

Risk-based Streamlining of IQC Frequency for Glucose and Ketone Meters

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INTRODUCTION

Nova StatStrip Glucose and β -Ketone meters are widely used (115 meters) across the Surrey and Sussex Healthcare (SASH) for quantitative glucose and ketone analysis in whole blood, capillary samples. Device management is overseen by the Point of Care Testing (POCT) team. Results are used for monitoring diabetic patients and investigating suspected diabetic ketoacidosis. Internal quality control (IQC testing) is critical to ensure testing accuracy and reliability of results. For the SASH Nova StatStrip Meters, these are performed by clinical users. The manufacturer recommends IQC is performed every 24 hours^[1]. However, elsewhere in the Berkshire and Surrey Pathology Service Network (BSPS) a risk-based assessment^[2] has been performed to reduce the frequency of IQC testing to weekly for other glucose/ketone meters, without compromising patient safety. This has improved the cost efficiency of testing, by reducing the number test strips used for IQC procedures, per patient test. This project aimed to assess whether stepping down the IQC frequency would also be appropriate for the Nova StatStrip Meters – aligning network procedures, and delivering cost-savings.

AIMS

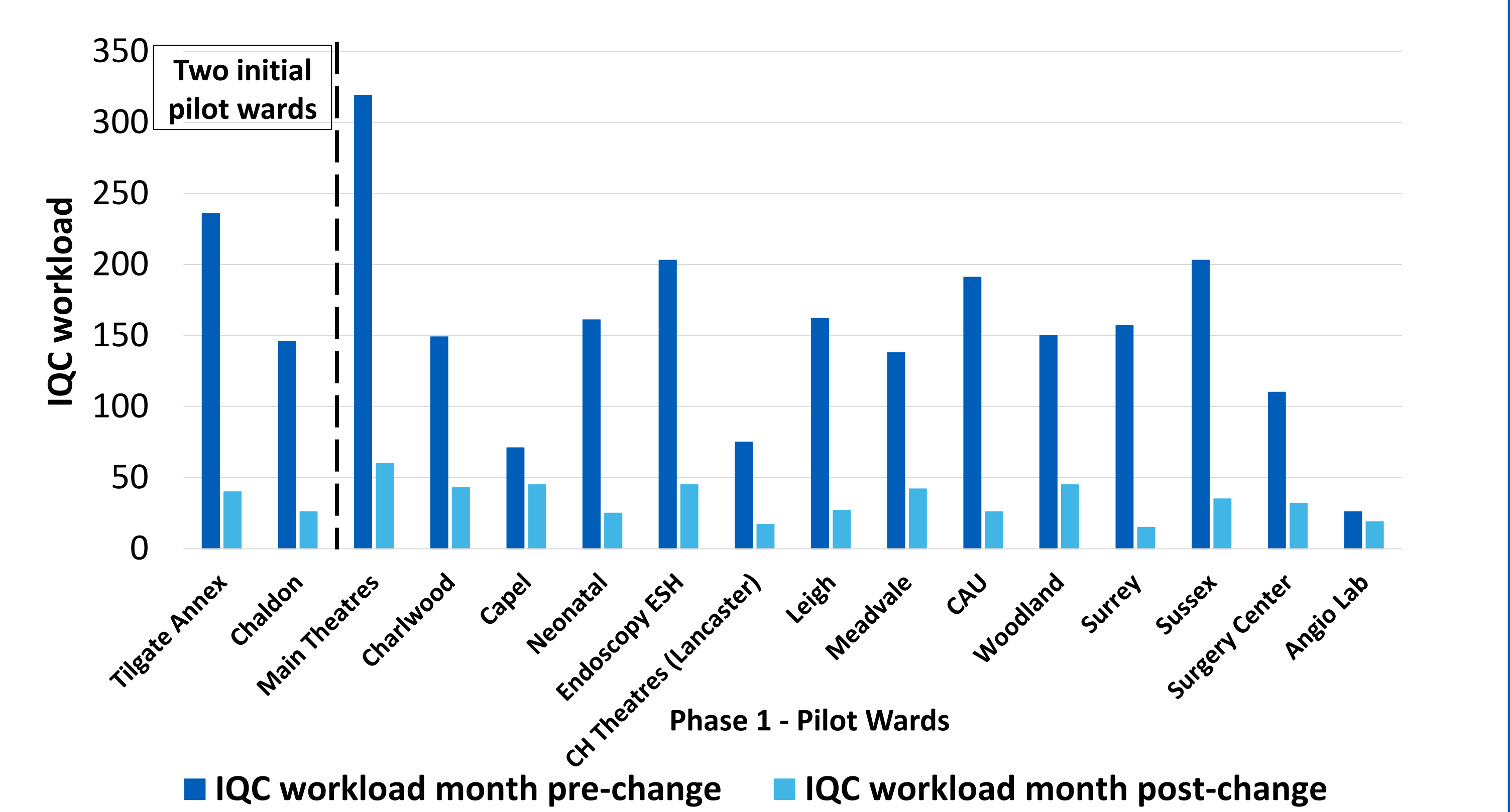
- For the Nova StatStrip Glucose and Ketone Meters:
- To implement in phases, changes in IQC frequency from daily to weekly.
 - To review the impact on patient care post-change.
 - To deliver predicted cost savings post-change.

