**RCA and FMEA Presentation of Case Scenario General purpose for conducting an RCA**

Cause analysis is a systematic process that involves the identification of a fundamental or the causal factors that are underlying the variance in performance. In many cases, the underlying variation of performance in the outcomes can result in unexpected results, often undesired and severe ones like the occurrence or a threat of a sentinel event. Based on the Joint Commission, sentinel events are patient safety occurrences which in the process of treatment result in death, permanent damages or even adverse temporary harm and damage to the patient. Equally a sentinel event can also be described as an anticipated occurrence of an incident involving death or even a major permanent loss of functioning of the patient’s body system organs which is caused by a condition that is unrelated to the patient’s illness (Latino, Latino, & Latino, 2016).  It is necessary to conduct a root cause analysis because it basically concentrates on the processes and systems’ performance and not based on individuals performance.

 The main purpose of conducting an RCA is to determine a process, a system and a team that works to comprehend the processes, the potential causal factors of variation that can cause or can result in an error as well as identifying the process and system changes that would make the variations in performance less likely to occur. Therefore, it is evident that root cause analysis is based on the principle that solutions can be found to problems in healthcare by identifying and correcting the causes as opposed to other problem-solving techniques that focuses on the problems’ symptoms. In this case, it is a reactive way of identifying and finding solutions to problems, with the aim of minimizing and preventing the reoccurrence of the problem (Latino et al., 2016). Thus, the RCA conduction is a purposeful tool for ensuring continuous improvement of the patient safety and care services to ensure enhanced patient outcome.

**Steps that are used to conduct an RCA as defined by IHI**

Based on the Institute for Health Improvement, six steps should be involved in the conduction of the RCA as outlined and explained in this section.

**Step 1:** Identification of the problem. This is the initial step that involves identifying what happened. In this step, the team attempts to identify and elaborate the problem had happened with accuracy and completeness. Some of the team members create flowcharts that simplify the problem and all that happened as well as the order in which I occurred (Latino et al., 2016). This is helpful because it organizes and provides further clarification of information about the event.

**Step 2:** Determining what should have happened. This is the second step of conducting an RCA. In this step the team what should have occurred in the ideal conditions. This information is useful in creating a flowchart based on the information obtained and comparing it to the chart that was obtained in the first step.

**Step 3:** Determining the cause of the problem. In this step, the team seeks to determine the causal factors that contributed to the occurrence of the event. The team examines and scrutinizes the most apparent or direct causes and the contributing factors that resulted in the occurrence of the event. In many cases, the fishbone diagram is considered as the useful tool for identification of the causal factors. This step helps the team members to identify the different factors influencing the clinical practice and performance in the medical error (Latino et al., 2016). This would include but not limited to the patient’s characteristics, task factors, and individual member of staff, work environment as well as organizational and managerial factors.

**Step 4:** Developing of the causal statements. In this step, the team develops which connects the cause that has been identified in step three above to its associated impacts and then back to the main event which prompted the initiation of the RCA. The causal statements tend to elaborate the contributing factors to the current conditions of the outcome of the patient and the staff (Latino et al., 2016). This causal statement is organized into three parts, including the cause, the effect and the event that resulted in the undesirable outcomes.

**Step 5:** Propose a list of recommendations and action of solutions that are to be taken to prevent the reoccurrence of the problem. In this step, preventive actions are recommended to minimize the recurrence of the problem. This is the changes that the RCA team proposes thinking that it will help in the prevention of the recurrence of the medical error (Latino et al., 2016). For instance, the RCA team can propose some of the recommendations including standardization of the equipment, developing and enforcing of new policies and educating the staff.

**Step 6:** Writing of a summary and sharing it with the relevant hospital departments. This is the last step of the RCA that involves summarizing the entire root cause analysis. This step provides an opportunity to engage with the key stakeholders of the healthcare organization to aid in driving the changes to the next level of improvement.

