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# Striking the right balance between accountability and quality improvement: a discharge summary timeliness tale

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## ABSTRACT

**Background** The timely distribution of discharge summaries within 48 hours can play an important role in ensuring safe patient care transitions and reducing readmission. Like other academic centres, we struggled with achieving a regulator mandated outcome of discharge summary authentication within 48 hours.

**Study aim** To increase the percentage of discharge summaries authenticated within 48 hours from a baseline of 62% to 75% over 1 year on six acute medicine teams.

**Methods** The model for improvement guided this quality improvement (QI) initiative. Outcome measures included the percentage of discharge summaries authenticated within 48 hours, and the average time from discharge to authentication. Balancing measures were a high-level process measure related to quality; editing behaviours before authentication. Data were analysed using a pre–post design and represented via statistical process control charts, P chart and XbarS charts.

**Results** While the primary aim was achieved, it was not sustained. By contrast, the time to authentication decreased from 53 hours to 38 hours and was sustained. The percentage of editing of summaries also exhibited significant variability. The 38% who demonstrated considerable improvement in time to authentication had decreased rates of consultant and trainee editing. In contrast, those who edited before authentication took longer to authenticate with a median difference of 5 hours ($p<2.2e-16$) and were less likely to meet the 48-hour target (OR 0.67, 95% CI 0.6028, 0.7521).

**Discussion** Our findings are important for both regulators and QI practitioners and highlight the importance of defining clinically meaningful targets while also considering their impact on quality and education. While we cannot be certain that summary quality was compromised in those without editing, the association between time to authentication and editing behaviour is highly suggestive. Moreover, it was also associated with a decrease in trainee editing, which is concerning from an educational perspective.

### WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The timely distribution of hospital discharge summaries can play an important role in ensuring safe patient care transitions, with delays being associated with higher rates of hospital readmission.

### WHAT THIS STUDY ADDS

⇒ While improving the timeliness of discharge summary availability is important, defining the right family of metrics, especially in academic contexts, matters greatly. Timeliness-related aims need to be balanced with other quality metrics including measures related to meaningful trainee involvement.

### HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ When designing metrics for accountability, do so with flexibility. Tailoring compliance requirements to organisational capacity and context is one strategy to reduce the risk of goal displacement.

## INTRODUCTION

The timely distribution of hospital discharge summaries can play an important role in ensuring safe patient care transitions from the hospital setting to community care. Research underscores that delays in distributing these summaries can be associated with higher rates of hospital readmission.[1–3] Recognising this, regulators such as Ontario Health and The College of Physicians and Surgeons of Ontario (CPSO) have mandated the distribution of discharge summaries to primary care providers within 48 hours postdischarge.

Although there are many examples of successful projects leading to improved timeliness,[4–7] timeliness is not the norm.[2] In academic centres, timeliness can also be challenging due to the need to meaningfully involve trainees in the process. At London Health Sciences Centre (LHSC), a strategy was implemented where medical trainees, including residents and fellows, are permitted to independently generate and approve discharge summaries if they demonstrate competence in written communication skills. This improvement strategy has been adopted in some departments of our organisation with significant improvements in discharge summaries timeliness.[6] On the acute medicine services, however, given the complexity of issues addressed during a patient stay, the discontinuity of trainee involvement over the stay and their experience in working with

trainees on summary quality, many consultant physicians had reservations about such an approach.

In 2022, 62% of the discharge summaries from the acute medicine services were authenticated within 48 hours. Aligned with the hospital quality indicator target, our primary objective was to increase this percentage to 75% by June 2023.

## METHODS

### Local context

Our project was conducted on the acute medicine service within a quaternary level teaching hospital in London, Canada. At our centre, there are six teams that are collectively referred to as Clinical Teaching Units (CTU). These units collectively produce 50% of all discharge summaries at LHSC, managing approximately 6000–7000 patients annually with each unit overseeing 24–28 beds and maintaining near full occupancy. Teams are composed of a consultant physician, one or two senior medicine residents (second-year or third-year residents), two to four junior residents and two to four medical students. Residents rotate monthly across various specialties, while consultants rotate every 1–2 weeks. Residents initiate discharge summaries using dictation/transcription services or directly within the electronic medical record, which are subsequently reviewed and authenticated by consultant physicians.

