From Swiss to Cheddar

Small improvements to mitigate inefficiencies & improve productivity within Cardiology Labs

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Introduction

James Reason proposed the Theory of Active and Latent Failures[1] in which unintended weaknesses within complex systems such as healthcare lead to an adverse event. Within the context of our quality improvement initiative, we view the inefficient use of a Cardiology Lab as the adverse effect. Defenses against failure are modeled as a series of imperfect barriers depicted as slices of Swiss cheese with holes. When weaknesses (or 'holes') in a system align, this presents the opportunity for hazard or accident. The model illustrates that no single layer of intervention is flawless, rather it is important to address multiple layers to reduce the risk of failure and in our case, lab inefficiency. To achieve our efficiency aims, mitigating as many weaknesses as possible and creating more robust barriers was identified as the approach with most potential success.

Initial Assessment

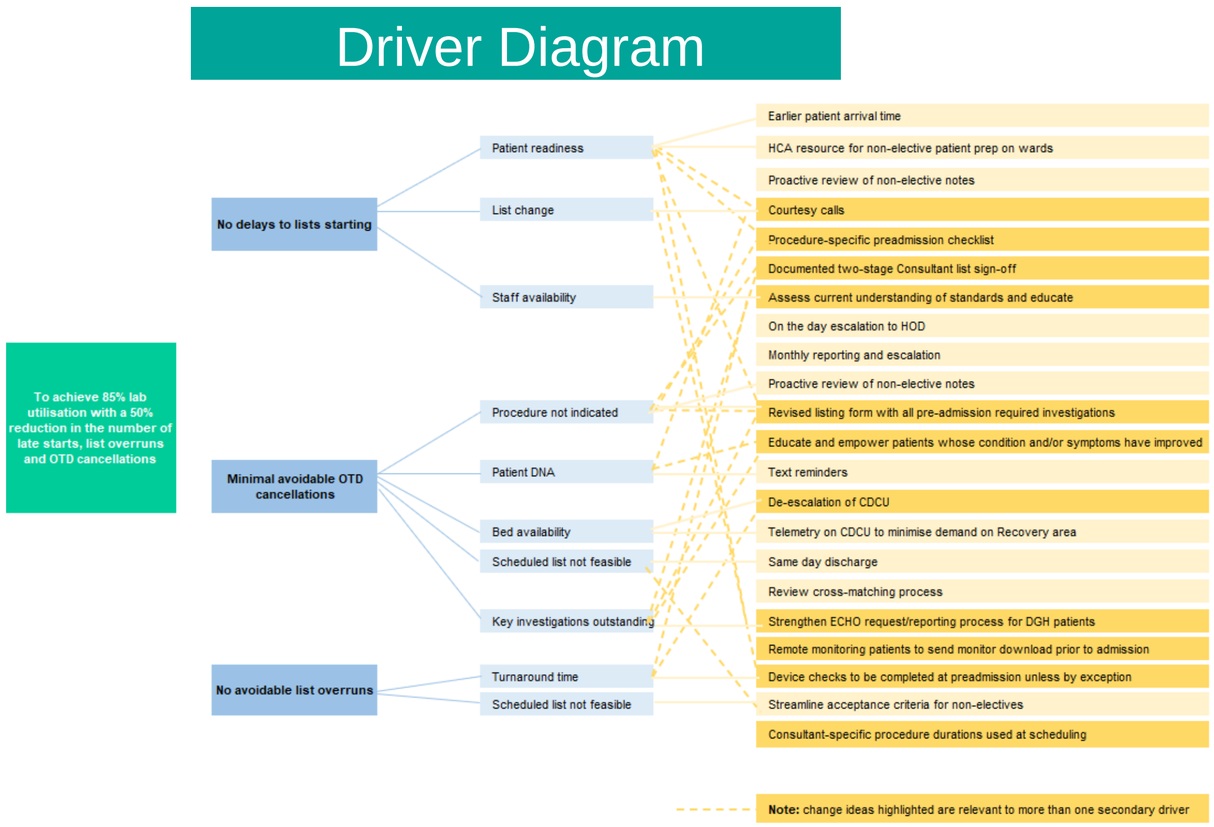
Cardiology procedures performed across 5 Labs operating Monday to Friday, 9am to 5pm with a procedure stratification comprising 48% Elective, 15% Inpatient and 38% Emergency and Acute Coronary Syndrome (ACS) within core hours. It was noted that the prevalence of patients requiring the latter two procedure types creates obstacles to achieving complete efficiency as some late starts, overruns and cancellations are unavoidable due to the nature and demands of the service. However, tangible room for improvement still exists and so the focus of this project is on avoidable efficiencies.

Aim

To ensure all lab sessions start on time with minimal turnaround delays, avoidable on the day cancellations (OTD) and late finishes. Aim to achieve a 50% reduction in the following metrics by April 2024:

KPI	Baseline	Target
Weekly number of late starts	15	7
Average duration of delay to start	29 minutes	15 minutes
Weekly number of OTD cancellations	7	3
Weekly number of list overruns	4	2
Average duration of list overrun	37 minutes	18 minutes

