Establishment of Electronic Root Cause Analysis (eRCA) Program in Hospital's Risk Management System (RMS) for Error Prevention

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Background

Root cause analysis (RCA) is a methodical approach for identifying the underlying root causes of events. Within an organization, problem solving, incident investigation and root cause analysis are all fundamentally connected by the basic questions of what the problem is, why and how did it happen and what can be done to prevent it. However, RCA is not often done for the less serious events which have the potential to evolve into more severe ones if it is not managed timely and effectively. It is often the case that RCA is seen as cumbersome and that the documentation tools are complicated. In actual fact RCA is not largely about how problems are documented and what charts to use but is basic critical and in-depth thinking using Quality Improvement Tool (QIT) as a guide. The key consideration on the establishment of eRCA is having thinking concepts made easy through simplifying the QIT to a step to step process and simple references to direct the analysis process of the events. Primarily the eRCA is mapped towards having the event to be analysed deeper to the root of the issue, rather than to simply address the symptomatic causes that resulted to an incident so as to effect targeted solution to mitigate the problem.

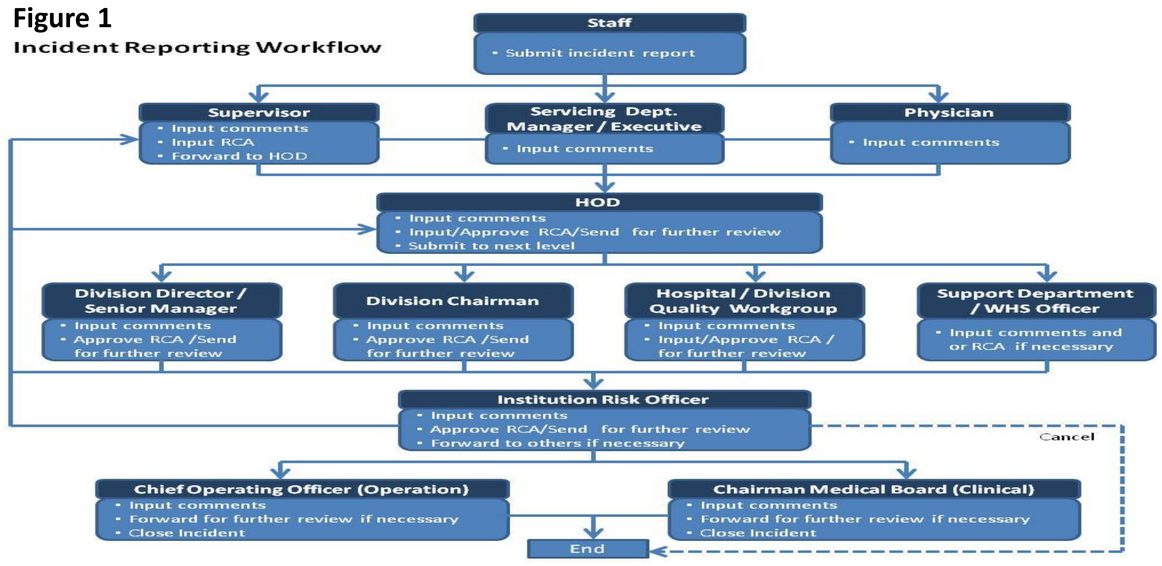
Aim

To improve the utility of RCA as a quality improvement tool (QIT) to identify underlying latent failures in hospital incidents which to be effectively eliminated using more targeted solutions.

Methodology

Adverse incidents and near-miss events are reported in the hospital's Risk Management System (RMS). An eRCA was established and incorporated in the RMS on November 2013 to support analysing and learning from reported events to promote the use of Quality Improvement Tool (QIT) in identifying problems and map control measures to reduce risks and potential harm to patients and staff. The RMS was incorporated with step-to-step and easy to follow reference guide to RCA for incident management. A structured format that consist of drop down lists of the contributory factors and preventive action plans; and text boxes were created to facilitate users in providing free text recommendations and risk mitigating solutions. Incident reporting workflow has included the responsible person to initiate the RCA review with the supervisor to provide RCA input. The next level is the HOD that will approve the RCA or can forward to relevant people involved if there is a need for further review. The completed RCA review will then be routed to the respective division head for approval with final endorsement by Institution Risk Officer and closure either by Chief Operating Officer or Chairman Medical Board (see Figure 1 for workflow).

Figure 1



In order to achieve the success of having staff to overcome the resistance on the use of RCA for analysis of preventable incidents. Two of the Risk Management Office (RMO) staff were assigned to provide support and facilitation when help is sought by any of the department or team. There was also a designated Information Service staff to assist in the review and enhancement of the program to make the system user friendly (see Figure 2 for samples of the eRCA reference). Support was also given by the senior leadership level, namely the division heads, quality and safety committee chairs to drive by either routing or stating in the comment in the recommendation the need for RCA review.

