ENHANCING PATIENT SAFETY THROUGH CONTINUOUS IMPROVEMENT AND RISK MANAGEMENT BY REDUCING SPECIMEN TRANSPORT LOSSES

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INTRODUCTION

Patient-centered care is paramount in healthcare, underscored by risk management within the ISO 15189 medical laboratory management system. The 2022 update emphasizes risk management's role in patient safety. For nonconformities, risks should be reassessed to enhance patient care. Pre-analytical errors are primarily responsible for laboratory inaccuracies. In 2021, our laboratory's review identified eight incidents related to specimen loss during shipment, leading to an integrated improvement and risk management plan to mitigate patient harm and improve care.

METHOD

We apply the Plan-Do-Check-Act (PDCA) process for improvement. Plan: We use Cause & Effect Analysis to identify the root causes of problems and establish improvement plans and objectives. Do: Take action according to the formulated plan. Check: Review improvement plans and results. Act: The process of correction and adjustment is standardized and documented, and a risk management procedure is introduced to establish risk control objectives for continuous monitoring.

RESULTS

Plan: The Cause & Effect Analysis was used to identify three reasons for the loss of transported specimens via the pneumatic tube system. These reasons included the stacking of pneumatic tube carriers, which caused them to return directly to the nursing station and the operational relay station; specimens not being sent out from the nursing station, and clinical laboratory technologists neglecting to remove specimens from the carriers.

Do: We've enhanced our specimen management by addressing three main issues: (1)Redesigning the hardware structure of carrier-receiving stations, completed in October 2022, effectively eliminated carrier stacking. (2) Our Laboratory Information System (LIS) now alerts if specimens are overdue, triggering reminders for laboratory staff to trace specimen whereabouts, ensuring timely examinations and avoiding re-draws. (3) We've standardized specimen collection from carriers and integrated this into our training program, improving process efficiency and specimen handling accuracy.

Act: To mitigate specimen loss during transport, our lab has integrated it into our risk management strategies. We've implemented two controls: (1) Including 'Standard Procedure for Specimen Removal from Pneumatic Tube Carrier' in staff proficiency assessments, achieving a 100% compliance rate. (2) Installing cameras to monitor staff operations, resulting in specimen loss incidents by lab staff being limited to one case per year or fewer. Both measures met our 2023 risk control targets effectively.

Check: After improvement, the incidents of specimen transport losses decreased from 8 cases in 2021 to 1 case in 2023, achieving an overall improvement rate of 87%.