### Development and implementation of interventions

We used the model for improvement to guide all aspects of the improvement initiative.[8] A timeline of our interventions is provided in online supplemental appendix A1. Following the root cause analysis phase in July and August 2022, a couple of interventions were implemented simultaneously from September 2022 onwards targeting three categories of root causes contributing to prolonged time to authentication: consultants, trainees and systems (online supplemental appendix A2). Implementation involved iterative plan-do-study-act cycles (online supplemental appendix A3) with a focus on addressing root causes across all three categories (figure 1). Early stages of the project identified discrepancies in understanding the processes between patient discharge and the arrival of discharge summaries in consultants' inboxes, prompting the breakdown of this process into manageable steps (online supplemental appendix A4).

To improve consultant performance, we extended beyond aggregate reporting by sites and teams to provide metrics at consultant level, facilitating consultants' access to their performance data and blind peer comparisons (online supplemental appendix A5). Concerns arose regarding the representation of the dichotomous hospital quality improvement (QI) indicator, specifically the proportion of discharge summaries authenticated within 48 hours as this did not adequately capture changes in

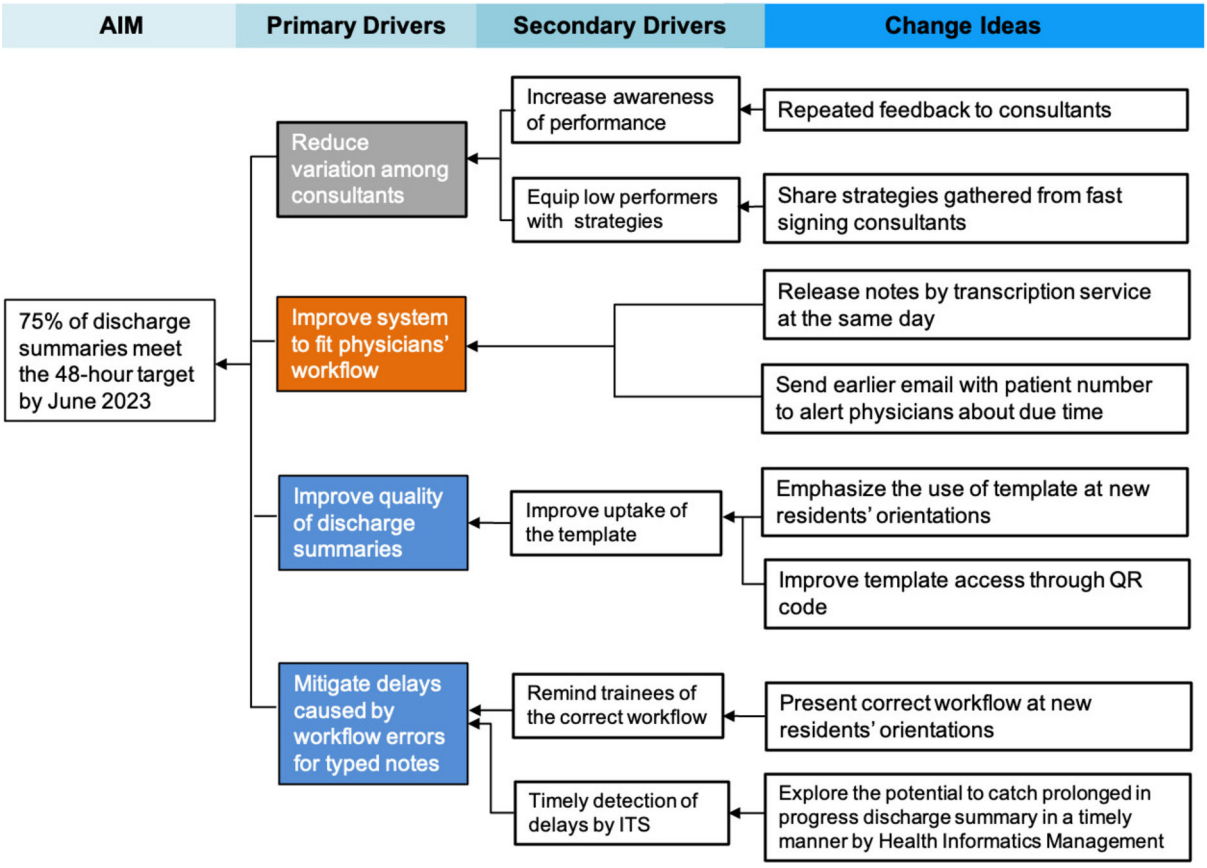


**Figure 1** Driver diagram. ITS, information technology services.

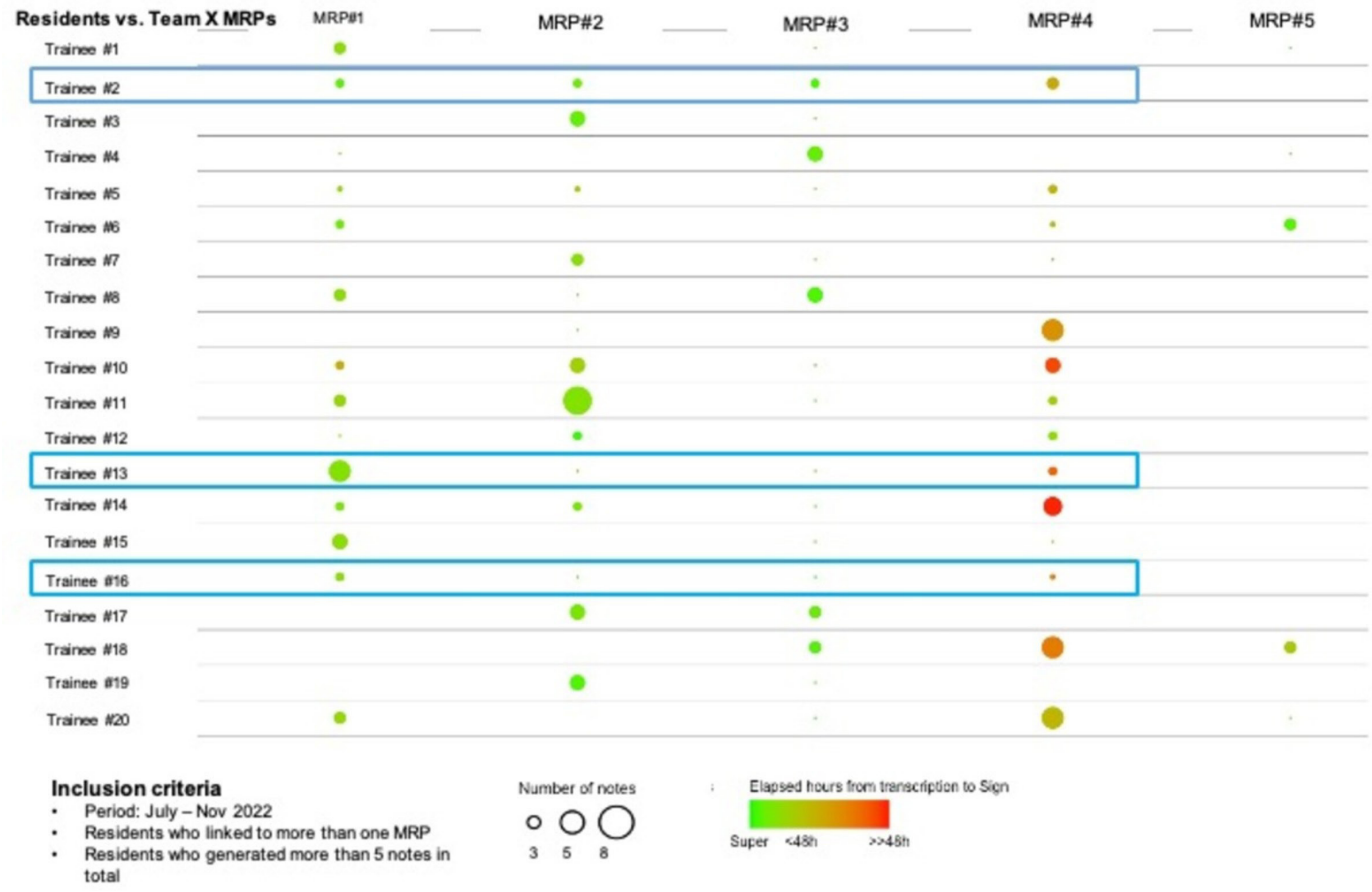


**Figure 2** The relationship between the number of discharge summaries produced by trainees and the average authentication time by consultants. MRP, most responsible physician.

reducing the time to authentication. Similarly, consultants voiced concerns about technical issues, beyond their control, that skewed averages. Therefore, we incorporated the average and median time to authentication in our reporting framework. Outlier consultants highlighted issues with trainees' discharge summary quality, necessitating extended feedback periods for revisions. Mapping, which analysed consultants' authentication times across overlapping trainees, revealed persistent variability among consultants rather than trainees (figure 2). The feedback implementation progressed from weekly updates to site leads, who then engaged with teams and individuals, ultimately addressing concerns directly with persistent outliers.

