ERM Approach in Mitigating Specimen Mislabeling Errors

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INTRODUCTION

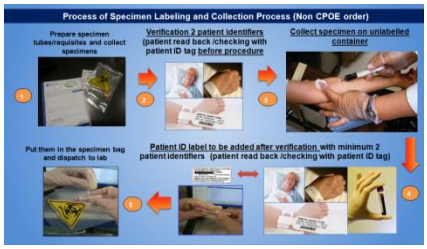
Accurate patient identification and correct specimen labeling are critical elements to patient safety. Inaccurately identified specimens can lead to wrong patient diagnosis, missed or incorrect treatments, blood transfusion errors, additional running cost for laboratory testing, inefficiency in service, loss of patient trust, service recovery and legal liability. Misidentification and mislabeling are errors that jeopardize patient safety but can be avoidable through an improved system of correctly identifying patient and correctly labeling specimens. This is consistent with the first goal of the Joint Commission International's National Patient Safety Goals : improve the accuracy of patient identification. This goal is not met if there is a loss of two matching identifiers anywhere in the testing process. The use of bar code scanning is evidence-based best practice to prevent misidentification/mislabeling of specimen. In 2011, Computerized Physician Order Entry (CPOE) was introduced in KKH. This is a computer application that allows physician ordering diagnostics: laboratory and other tests that is entered electronically instead of the manual request or order forms in order to reduce errors or near misses.

AIM

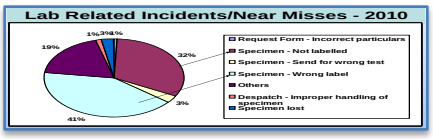
In spite of the evidences that CPOE is the best practice in preventing mislabelling errors or near-misses, automation can have new and/or un-anticipated types of errors that has impact on patient safety. These include system and hardware failure, inexperience users who are unfamiliar with new system and workflow processes which could lead to delay or wrong treatment prescribed for patients. The key objective of this project is to improve the accuracy of patient identification using Enterprise Risk Management by identifying the cause of inaccuracy in patient specimen identification.

BACKGROUND

In 2010, prior to the introduction of computerized prescribing order entry, the selection of patient was done manually. The verification process was performed using 2-patient identifiers through checking with patient ID tag before the procedure and patient read back. The patient ID label will be added after the verification.

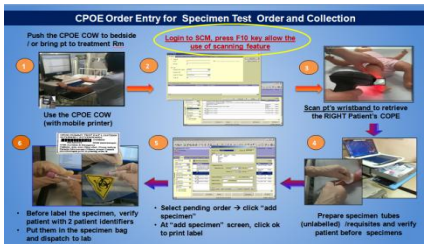


Notwithstanding the stringent workflow, there was still an increase in the number of laboratory related incident errors/near misses and about 41% were related to wrong specimen labeling. Nursing has reviewed and evaluated the problem and developed new Policies and Procedures (P&P) that highlighted 3 key points; use of 2 patient identifier, staff involvement in the specimen collection and staff acknowledging the correct patient label on the request forms and specimen containers. These provided a clearer and more practical guide for staff to work on.



IMPLEMENTATION OF CPOE

In 2011, KKH adopted the Computerized Physician Order Entry and began its pilot trial from August to September. There was a remarkable decline in the mislabeling error during the trial period. To further strengthen the advantage of this electronic ordering, a one-stop CPOE-COW (Computer-on-Wheels) was designed where the laptop and mobile specimen label printer were build onto this CPOE-COW so that it can be pushed to the patient's bedside during specimen collection to complete the entire processes. To ensure that the right patient is selected, Nursing Informatics and IT team created "F10" function key to allow barcode scanning of patient's 2D identification wrist-tag before specimen collection.



METHODOLOGY

To measure the outcome of the new electronic system, all the laboratory related errors were tracked and analyzed using the Risk Management System. It was noted that after the full implementation in October 2011, there was a sudden rise in the number of mislabeled specimen. The trend is not steadily going down despite the measures that were implemented by the CPOE Project workgroups.

NUMBER OF MISLABELLED SPECIMEN FROM JANUARY 2010 – JUNE 2012

Month	Jan-Mar 10	Apr-Jun 10	Jul-Sept 10	Oct-Dec 10	Jan-Mar 11	Apr-Jun 11	Jul-Sept 11	Oct-Dec 11	Jan-Mar 12	Apr-Jun 12
No. of mislabelled specimen per 10,000 lab orders received	2.6	2.7	4.0	3.8	3.1	2.8	2.6	1.2	1.1	1.9
Total number of lab order received	154880	163013	160693	155614	164052	175737	180449	188559	184693	184966

CPOE Project workgroup conducted an Observational study to determine the compliance with CPOE new workflow. Majority of the respondents were non-compliant with the 2–patient identifier during specimen ordering, use of CPOE-COW for collection of blood specimen, use of "F10" function key to perform barcode scanning of patient's 2D identification wrist-tag before specimen collection and pasting of specimen label immediately.