**Application of the RCA to the causative and contributing factors of the scenario**

Based on the provided text, the scenario begins with Mr. B being presented during an afternoon shift in a small six-bed ER in a rural hospital. That day, the hospital staff included an emergency room doctor T, one registered nurse, one licensed practical nurse and a secretary. The ED appears to be congested because the text provides that before Mr. B was brought in, two emergencies were yet to be discharged, there was the case of Mr. B, and the hospital receives two other emergencies of the 75-years old lady and an eight years old boy. After the doctor completes his evaluation, he orders nurse J to administer 5mg diazepam of IVP to Mr. B. after waiting again for another 5minutes Dr. T orders again nurse J to administer 2gmhydromorphone of IVP. The doctor waits five minutes after which he orders a nurse to repeat the two diazepam and hydromorphone doses respectively because the sedation state of the patient had not satisfied him. Nurse J is an experienced nurse, but she decides to put Mr. B on a blood pressure machine that was automatic with a pulse oximeter and not hooked or connected to any monitors in the room. Additionally, it does not contain an EKG nor an end-tidal oxygen monitor. Further, the nurse elects to leave the patient with his son’s company with a blood pressure of 110/62 mmHg and a 92% oxygen saturation on the automatic machine. In this state, the patient is only using the room oxygen and has no any ongoing monitoring.

The RN and LPN are both involved in the stabilizing process of the newly arrived patients as the lobby of the ED become congested because more patients are seeking care. In this case, there is no mention of additional staffs to the hospital to help with the workload. It is during this time that the pulse oximeter alarms is showing 85% oxygen saturation. This is when the LPN enters Mr. B’s room and assesses his vitals by resetting the alarm as well as reaping the blood pressure, but he however fails to assess the respiratory and mental status of the patient. It is only some minutes later when the patient is connected to the cardiac monitor by the stat code for the first time after the alarm to realize that Mr. B is in a respiratory arrest. The patient also has ventricular fibrillation. Cardio-Pulmonary Resuscitation (CPR) is started and eventually the patient is defibrillated. When RCA is linked to MR. B’s case scenario, the identified causal and contributory factors include poor staffing as compared to the patient ratios as received by the rural hospital. Also, there is inadequate adherence to hospital’s set policies regarding the moderation sedation of the patients. Additionally, there is no communication between the staffs or core workers. The human causal factors in this scenario reflect on the possible failure of the staffs to adhere to the set policies and protocols, fatigue and burnouts due to heavy workloads. This scenario also manifests a failure to utilize the thinking skills and maintaining of focus on the tasks. The scenario indicates that LPN assessing the patient’s condition assessed the status of the patient without noticing the poor pulse oximeter reading and even without resetting the monitor. This shows inconsistency in communication whereby the LPN would have communicated to the RN of the vital signs of the patient.

**Improvement plan**

This situation has various improvement plans that need to be implemented. To start, with, is the assessment and revision of the education requirements and gained experiences of the staff members. This would have been seriously done by the interdisciplinary team. The mistakes which occurred in this scenario and that contributed to the occurrence of the sentinel event are educational or training and experience of the staffs. For instance, there was a conscious sedation protocol, but it was ignored. Despite that nurse J had a certification of the ACLS and had completed the relevant training modules as required by the hospital, she did not adhere to the outlined standards and guidelines provided in the procedure protocols as advised by the hospital. Otherwise, the sentinel event would not have occurred (McFadden, Stock, & Gowen III, 2015). Additionally, the RN with experience did not follow up the procedure, nor did she use monitoring equipment that was in the room like the supplemental oxygen and end-tidal CO2 monitoring. Establishment of better communication model and skills should be practiced among the staffs. The RN never communicated nor did she call for a nurse backup to monitor the condition of the patient. The LPN, on the other hand, failed to communicate the vital conditions of the patient to more qualified staffs rather she went ahead to assess the condition of the patients (McFadden et al., 2015). This indicates the hospital needs to reestablish the communication model and skills of the staff to minimize the recurrence of the sentinel event.

**Discussion of Lewin’s change theory**

Kurt Lewin’s change theory can be applied to the proposed improvement plan in the case scenario of Mr. B’s unanticipated event. This can be applied based on the human side of change as presented by Lewin. The theory works in three phases that is the unfreezing, transition and the freezing phase. Change model of Lewin is designed to recognize the factors that hinder change from occurring. It states that there are forces that oppose a transition from occurring and there are also forces that drive and promote a transition to take place. Based on this given scenario, the unfreezing phase as described by Lewin is when the staff is informed of the sentinel event thus encouraged to comprehend why the change is needed (Batras, Duff, & Smith, 2016). Thus about the improvement plan, already the staff knows the sentinel event, they should be encouraged to get trained and their experience and skills reassessed. They should be encouraged to identify any hindrances to impede the transition process.