To improve the quality of discharge summaries generated by trainees, we introduced a QR code to facilitate access to an 'optimal' discharge summary template. We also included discharge summary timeliness strategies in the monthly orientation slides for new trainees. Subsequently, we revised the template for better display on mobile devices (online supplemental appendix A6). Detailed adjustments to the template are outlined in online supplemental appendix A3.

Workflow improvements comprised three key interventions: first, a 'just-do' approach ensuring same-day release of dictated discharge summaries by transcription services, facilitating prompt correction by responsible trainees; second, an early 24-hour email notification with patient information to alert consultants of pending discharge summaries, replacing the original notification lacking patient details; and third, Health Information Management's adjustment of audit processes to identify and rectify delays arising from improper documentation workflows in our electronic medical record. Correct workflow education was integrated into monthly orientation sessions.

In July 2023, we transitioned into sustainability, providing concise monthly performance summaries to the site chief via email but without mandating any action on their part.

## Data collection and analysis

Data and timestamps related to discharge summaries were automatically captured within the electronic health record (Oracle Cerner) and provided by Decision Support and Knowledge Creation from the organisation. In addition to monitoring process changes, we analysed the data by comparing preintervention and postintervention across the entire Medicine CTU, in three groups (group 1, group 2 and group 3), and by examining data at the individual consultant level. Group 1 undertook a team-owned QI project regarding discharge summary

quality and template development that was conducted separately but simultaneously with this project, necessitating that their data be looked at separately.[9] Group 2 and group 3 are the rest of the teams led by different site chiefs on two hospital sites.

Two outcome measures were assessed: (1) the percentage of discharge summaries authenticated within 48 hours and (2) the average time from discharge to authentication. Our balancing measures were a high-level process measure relating to discharge summary quality—editing behaviours before authentication. Specifically, we analysed whether discharge summaries were edited by consultants or trainees after receipt by consultants. These balancing measures were defined as the proportion of discharge summaries edited before authentication by consultants and by trainees.

We used statistical process control charts, P chart and XbarS charts, for proportional and continuous variables, respectively. The $\chi^2$ tests were used to compare proportional differences. Logistic regression was used to estimate the impact of editing behaviours on achieving the 48-hour target. We used the Mann-Whitney U test to compare the differences of time between transcription to authentication. All SPC charts were plotted using QI Macros for Excel (V.2020.10 Licensed). Other analyses were conducted using R (V.3.3.3).

## RESULTS

### Discharge summary timeliness

Across the entire CTU, the average time from patient discharge to discharge summary authentication decreased from 53 hours to 38 hours by June 2023, and the improvement was sustained (figure 3a). Both the average and median time from transcription to authentication decreased significantly for each group (online supplemental appendix A7).

However, the dichotomous outcome, percentage authenticated within 48 hours, did not meet our target (figure 3b). On average, 75% of discharge summaries met the target by June 2023, but this was not sustained. Performance variability was a major contributor.

We also compared the degree of timeliness changes (time from transcription to authentication) from pre-to-post intervention by consultants for group 1 against group 2, and against group 3 separately. There is no statistically significant difference in the degree of timeliness change between groups 1 and 2 (p=0.2895, difference=8.46), between groups 1 and 3 (p=0.0998, difference=11.27), and between groups 2 and 3 (p=0.4382, difference=5.99). Therefore, having the team-owned QI project did not have a significant impact on the degree of timeliness change for group 1. However, group 1 shows a significantly higher baseline timeliness compared with group 2 (p<4.05e−06, difference=−4.27) and group 3 (p<2.2e−16, difference=−9.30). This can potentially be attributed to the team-owned QI project as it started before this study.

### Balancing measures related to discharge summary quality

The percentage of edited summaries exhibited significant variability over time (online supplemental appendix A8). This can be attributed to the variation in individual consultants (online supplemental appendix A9c). Prior to this project, an average of 52.7% of discharge summaries were edited before authentication (28%–95%; median 46.5%). After interventions, the average was 52.9% (22%–89%; median 51.5%).

