

# Instrumental Change: Examining the workflow impact in a Biochemistry Laboratory during instrument replacement.

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## Introduction

Replacing automation instruments in a hospital laboratory can prove challenging and cause workflow disruption throughout the analytical phases. Northern Health and Social Care Trust Biochemistry Laboratory is currently in a regional replacement programme in Northern Ireland due to be completed by the end of 2023. The programme requires the installation of new lines alongside the removal of old lines, whilst continuing to provide quality service. The project will review and update current processes to standardise across both sites; making across site working easily adaptable to staff and provide equality of care to patients. Turnaround times (TAT) will be measured at multiple stages of the replacement programme to identify variation and trends that can occur during the changeover of core automation instrumentation. Findings allow for forward planning of future replacement schedules through preventative action and risk assessment. This is essential for maintaining quality of care for patients during any changes so that service provision is not compromised.

## Aim

The objective of this project is to analyse the correlation between turnaround times and the installation timeline at the Causeway Hospital laboratory, identifying potential trends to enable a proactive approach during installation at the Antrim Hospital laboratory.

## Results

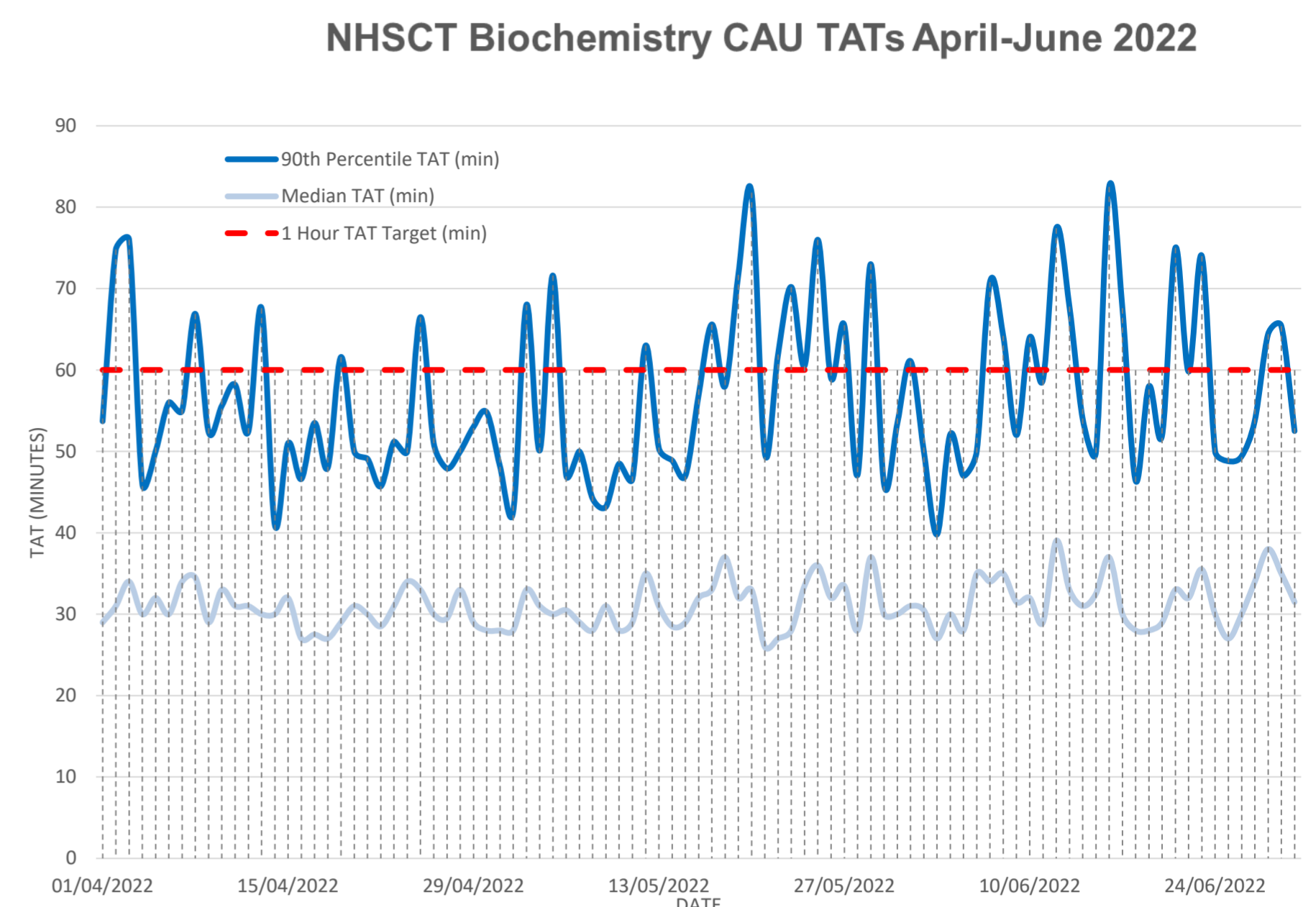


Fig 2. Graph showing 90th percentile and median TATs against 1 hour target for Causeway Biochemistry between April-June 2022.



Fig 3. Condensed timeline of Causeway install of automation instrument.