METHOD

- Phase 1:**
- For a single meter, the IQC lock-out frequency settings were adjusted to 168 hours and tested.
 - IQC and patient testing workload for all clinical areas were reviewed to identify opportunities for device streamlining.
 - Relevant clinical committees were notified of proposals and changes ratified.
 - In August 2024 the IQC reduction was initially implemented in two high usage pilot wards (Tilgate Annex and Chaldon). Local communications were prepared.
 - Compliance in pilot locations was monitored. Success was measured by:
 - Reduction in IQC workload (Figure 1).
 - No changes in IQC failure rates.
 - Good EQA results.
 - Following successful implementation in Tilgate Annex and Chaldon, roll-out to an additional 14 locations were staggered (Figure 1).
- Phase 2:**
- The trust-wide roll-out was actioned on 10th March 2025. Changes could be made simultaneously to all meters by adjusting the configuration settings on the middleware NovaNet and ensuring all meters were docked to update the frequency change. Meters that were not docked, required a manual docking performed by the POCT team.
- Communication included:
- Direct communication with ward managers and clinical staff.
 - Trust-wide e-mail issued by communication team and intranet notices.
 - Notices and user quick-guides displayed beside meters in clinical areas.
 - Pharmacy communications to facilitate reagent stock adjustment.
- IQC workload were reviewed using data extracts from the middleware BioConnect and analysed in excel. Cost predictions were based on cost per test of Glucose = £0.22, Ketone = £1.95, (Figure 2).

RESULTS – PHASE 1 (PILOT)

Figure 1: The reduction in IQC frequency performed for phase 1 pilot wards post-change starting with initial pilot locations: Tilgate Annex and Chaldon.

