Coagulation testing reduction in Vale of Leven Hospital Medical Assessment Unit

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BACKGROUND

The cost of analysis of a single coagulation screen (CS) in NHS Greater Glasgow & Clyde is approximately £26: this includes the cost of venepuncture equipment, staffing and laboratory machine upkeep.[1]

The Vale of Leven Hospital (VoL) has recently reduced onsite laboratory working hours for sample analysis meaning outside of these hours all blood samples are sent for testing to the laboratories in the Royal Alexandra Hospital, approximately twenty miles away. Samples are transported by shuttle bus or taxi, with the journey taking thirty minutes to an hour depending on traffic.

A CS needs a full 4ml sample of blood to be processed as the ratio of anticoagulant to blood must be accurate, unlike other routine samples which don't have this requirement. Because of this, there is a increased risk that these samples are insufficient for processing and need to be repeated. This results in increased repeat venepuncture attempts, and increased patient length of stay in the department especially when the on-site labs are shut. We therefore wanted to ensure we were only requesting and analysing CSs when clinically indicated.

AIM

To reduce the number of Coagulation Screens being taken unnecessarily in the Vale of Leven Medical Assessment Unit (MAU) by 30% to improve patient experience while also improving sustainability by minimising waste and associated carbon emissions.

METHODS

We reviewed one week's worth of coagulation test results in MAU to determine if they were clinically indicated/appropriate, and their purpose.

In one week 101 coagulation tests were resulted.

- 36/101 samples were unnecessary/inappropriate and had no impact on the management plan.
- 29/101 were chest pain presentations – 50% of these samples had no impact on the management plan.

After discussion regarding the indications for coagulation testing, and adaptation of guidance currently utilised by our nearest Emergency Department in the same health board, we created a list of presenting conditions for which a CS was indicated (Figure 1). This came with the agreement that a coagulation screen should only be sent in other cases if a senior clinician deemed it necessary.

In addition, we estimated the annual cost of inappropriate coagulation screen analysis and the potential annual savings along with basic carbon emissions savings.

Figure 1

PDSA CYCLES

Cycle 1 (C1): We created a poster (Figure 1) which was placed in MAU and shared with our colleagues

Cycle 2 (C2): We moved coagulation bottles away from the other blood sample bottles

RESULTS AND DISCUSSIONS

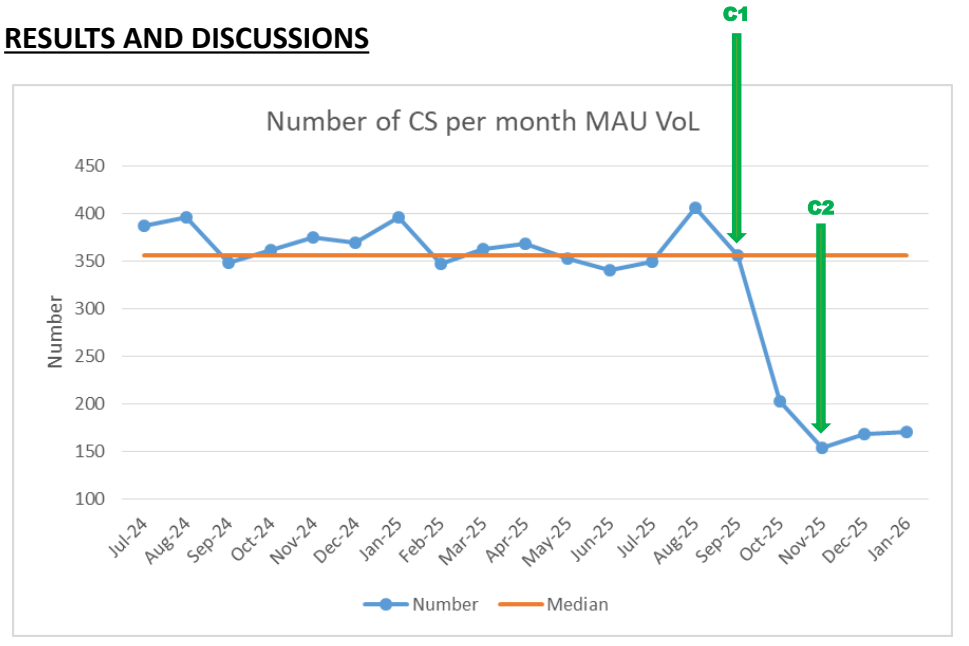

Figure 2

The average number of CSs resulted in the fourteen month period prior to October 2025 was 368 per month, with 85% of all venepunctures including a CS.

The average number of CSs resulted during October to December 2025 after both interventions was 175 per month (40% of all venepunctures), demonstrating a 52% reduction in CS testing and a monthly saving of £4,550, with potential annual savings of £54,600. This surpasses the 30% target we had anticipated.

The annual reduction in carbon emissions resulting from the decrease in volume of blood products undergoing incineration, is up to 27KgCO_2 roughly equating to a car journey from Glasgow to Aberdeen.[2]

C1 appears to have had the biggest impact, though we recognise that VoL MAU have a small number of consistent staff enabling and ensuring continuity in implementation. In bigger units with more staffing variability C2 could be more effective aiding the sustainability of the project.

The notable drop of 50% of overall venepunctures containing CS highlights the positive impact on minimising waste.

CONCLUSIONS/FUTURE CONSIDERATIONS

We believe this project to be a safe way of minimising waste, reducing laboratory costs and improving sustainability: it is transferrable and replicable in other front door services. An additional benefit in the reduction in unnecessary CS testing is it enables laboratory staff to improve turnaround times for other potentially more important samples which may in turn improve patient flow and discharge.

No safety issues were identified with this project as if coagulation was not tested initially and the senior clinical decision maker felt it was indicated, it was completed.

We aim to share this practice with other MAU departments in our health board, with the hope of upscaling the financial and environmental savings .

REFERENCES

1. National Institute for Health and Care Excellence. Appendix M: Economic considerations for Delphi (13-page guideline appendices), in Routine preoperative tests for elective surgery (NICE Guideline NG45). National Clinical Guideline Centre; October 2015 (Draft for consultation). PDF hosted by NICE.
2. Rizan C, Bhutta M, Reed M, Lillywhite R. The carbon footprint of waste streams in a UK hospital. Journal of Cleaner Production 286 (2021).