Medicine but also Gastroenterology and Obstetrics and Gynaecology teams.

Measurement:

Patient outcomes:

We measured the Millilitres of blood taken unnecessarily from patients.

Environmental sustainability:

The carbon footprint associated with coagulation tests was estimated using data taken from a 2023 study ([Spoyalo et al, 2023](#)) estimating the carbon footprints of various blood tests. It was assumed that the coagulation blood test in this study was undertaken in a similar way to the coagulation blood test undertaken at Hampshire Hospital. The carbon footprint of one coagulation sample included; 1 blood vial, 1 PT, 1 APTT and 1 Fibrinogen.

Economic sustainability:

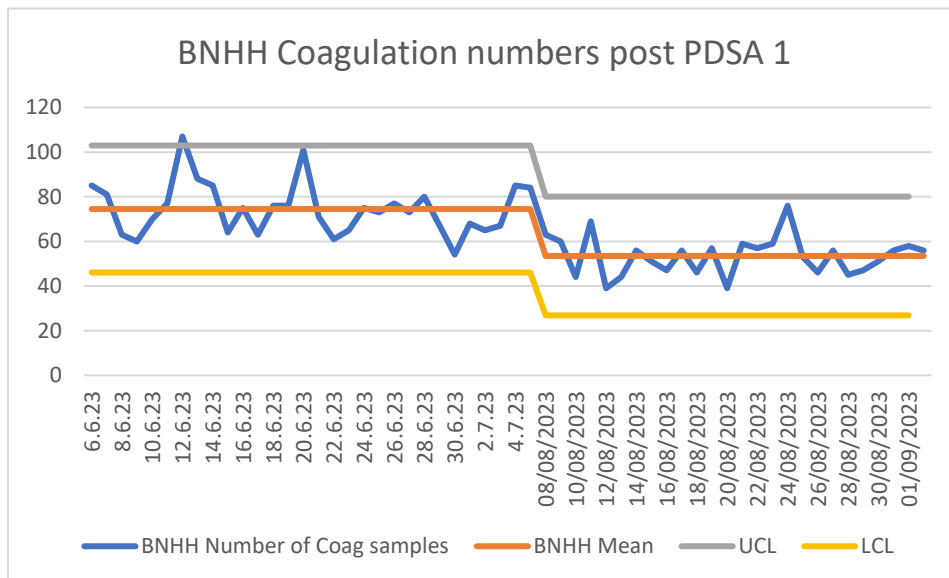
Cost savings – consumables and tests

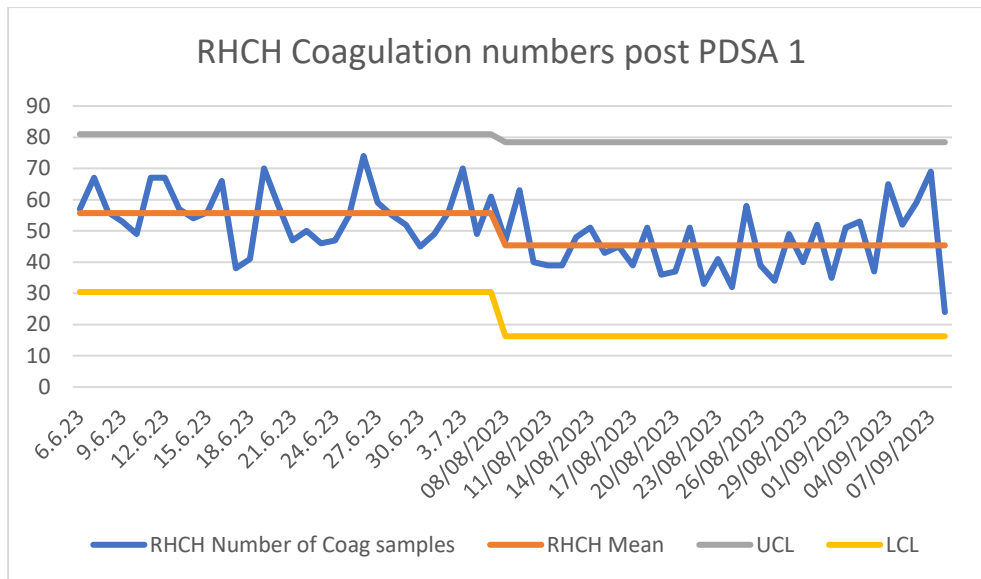
Social sustainability:

Staff engagement and satisfaction in delivering best patient care

Liberated resources for population e.g. Lab process time for other tests

Results:





We have observed a reduction in 1,884 coagulation samples in two months. This is a 24% reduction in coagulation samples from 130.2/day to 98.8/day (31.4 samples/day).

Assuming a similar number of samples can be reduced across the year, 11,461 samples will be saved. It is likely this could be improved upon further, with greater numbers of samples prevented.

Patient outcomes:

Each coagulation sample is 3.5ml. Already **6.6L of blood saved**. **Annual saving is 40.11L** of blood/year if improvements sustained (and every likelihood that this will improve further).

Environmental sustainability:

Already **182.6 kgCO₂e saved** from wasted coagulation bottles, **potential 1,095.67 kgCO₂e over the year** if sustained, and every likelihood this could be better. This is equivalent to driving 3,236 miles in an average car. This does not include the saving of water to flush the lab equipment or the carbon footprint of the lab equipment or consumables associated with the reagents.

Economic sustainability:

£139.42 saved so far, £848.11 over a year on coagulation bottles. There is also a £1055 saving on lab staff and consumables so far with £6418 expected across the year.

TOTAL £1,194.42 saved so far with £7,266.11 expected over the year.

Social sustainability:

Whilst hard to measure, supporting and empowering staff to deliver better care supports a culture where staff take pride in their work and strive to be the best we can be for patients.

Lab processing time saved = **157 hours (6.5 days) so far, with 955 hours (40 days) over a year**. This resource is now available to the wider population and can contribute to faster turnaround of other tests and job satisfaction for the lab team.



Discussion:

With a driver of doing the right thing for the patient, we have had the additional benefit of doing the right thing for the planet. Whilst the numbers may not look huge, we chose this area due to its commonality and potential opportunity. With 170 Type 1 EDs in the country, the potential for relatively quickly replicable interventions would yield significant upscaled impact.

The benefit of this project has also sparked interest in GreenED as a concept and the following projects are also underway as a direct result of the discussions around this project:

- ✓ Reducing plastic cup waste - moving from 820,000 plastic cups across 2 Eds to reusable options
- ✓ Reducing electrical waste – difficult to measure but movement sensors already inserted into loos rather than constant lights on 24/7
- ✓ More appropriate waste disposal – bin audits complete and changes to bins in place to encourage use of the right bin for the right waste with increased recycling.
- ✓ Paperless patient information leaflets – project underway to use QR codes rather than paper safety netting.
- ✓ Switch from Nitrous oxide (42,340 days/116 years atmospheric life with ozone depletion 0.017) to Pentrox (54 days atmospheric life with ozone depletion 0.001)

Conclusions:

Due to the scale of the NHS, we have opportunity to reduce our environmental impact significantly. By introducing simple changes in a very common process, the environmental impact is obvious, with potential for upscale across the system.

Resources

We would like to thank:

- Sustainability Team HHFT – Gillian and Miranda
- Centre for Sustainable Healthcare – Rosie Hilson for support to carbon footprint the project.