SURVEY QUESTION	RESPONSE YES	RESPONSE NO	TOTAL SURVEYED	% NON - COMPLIANCE
Ordering a Specimen				
Does the staff verify patient's name using 2-patient identifier before placing an order	40	38	78	49%
Performing Specimen Collection				
Does the staff use CPOE-COW for collection of specimen	57	29	86	34%
Does the staff press "F10" function key and scan patient wrist band	50	37	87	43%
After blood taking, does the staff print the specimen label and paste it on the specimen tube immediately	61	27	88	31%

USE OF ENTERPRISE RISK MANAGEMENT (ERM)

Multidisciplinary workgroup was formed involving Nurses, Doctors, Information System, Laboratory & Risk Management Office representatives. Key Risk Mitigation work plan was the tool used for risk assessment and mitigation. The first risk identified was the non-compliance with two-patient identifier. The current control measure of staff reinforcement in adhering to the process and staff education were not effective. Hence, additional measures to mitigate the risk were put in place such as educational video, medical informatics conducting training to new doctors, and regular focus group discussion with direct care nurses. To increase the staff awareness on 2-patient identifier for specimen collection: posters and platform such as CEO forum and CMB Patient Safety Round were used to address this.

RISK	CURRENT MITIGATION & MEASURES	RISK RATING WITH CURRENT CONTROL	CHANGES TO CONTROL	CHANGE TO CONTROL EFFECTIVENESS	RISK RATING AFTER CHANGES TO CONTROL	ACCOUNTABLE PERSON/ DEPARTMENT
No available COW on busy period during ordering	Wait for the available COW Indicate order on the case notes and order in CPOE later	Under controlled	Reinforce coder to use their own laptop Propose HO/MO to be given a laptop/ toughbook	Significant improvement	Adequately controlled	CMB/DDMS
Doctors reset the printer	Reinforce doctors to use the allotted PC for their ward work	Under controlled	Propose HO/MO to be given a laptop/ toughbook	Significant improvement		

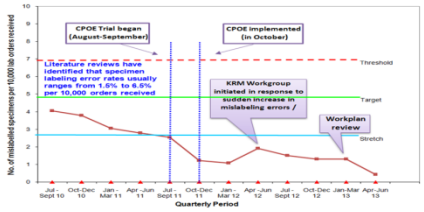
To mitigate the other risks such as lack of CPOE-COW during peak periods and resetting the mobile printer, doctors were provided with Toughbook (laptop) and more mobile computers were deployed.

RESULTS

There was a decreasing trend in the number of mislabeled specimen from 1.9 to 0.4 per 10,000 laboratory orders received after the implementation of the additional measures in June 2012. The significant improvement in the reduction of errors and near misses in specimen mislabeling showed the effectiveness of the key risk mitigation plan that was implemented.

WORK PLAN REVIEW FOR SUSTAINABILITY

"Relabeling of specimen is not allowed". However, a new policy on relabeling was implemented for irreplaceable specimen. When the samples cannot be re-collected (e.g. cerebrospinal fluid, bone marrow aspirates, and surgically collected specimens), the consequences of not having a result may significantly impact the patient. Thus, when the risk of collection outweighs the risk of relabeling, the submitting department must seek the approval of Chairman of the Medical Board through the Division Chairman for his consideration and approval. This policy has tighten the workflow on specimen labeling and provided another layer of protection for the patient.



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No. of mislabelled specimen per 10,000 lab orders received	4.0	3.8	3.1	2.8	2.6	1.2	1.1	1.9	1.5	1.3	1.3	0.4
Total number of lab order received	160693	155614	164052	175737	180449	188559	184693	184966	185318	186309	179230	187125

CONCLUSION

Errors cannot be prevented nor corrected unless and until we determine where and when they are occurring. Risk Assessment is a tool that provided the avenue to review and develop possible strategies for improvement and enabled us to track whether the additional measures has significant improvement. Leadership support, sustained awareness of our staff on mislabeling issues and implementation of the interventions have greatly contributed to the reduction of specimen mislabeling errors and near-misses therefore improving patient safety.

FUTURE PLANS

Continue to monitor and analyze Laboratory related incidents and share the results to the relevant department. Share the success to other institutions as this impacts patient safety.

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