At the individual consultant level, as shown in figure 4, as authentication time improved, for some of the consultants, editing rates decreased. Of the 15 consultants who showed considerable improvement in time to authentication, 38% (5 consultants) demonstrated decreased rates of personal and trainee editing. As shown in online supplemental appendix A10, those who edited before authentication took longer to authenticate with a median difference of 5 hours (23.0 vs 18.0 hours, p<2.2e−16) and were less likely to meet the 48-hour target (OR 0.67, 95% CI 0.6028, 0.7521). This was also true for those who let trainees edit with a median difference of 5.5 hours (23.7 vs 18.2 hours, p<2.2e−16) and less likely to achieve target (OR 0.65, 95% CI 0.5842, 0.7280).

As shown in figure 5, timing also played a role in both editing rates and achievement of the 48-hour authentication; those authenticating first thing in the morning had lower editing rates and better timeliness to authentication. By contrast, in comparison to those authenticating during regular work hours (07:00–18:59 hours), those authenticating after work hours (19:00–06:59 hours) had a higher rate of editing (50% vs 55%; p=0.001087) and were less likely to meet 48-hour targets (OR 0.77, 95% CI 0.6878, 0.8740).

## DISCUSSION

Working with hospital leadership and in response to a mandate from our regional regulator (CPSO), our goal was to increase the proportion of discharge summaries completed and authenticated within 48 hours from 62% to 75% across acute care medicine services. While this aim was achieved, there continued to be a degree of variability across consultants, and the 75% target was not sustained. However, other important outcomes were achieved, and several lessons were learnt about choosing the right metric, attending to the quality, addressing impact on workload and, in the context of an academic health sciences centre, the issue of impact on trainee education.

During the time of the intervention, our improvement aim was achieved. While it is impossible to determine which of our interventions had the greatest impact, we would like to highlight a key element that appeared to support the change; data-supported conversations with individuals not meeting the aim. As shown in online supplemental appendix figures 4, 5, consultants needed to see the details of their data and not just the percentage of summaries authenticated by them within 48 hours. This allowed for more meaningful engagement and fewer