Figure 2

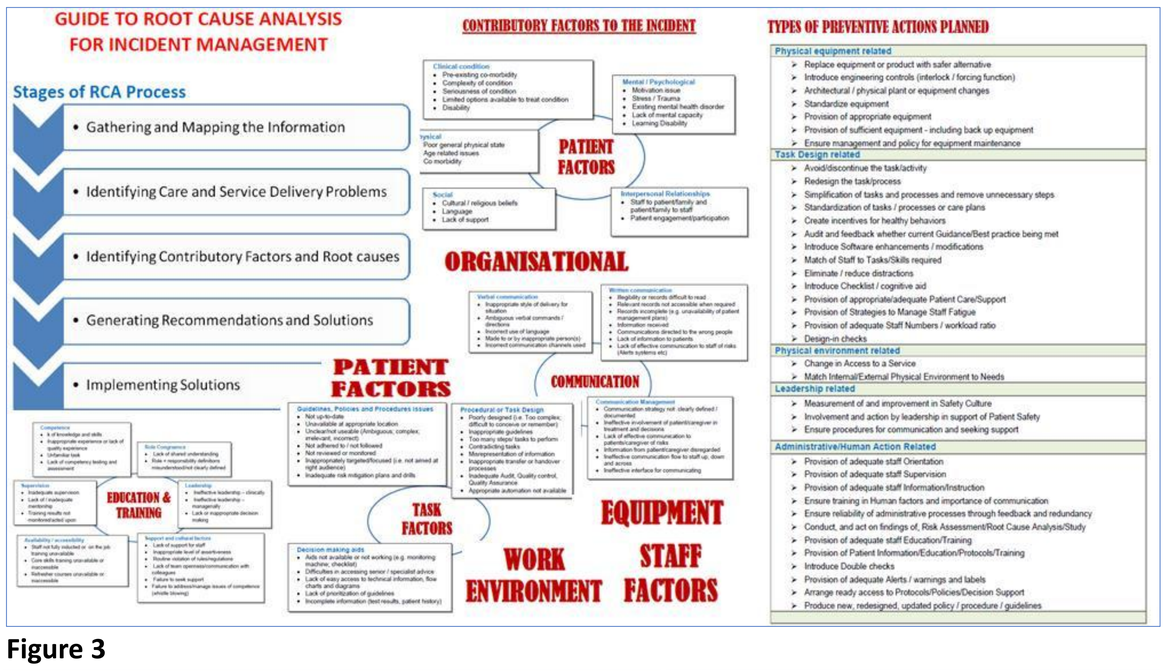


Figure 3

Incident Type	Specimen/Laboratory Related Error/Near-miss	Sub-Type	Mislabelling

Root Cause Analysis (RCA)

IDENTIFY THE UNDERLYING FACTORS AND CONTRIBUTORY FACTORS TO THE INCIDENT

Key Determinants	Underlying Factors	Contributory Factors
Staff	Distraction/Attention Deficit	Staff did not verify the correct label by using 2 patient identifiers as she was busy attending to the patient at the trolley.
Work Environment	Lack of space	Patient was seen at the observation area and blood was taken there. However, the CPOE labels were printed from consult room 6. Patient was not seen in Consult room 6 due to space constraint. The room was too small to fit the trolley.

RECOMMENDATIONS

To reinforce to all staff on the importance of using 2 patient identifiers to verify correct patient.
To remind doctors to use the bar code scanner instead of selecting the patient from the list.
All trolley cases to be seen in Consult Room 5 which is bigger and can accomodate the trolley.

RISK MITIGATION SOLUTIONS TO BE IMPLEMENTED

Solution	Implementation Date
To perform adhoc audit to make sure the staff and the doctor adheres to the IPSG 6 Identifying the Patient Correctly	With immediate effect

Result

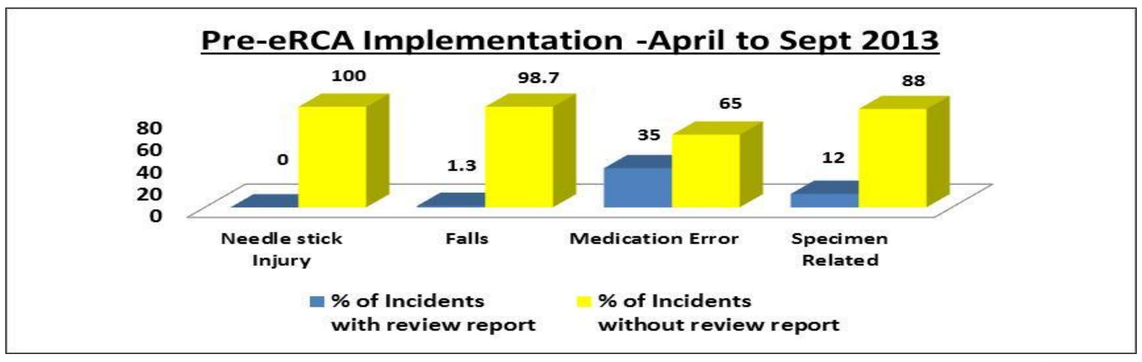
Pre-implementation base-line data of the 4 categories from 1/4/13 to 30/9/13 was taken (see Figure 4) :

Percentage of RMS incidents with RCA conducted by Division/Department:

- Fall – 1.3% (2/79)
- Needle-stick Injury - 0% (0/31)
- Medication Errors – 35% (17/49)
- Specimen Related Errors/Near-misses -12% (8/69)

In total only 13% has RCA conducted.