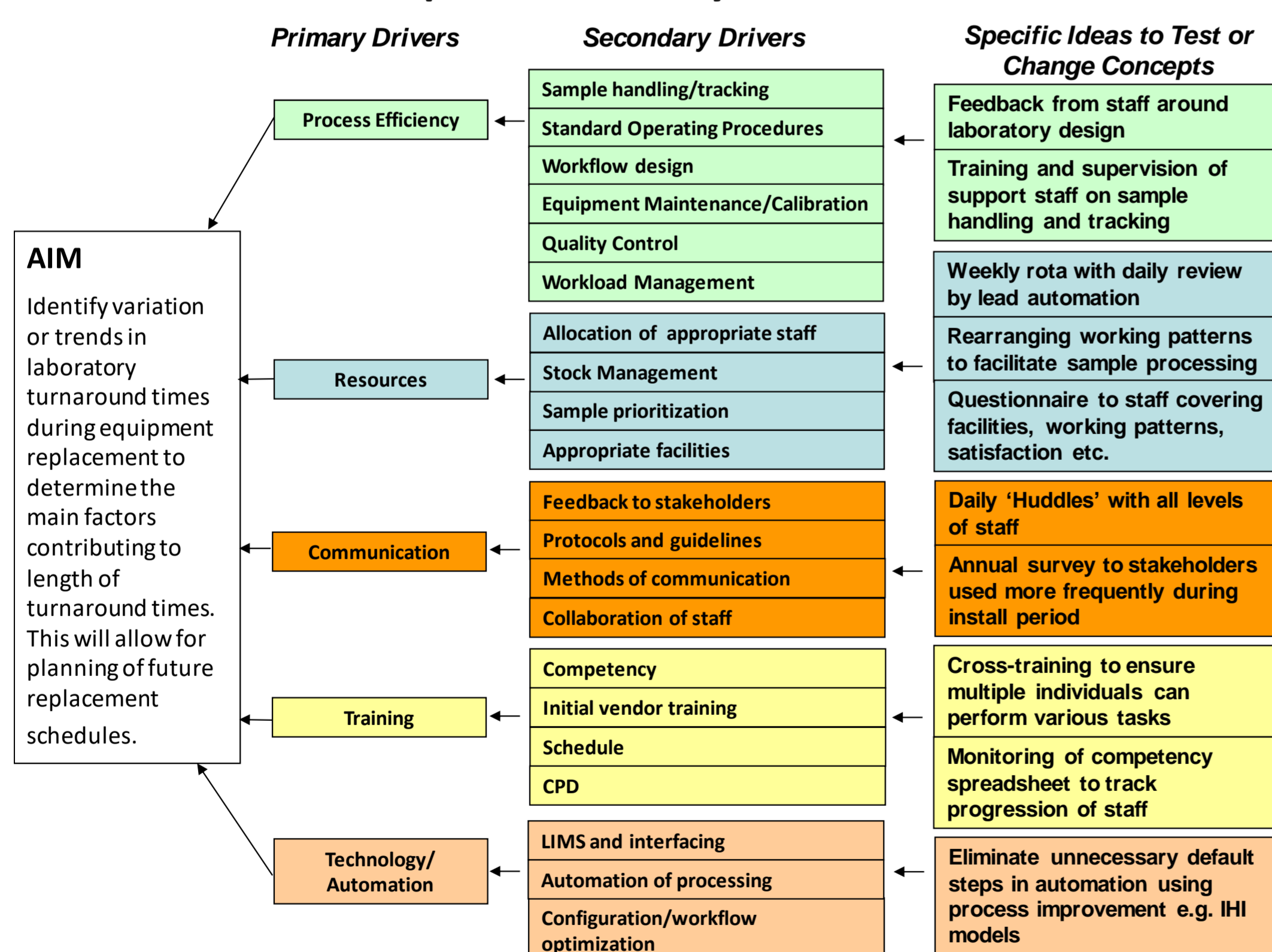


Fig 1 Driver Diagram identifying the key areas that impact TATs in the laboratory.

## Methods

1. Collect TATs for urgent 1-hour samples in Causeway between April 2022-June 2022 installation period.
2. Calculate median and 90<sup>th</sup> percentile of Vetted-PID time (minutes).
3. Analyse trends between TATs and timeline.
4. Use driver diagram to plan improvements for installation in Antrim using trends identified.

## Discussion

The most significant impact on turnaround times occurred after 16<sup>th</sup> May, coinciding with the second week of the verification process, which involved sample comparisons and precision checks. The highest values, reaching the 90th percentile, were observed on 20<sup>th</sup> May with a value of 81.8 and 16<sup>th</sup> June with a value of 82.5. Precision checks and data signoff were conducted on May 20<sup>th</sup>, and preparations for the go-live on June 16<sup>th</sup> were underway. During these periods, staffing and workload emerged as primary factors influencing TATs, whilst also recognising that outdated instrumentation was progressively diminishing efficiency.

Antrim laboratory has commenced the verification process as of September 2023. During this period, TAT data will be collected on urgent samples, and the laboratory's performance will be closely monitored to mitigate any potential impact of those identified from Causeway. Throughout the installation phase of all automated platforms, various change concepts from the driver diagram will be tested to enhance the project's aim and achieve improved outcomes.

## References

<https://www.ihl.org/resources/Pages/Tools/Driver-Diagram.aspx>