Specimen Labelling Improvement Bundle

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Background

There are more than 1 million specimens being processed by CGH laboratory annually. Specimen labelling errors could lead to wrong diagnosis, treatment delays and waste of resources as rework had to be done. Two patient identifiers are crucial during the process of specimen handling and dispatch.

Specimen labelling errors can broadly categorised into two categories: mislabelled specimen and unlabelled specimen. Mislabelled specimen (MS) is one of which the patient's two identifiers do not match with the specimen dispatched and received by laboratory. Unlabelled specimen (US) is one of which the specimen dispatched to the laboratory is not labelled with patient identifiers.

In year 2021, Nursing observed an increase in specimen labelling errors as compared to 2020. Further observations in clinical setting were done and it was revealed that there was inconsistency in practice in the specimen labelling and collection workflow among nurses, both inpatient and outpatient setting.

Observations were shared at the Department of Nursing Administration meeting and support was given to address the situation.

Period	MS	US	Total
Jan 20 to Dec 20	39	61	100
Jan 21 to Dec 21	51 (↑ 31%)	88 (↑ 44%)	139

The project aims to:

1. Reduce the number of Mislabelled and Unlabelled specimens by nurses in six months, from January 2023 to June 2023.
2. To streamline specimen labelling and collection workflow across clinical settings.

Changes

'Specimen Labelling Improvement Workgroup' was formed in April 2022. The team comprises of representatives from Nursing Administration, Nursing Quality and Laboratory. Data for specimen labelling errors for 2021 were analysed by the workgroup and nurses involved in specimen errors were interviewed. Collecting specimens from more than one patient at a time, printing multiple CPOE labels of different patients at a time and not verifying patient's two identifiers at the point of specimen collection were identified as common reasons leading to specimen labelling errors. The workgroup then reviewed the existing workflows from both inpatient and outpatient settings. It was noted that there was a lack of clear guideline for the specimen labelling and collection workflow. The specimen labelling improvement bundle was implemented in phases.

1st Change

The workgroup embarked on a journey to standardised the specimen labelling and collection workflow. The workgroup invited representatives from all clinical settings for discussion to share their views.

After multiple discussions, it was agreed that the specimen labelling and collection process required mandatory checks to enhance the safety of the process. Therefore, the 'Two-Point Checks' was introduced and incorporated in the specimen labelling and collection workflow.

Two-Point Checks:

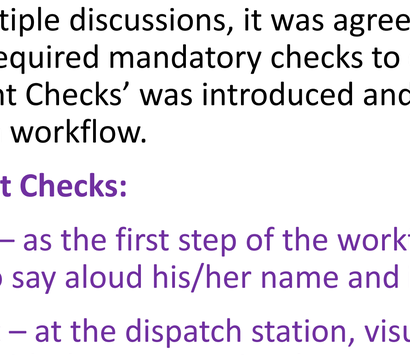
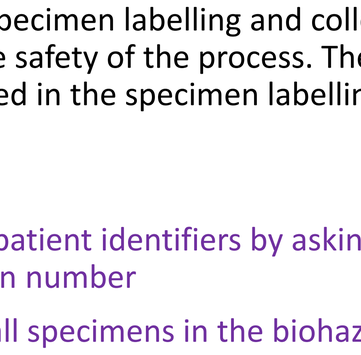
1st point – as the first step of the workflow, verify patient identifiers by asking the patient to say aloud his/her name and identification number

2nd point – at the dispatch station, visually check all specimens in the biohazard bag are labelled with the same patient's name

A total of five sets of workflows were identified to cater to the collection of different types of specimen. Multiple train-the-trainer sessions were conducted by the workgroup to disseminate the change in workflows to all nurses in the hospital from October 2022. The enhanced workflows officially started from January 2023.

2nd Change

The workgroup setup visual reminder at the location where the 1st and 2nd point check is conducted to provide a timely reminder to nurses. These were rolled out at the start of the enhanced workflows.

Visual Cue	
1st Point Check at each Phlebotomy Trolley	2nd Point Check at each Pneumatic Tube
	

3rd Change

To monitor compliance with the change in workflows. Self-audit process was setup with audit form created using FormSG to ensure accessibility. The audit process was included as a part of the train-the-trainers session.

4th Change

In July 2023, to augment the reminder at the 2nd point check, a voice recorder is added. This recorder is placed strategically at each pneumatic tube with a pre-recorded voice reminder message triggered by motion sensor.