Figure 4



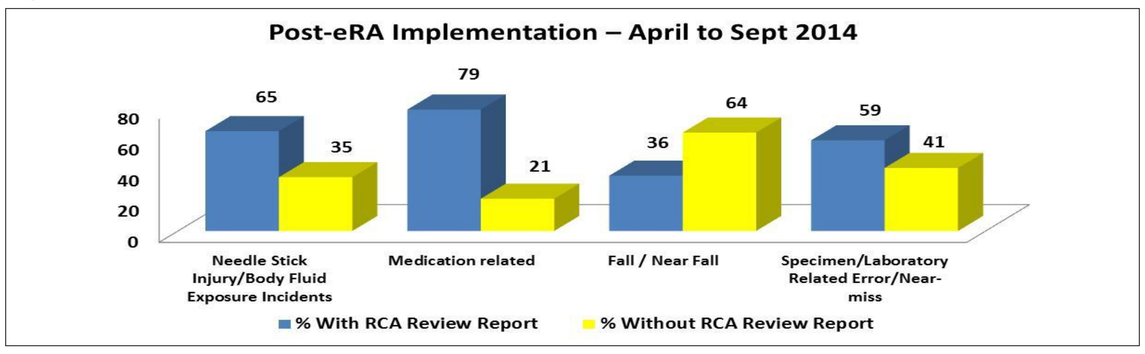
Post-implementation data from 1/4/14 to 30/9/14 of similar categories (see Figure 5):

Percentage of RMS incidents with RCA conducted by Division/Department:

- Fall –36% (36/100) and 64 incidents without RCA; 78% was not preventable (most were related to child fall due accidental trip while running or walking and all with caregivers around).
- Needle-stick Injury – 65% (17/26)
- Medication Errors – 79% (60/76)
- Specimen Related Errors/Near-misses -59% (48/82)

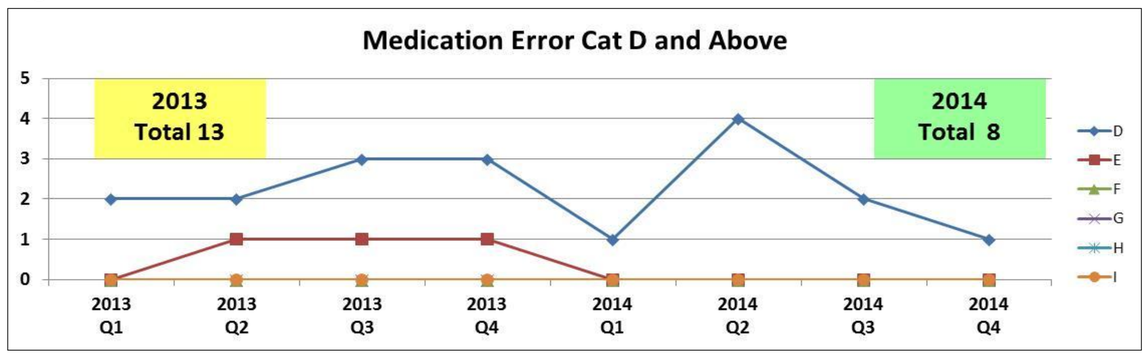
In total, 60% has RCA done, a 462% increase as compared to pre-implementation period.

Figure 5



The eRCA implementation has essentially elevated the value of using a structured approach to incident review; and the identification of the root causes has also pointed towards implementing more effective solutions to mitigate the risk of recurrence (see figure 3). The achieved outcomes includes reduction of more serious medication errors (Cat D & above) by 39% for 2014 (see Figure 6) and a promotion of reporting culture which is evident by the 20% increase in incident reporting over the same period.

Figure 6



Conclusion

The strong collaborative culture in KKH is the foundation to a successful implementation. In addition, the two key factors attributed to the acceptance in the use of RCA for preventable incidents reviews are: senior leadership support to drive safety in collective effort and the involvement of relevant stakeholders to take ownership of the problem that need to be mitigated. RCA reviews also form part of the Department Balance Score Card indicator where the target is to be fulfilled as patient safety or risk management activities or projects. RCA has aided KKH to avoid the tendency to arrive at the most convenient solution or incomplete resolution to error prevention. Apart from treating the underlying problems that contribute to a problem or event, there is an ongoing process that strives for continuous improvement.