



Singapore Healthcare  
Management 2017

# Elimination of transcription errors resulting from handwriting and pre-printed labels during microscopic glass slide labelling

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## Background

Transcription errors are defined as mistakes associated with performing data entry from one source to another. In the laboratory, this can lead to mislabelling of specimen which could contribute to significant clinical implications.

Traditionally, staff would handwrite the unique laboratory number of the specimen onto the frosted end of the glass slide before transferring the specimen onto the glass slide for further technical processing.

At the end of the technical processing, staff would paste over a pre-printed barcode label which contain the same unique laboratory number over the handwritten laboratory number.

Transcription errors that can occur includes incomplete and illegible handwritten information which resulted in laboratory number not being recognized for identification or pasting of the wrong pre-printed barcode label over the handwritten glass slides which resulted in mislabelling of the specimen.

## Introduction

In year 2015, we encountered rare and random near-miss transcription errors associated with handwriting and the usage of pre-printed slide labels for glass slide identification. Using the Root Cause Analysis (RCA) methodology, we started to analyse the incidents as a whole.

## Aims

The aim of this study was (1) to identify the root cause of transcriptions errors resulting from handwriting on microscopic glass slides and the usage of pre-printed labels; and (2) the possibility to leverage on technology to streamline work processes thereby eliminating handwriting information thus improving patient safety.

## Methodology and Results

Brainstorming RCA session was conducted based on key determinants that were categorized as staff, task, communication, work environment, organizational and training.

The three main key determinants that were identified to have root causes leading to the errors are staff, task and work environment.

## Findings and Results

### ➤ Task:

The task of writing and pasting the pre-printed barcode label on glass slides was labour-intensive as this was performed in a batch. Each batch had a workload of more than 100 glass slides to be written and label with accession number that contains at least ten numerical characters. This resulted in "sight-overlook" of information.

The lack of automation further burdened this task.

### ➤ Staff:

Staff tasked to perform handwritten information was found to have immersed into "auto pilot" working mode. As the staff was the sole personnel performing this task, there was lack of job satisfaction.

Staff was also preoccupied at times as there were multiple duties to perform at the same time.

### ➤ Work environment:

Due to the lack of working space, glass slides that were pre-handwritten with specimen number were stacked onto each other to save space. During the transferring of specimen onto the glass slide, staff assumed that the top slide was the next slide to use.

The lack of colour contrast in the work environment further increase the risk of error-making.

The time pressure to complete the task on hand in order to proceed with the next was also one of the root cause.

Once the root causes were identified, we targeted and planned our preventative actions as accordingly to each key determinants.

Some of the actions taken included (1) purchasing an on-demand slide labeller which eliminates handwriting on glass slides (2) provision of strategies to manage staff fatigue and a healthy staff:workload ratio (3) enhancing the work environment by introducing colour.

These actions were implemented in phases due to limitation in operational means. It has been more than 12 months since all planned prevention actions were implemented. Till date, we have achieved **ZERO** mislabeling errors.

## Conclusion

In our experience, labelling error can be eliminated by avoiding the use of pre-printed labels and handwriting on glass slides. High workload ratio that result in rushing and "auto pilot" reaction also contributed to the cause. "Auto pilot" processing can be reduced by introducing staff rotation or incorporating double checks. Lastly, using an automatic slide labeller that produces on-demand printing ensures that only one specimen can be labelled each time.