5th Change

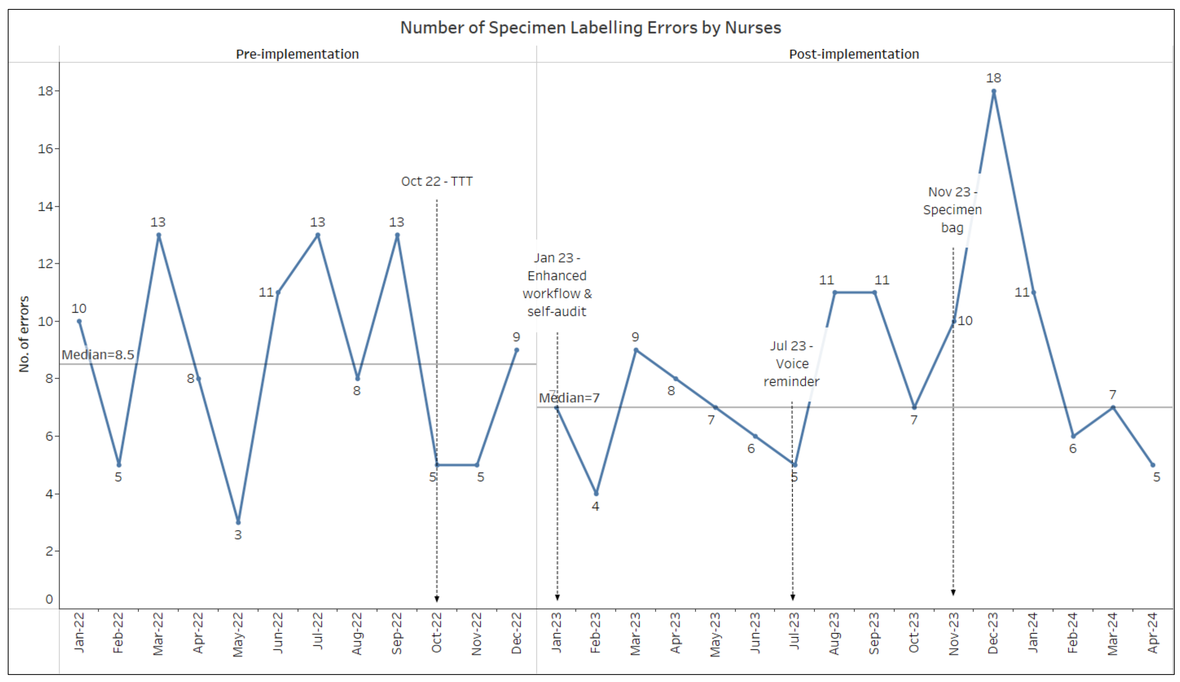
To enhance the visual reminder further, specimen bags printed with customised reminder message were implemented from November 2023.

A voice recorder with a pre-recorded voice reminder message triggered by motion sensor	Customised Specimen Bag with Reminder Message
	

Measures

To monitor nurses' compliance with the enhanced specimen labelling and collection workflows, each department's nursing supervisor conducted five observational audits monthly. If non-compliance that may compromise patient safety is identified during the audit, nursing supervisors will pause the audit and immediately address the nurse's behaviour. This ensures immediate rectification and timely feedback. Audit results showed high compliance rate of 93% across all departments.

The number of specimen labelling errors was tracked to evaluate the effectiveness of the changes made to the specimen labelling and collection workflows. From January 2023 to June 2023, the number of specimen labelling errors was reduced by 22.6% compared to July 2022 to December 2022. The number of specimen labelling errors fluctuated after July 2023 and decreased again in January 2024. The reduction in specimen labelling errors translates to savings in unnecessary resources spent on rectifying errors. Using the cost of a common blood test, Full Blood Count, the reduction in specimen labelling errors potentially translate to $420 saved and 6 hours of saving.



Conclusion

The specimen labelling and collection workflows were improved by identifying and augmenting the important steps within existing workflows. This minimised the effort needed from nurses to adjust to an entirely new workflow. The team worked closely with nursing leaders and nurses from the beginning of the project to implement interventions, monitor specimen labelling errors and gather feedback. This facilitated buy-in from end users. The team will continue to monitor and analyse specimen labelling errors to improve and adjust the improvement bundle when necessary.