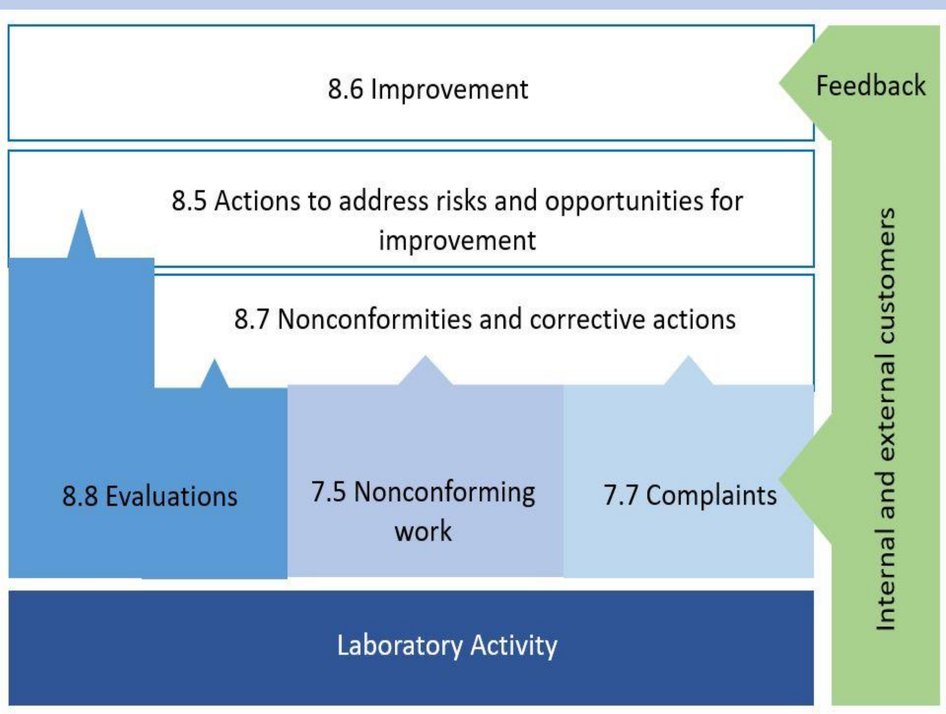

Figure 1. The Framework for Continuous Improvement of ISO 15189:2022

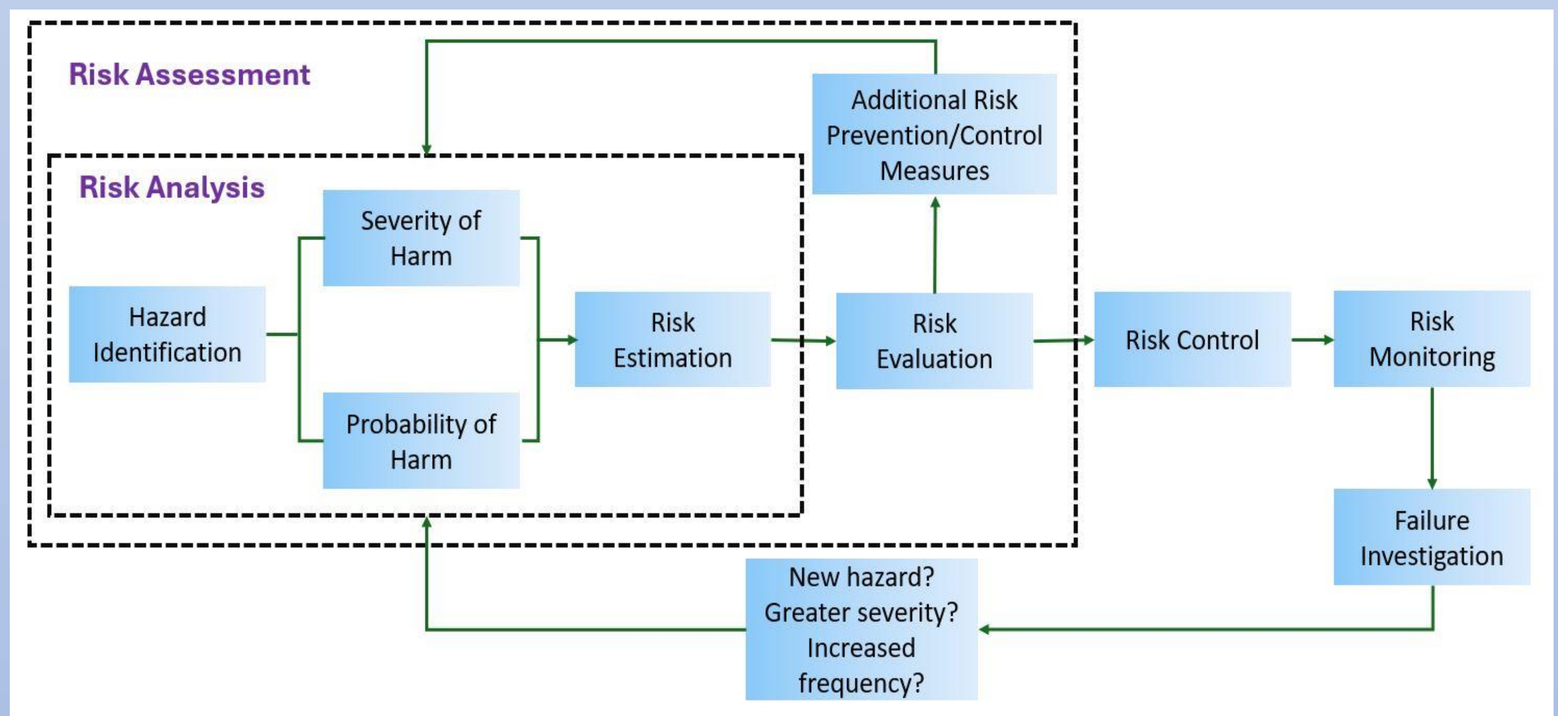

Figure 2. Risk Management Flow Chart

CONCLUSIONS

Improvements in our lab management system have notably decreased specimen transport losses, reducing the need for repeat blood draws, infection risks, and diagnosis delays. Adhering to ISO 15189, we enhance system effectiveness through risk assessments, procedure reviews, and feedback integration, continually assessing the impact of implemented actions.

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