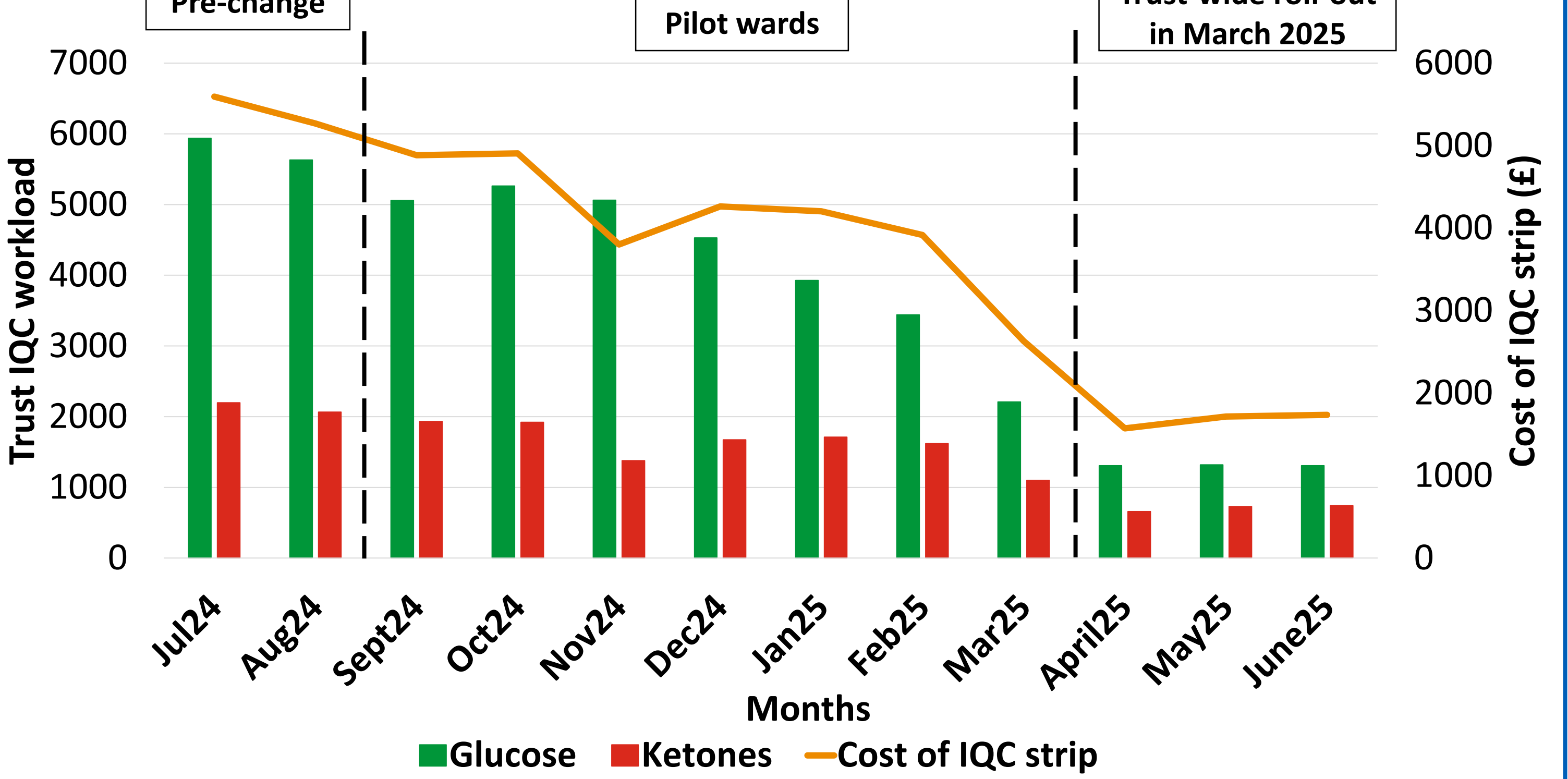


The implementation of the new IQC schedule in initial pilot wards, Tilgate Annex and Chaldon, in August 2024 resulted in an overall **82.7% decrease in IQC workload**. The reduction suggested the change management was successful and supported continued pilot roll-out at fourteen additional locations, staggered over the next five months. The initial findings were mirrored, and this instilled confidence for the trust-wide roll-out.

- Throughout the project, the impact was monitored by monitoring EQA performance, IQC failure rates, and clinical user feedback.
- IQC failure rates showed no significant change.
 - There were no reported complaints, patient incidents or concerns
 - The external quality assessment (EQA) results of July 2024 compared to May 2025 has shown approximately 32.4% increase in ‘good’ returns and 95.5% decrease in ‘non-returns’.

RESULTS – PHASES AND COSTS

Figure 2: The Glucose and Ketone IQC workload and cost of strips used for IQC trust-wide from July 2024 to June 2025. The implementation occurred over different phases.



From September 2024, a gradual decrease in trust-wide IQC usage was seen as the change was rolled out in additional ‘Phase 1 areas’. In April 2025, after the Trust-wide roll-out, the IQC-related strip usage decreased by 75.8% compared to July 2024 (pre-change). This translates to an estimated cost saving of £4021 per month. From then, the IQC workload has remained stable and demonstrates ongoing user compliance.

DISCUSSION AND CONCLUSION

The success of the pilot phase roll-out (figure 1) and sustained user compliance (figure 2), highlights the effectiveness of our POCT teams' engagement with clinical users. The implementation was guided by a **change control procedure**, which outlined individual responsibilities, project timelines, roll-back plans and defined measures of project success. The **phased implementation** prior to trust wide roll-out was particularly helpful in: managing workload effectively, resolving unexpected issues, allowing ongoing assessment of risk and impact, and identifying whether the strategy would likely achieve compliance on a trust-wide level.

The improving external quality assessment (EQA) results, low-level of IQC failure rates, and absence of clinical incidents evidence **the benefit of using clinically driven risk-assessments to support change in practice**.

As a result, **significant cost savings** of £48252 per year are **predicted**. Additionally, the change has **sustainability** and **clinical efficiency benefits** - allowing clinical staff to spend more time on patient care rather than daily IQC testing.

The POCT team continue to monitor IQC schedule compliance to minimise over-testing of IQC by habit rather than need. Trust savings will be re-invested in POCT services, contributing to a wider scale of quality improvements for patient benefit.

REFERENCES

- [1] Nova StatStrip Glucose and β -Ketone Instructions for Use Manual
- [2] Point-of-care testing in primary healthcare: a scoring system to determine the frequency of performing internal quality control. Gidske et al. CCLM, 2022 Feb 14;60(5):740-747).

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