Driver Diagram

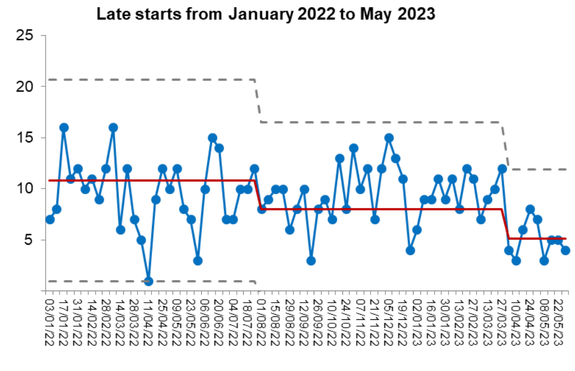


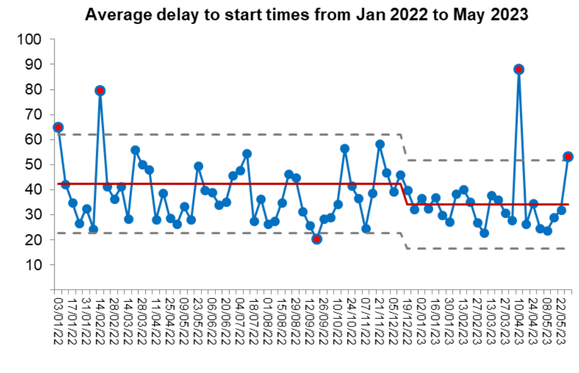
Change Ideas

- Earlier patient arrival time to Cardiac Day Case Unit (CDCU)
- Courtesy calls to patients 48 hours pre-admission
- Procedure-specific pre-admission checklist
- Documented Consultant list sign-off at booking and 48 hours prior to procedure
- Educational workstream focusing on shared understanding and ownership of Lab standards
- Timely escalation of avoidable late starts to prompt action and learning
- Improved, visible reporting at subspecialty level
- Revised digital listing form with pre-admission checklists
- Inform and empower patients to get in touch when their condition or symptoms change
- Introduce Telemetry to CDCU to reduce demand on recovery area
- Utilise Consultant-specific procedure durations to inform scheduling
- Transparent tracking of job planned lab session allocation

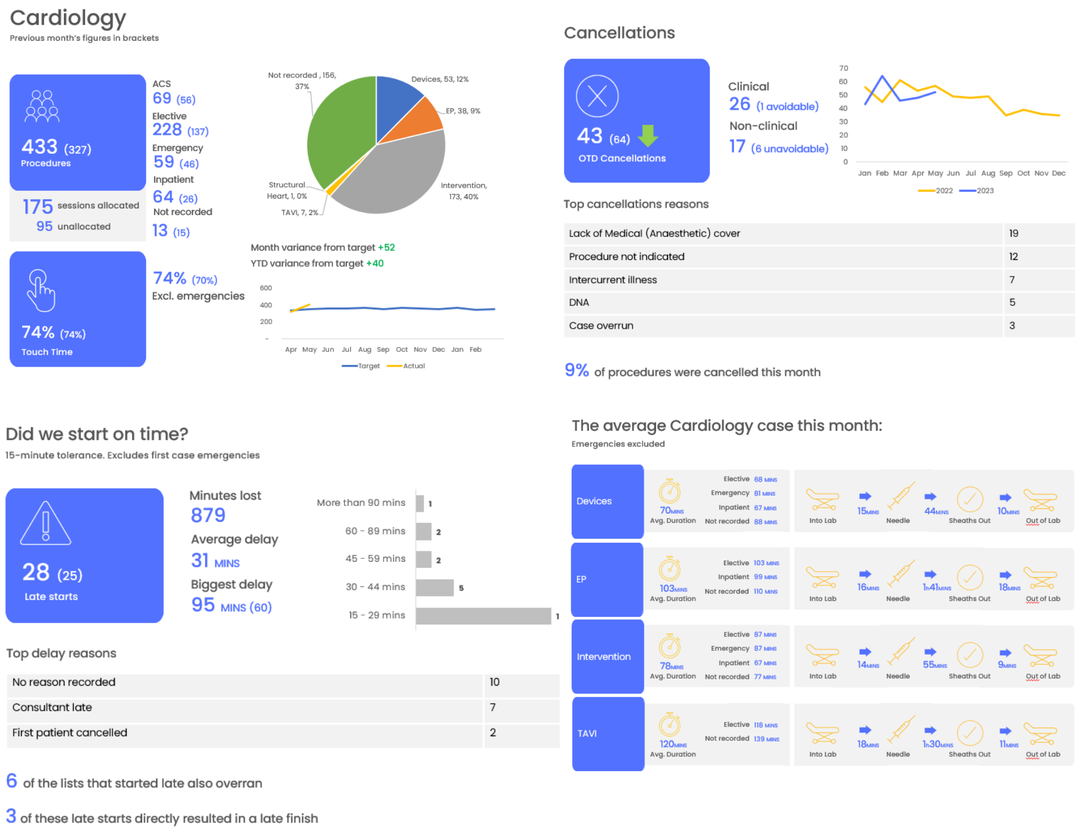
Results

A reduction in the frequency and duration of late starts observed with a weekly average of 12 late starts and 23 minute delay recorded in May. Whilst this is below our baseline and shows progress towards our target, opportunity still exists and some identified issues remain prevalent.





No statistically significant improvement observed in OTD cancellations and list overruns although work (and enthusiasm) continues.
Reporting at both subspecialty and Consultant level now available to spark interest, encourage accountability and ultimately support a collaborative approach to improving efficiency. Screenshots of the dashboards can be seen below:



References

1. Reason JT (1990). *Human error*. Cambridge, England: Cambridge University Press [Google Scholar]

Sustainability & Spread

All initiatives have been incorporated into the Clinical Productivity workstream with CEO oversight via the Strategic Transformation Committee. The team remain committed to enacting (and embedding) improvement on both a small and large scale

Lessons Learned

- Ring-fence time to progress project
- Clinical engagement vital alongside open, transparent conversations
- Take time (and care) when refining data
- Do not dismiss the smaller quick wins – every improvement counts
- **Failure to attempt is the biggest failure**

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