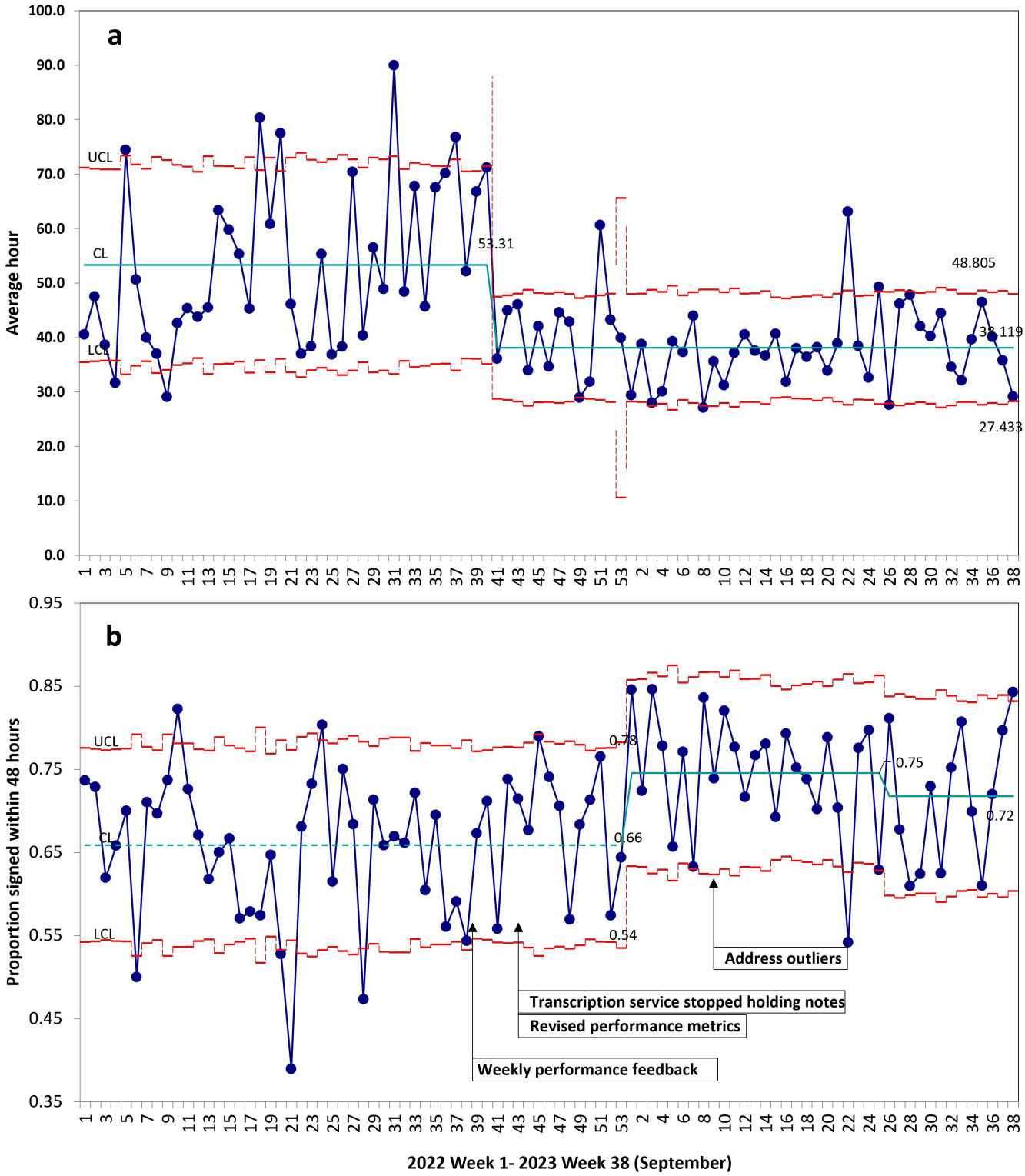


**Figure 3** (a) Average hours from discharge to authentication, (b) Proportion of discharge summaries met 48-hour target across the entire Medicine CTU. CTU, Clinical Teaching Unit; UCL, upper control limit; CL, control limit; LCL, lower control limit.

discussions about where in the process the real delays were occurring. By showing median data, they were also able to see the success without confounding from outlier data which typically related to process problems. During the sustainability phase, conversations were no longer being offered, and we suspect this lack of conversations, particularly with the outliers, contributed to its lack of sustainability. Addressing the process problems was also important, especially those related to transcription releasing notes with missing information and ensuring that, regardless of the method of creating the note, the consultant was set as the note authenticator.

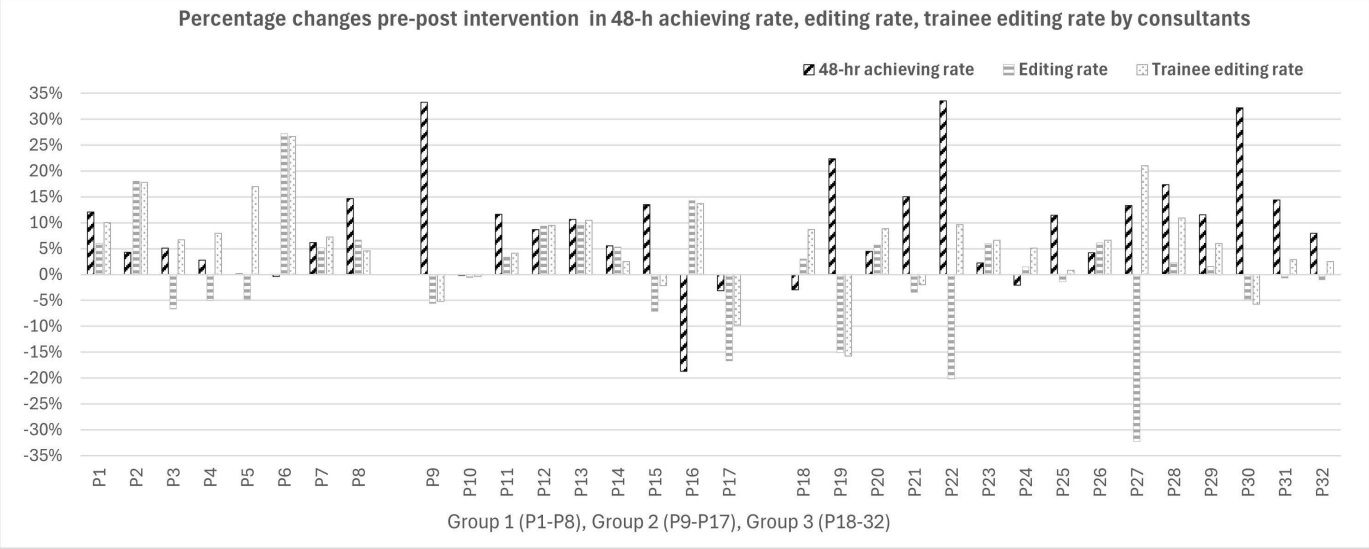


**Figure 4** Compare the per cent changes in 48-hour achieving rate, editing rate and trainee editing rate in preintervention and postintervention period. Preintervention period: January 2022–September 2022; postintervention period: February 2023–January 2024.

A key distinction in this study's context is between data for accountability and data improvement, and it makes up the most important lesson learnt. Accountability data serves decision-making purposes, such as determining rewards, facilitating comparisons and providing reassurance.[10] It is typically precise, comprehensive and valid, involving complete data sets without sampling. In contrast, improvement data are focused on enhancing local processes and is more approximate, relying on small, repeated samples to understand and drive performance changes. In line with our regulator's accountability metric,[11] we chose 'percentage of discharge summaries made available within 48 hours of discharge' as our outcome measure. There were several problems with this metric.

First, as a binary metric, it is less sensitive to special cause variation than its continuous counterpart 'mean time to authentication'.[12] The binary metric target of 75% was achieved but not sustained. However, the continuous metric showed a meaningful improvement from 58

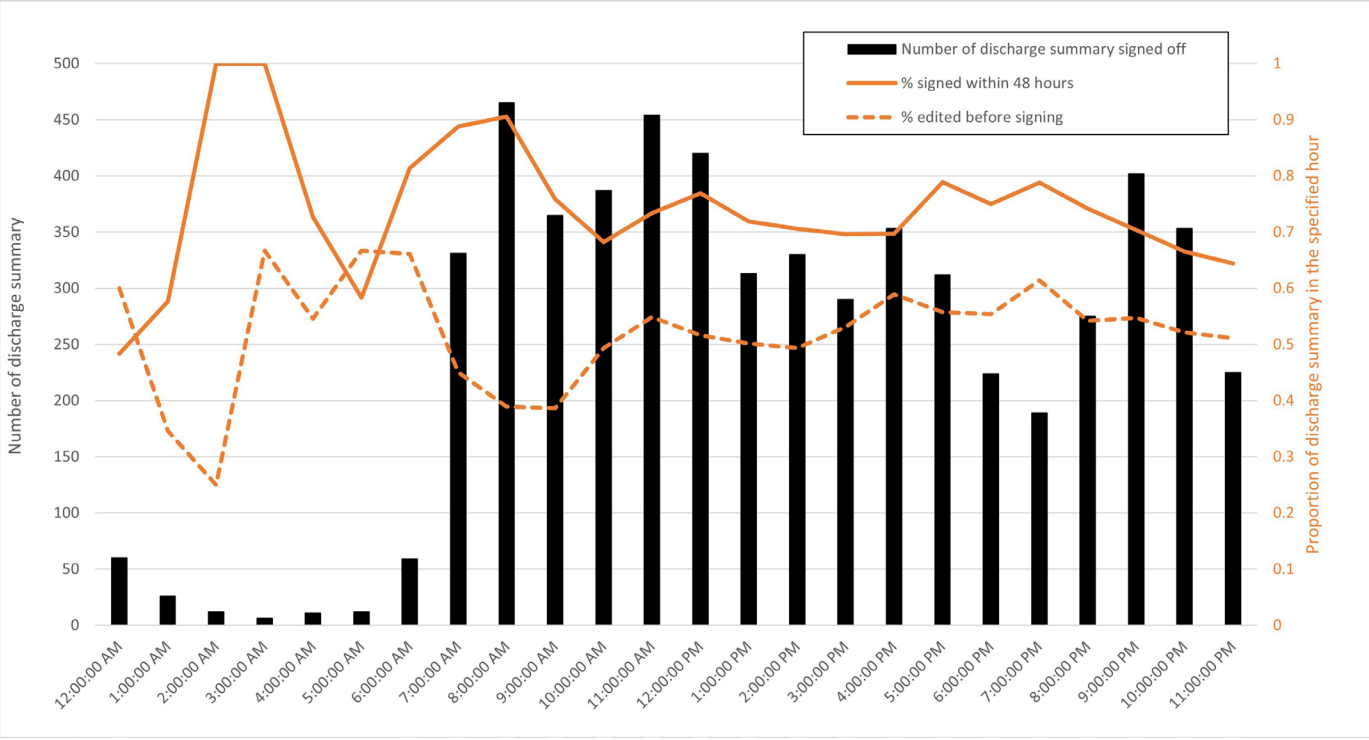


**Figure 5** Relationship between authentication timing in a day, editing rate and 48-hour achieving rate (data duration span from October 2022 to November 2023).

to 38 hours, which was sustained and, from a patient care perspective, represents the more meaningful metric to have been achieved. From a provider perspective, given the burden that documentation plays[13–15] and its impact on well-being, [16–18]choosing clinically relevant metrics is essential. While outcomes like readmission do increase with summary delay, most patients do not need to see the next physician within the first 48 hours of discharge,[19 20] and research suggests that delays beyond 72 hours appear to be more meaningful.[1 3 21] Moreover, authenticating consistently at 49 hours vs 48 hours, especially if this is on a Sunday or a weekday evening, is inconsequential from a clinical care perspective. However, considering 49 hours a failure and 48 hours a success does have negative repercussions on physician morale, especially if they have been striving to improve. The difference between success and failure in this example does not have face validity. This finding has also been seen in other timeliness interventions[13] and represents an important lesson for others pursuing timeliness work; given the number of faculty who were attending to their documentation work after hours—sometimes quite late after hours—attending to this lesson is also essential from a faculty workload and well-being perspective.

Second and more concerning was the lesson from our balancing measures and its potential implications on the quality of the summaries. While not true for the overall group, consultants demonstrating the greatest improvement (over 20 percentage points) showed a notable decline in overall editing rates, both personal and trainee. This suggests a possible trade-off between discharge summary quality and timeliness, raising concerns about the early onset of goal displacement—a phenomenon in which meeting specific, measurable metrics or compliance standards becomes more important than fulfilling the broader objectives these measures were designed to support.[22 23] In extreme cases, goal displacement can result in data manipulation or other perverse behaviours, as evidenced by the failures of various pay-for-performance systems. Despite initial enthusiasm, these systems frequently fall short of their intended goals, often leading to adverse outcomes.[24–26] These findings align with a mature body of literature that demonstrates that extrinsic motivators, if poorly designed, tend to actively undermine efforts to achieve complex, high-quality outcomes (such as those in healthcare).[27 28] Several strategies have been described to reduce the risk of goal displacement. These include pairing quantity metrics with quality metrics, pregaming the metric, mining for unintended consequences and testing for threshold effects.[29 30] In future refinements of our intervention, specific strategies could include spot audits of discharge summary quality, early informal interviews with practitioners to identify unintended consequences, and threshold testing.

Finally, there were also wide differences in trainee editing prior to consultant note authentication (23%–61%). Given the importance of the need for trainees to develop competence in clinical documentation, this is a significant and potentially problematic finding. As reported by many of the participating consultant physicians, while they would prefer to provide feedback and give the trainees time to edit their own notes, they were not confident that this could be achieved in under 48 hours given the overall high workload on the units. This finding is also consistent with the literature suggesting that the most effective and sustained changes to quality occur in relation to feedback integrated into clinical work[2]; having separate teaching sessions appears to be far less effective.[2 15] In future iterations, more attention will need to be paid to ensuring trainee involvement and studying its impact on their learning.

### Limitations

There are a few important limitations to this initiative. The first relates to transferability to other settings. This initiative took place in a context where trainees type or dictate notes and consultant physicians authenticate. However, in some jurisdictions, electronic health records are being harnessed to support real-time summaries that can be authenticated at the time of discharge. While those systems sometimes struggle with quality, timeliness is less of an issue.[31 32] Looking to the future, artificial intelligence-based solutions are likely also not far off.[33 34] The second issue relates to the timeliness vs quality problem. We used a high-level process measure (authentication without editing) as a correlate to quality. We, however, fully recognise that editing does not necessarily lead to meaningful improvements.

## CONCLUSIONS

In conclusion, while our intervention improved timeliness of discharge summary authentication, more work is needed. First, there is a need to address the quality of the discharge summaries to ensure that timeliness does not sacrifice quality. Second, and relatedly, there is a need to advocate at both the institution and regulator level to reconsider the metric of a dichotomous 48-hour discharge summary. Failing to do so may continue to erode provider well-being as well as undermine academic training programmes without influencing quality in the intended direction.

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