 In this case, the staff need to be informed of the change and need for the change so that they can concentrate on the driving force that could result in quality care for the patients. Additionally, there must also be an effort to decrease the negative impact of the transition. For instance, the change should begin by revising the skills and the training to the ED on how the sedation procedure is performed and how the patients are handled before and after the procedure is finished (Batras et al., 2016). Also, the procedure protocol should also be reviewed, and other related policies are improved because the procedure performed that day caused harm and subsequent death of the patient. The staff members should also be offered communication skills and be encouraged to attend. This is to improve the communication skills of the team workers. Was it not for poor communication skills and model in the ED, Mr. B would not have reached his vital signs.

**The general purpose of the FMEA**

The FMEA is a technique or method of proactively evaluating and assessing a process to determine whether and how the process might fail to accomplish its work (Anand, Asif, Muhil, & Thomas, 2015). Additionally, the FMEA method is also generally purposed to assess and evaluate that relative effect of the failures so that the parts of the process could use that needs to be improved could be identified, or the parts that require the most change could be noted.

**Steps of the FMEA process**

The systematic evaluation of the process is done in various steps as highlighted and elaborated in this section.

**Step 1**: Determining the failures and severity of the modes. This is the initial step of the FMEA which involves determining what could go wrong with the improvement plan.

**Step 2**: Highlighting the failure causes of the mode and the occurrence. This step involves determining the causes of the failures of the mode and highlighting them. In this step, determining why the failures would happen is highlighted.

**Step3:** In this step, the consequences or effects and detection of each failure are determined (Anand et al., 2015). This is helpful to determine any possible solutions to the causes of the effects to prevent the anticipated or known effects of the failures.

**FMEA Table**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **process** | **Potential failure modes** | **Potential effects of the failures** | **Severity rating** | **Potential failure causes** | **Occurrence****Rating** | **Current process controls** | **Detection rating** | **Risk priority number****%** |
| Education and training skills and module experience revision of the ED nurses | Staff resistance | Poor patient safety services | 6 | Fear and inadequate time factors to learn and acquire the new improvement skills. | 3 | Close supervision by nurse managers | 1 | 18 |
| Limited resources | Poor patient outcomes and care services | 8 | Time factors, limited staff trainers, and trainees, limited and obsolete equipment | 6 | Utilization of the available resources as the new equipment is bought. Staffing of the nurses and hiring of trainers | 3 | 68 |
| Patient under-cooperation  | Poor patient services and outcome Low healthcare service accreditation | 6 | Poor communication between the patients and the caregivers The resistance of the patients towards the change due to cost factors | 5 | Seeking assistance from insurance schemes  | 2 | 34% |

**Intervention testing**

To test the interventions of the improvement plan of the process as stated in section B, it would be significant to gather the team that is impacted by the change and makes a planned rollout of the change. In this case, the team would include all the representative from various departments that are affected by the change as well as the members of the Quality improvement and the interdisciplinary team (Anand et al., 2015). On a start point, the initial rollout of the transition would be small scale, in one unit of the hospital, based on the given case scenario, the ED department would be a significant starting point. About the improvement plan, the staff that was involved in the sentinel event needs to be educated and their experienced and module training regarding performing basic ER procedures. Also, they should know what their responsibilities are. During this period of transition, continuous education needs to be provided and updated by nurse managers who ensure that it is not longer than a year since the education, module training and various certification who provided to the nurses (Anand et al., 2015). Once the staff has been educated on the needed and effective skills, and the date that the certification should be done has been established, the staff needs to utilize the new checklist. This will aid in analyzing and use the skills and updated protocols properly and to the point. The nurse managers will also be required to ensure that the nurses adhere to the use of the new checklist so that the teams meet with the new implementations. This will help the team discuss and document the successes of the plan that are expected as well as the failures and the related effects. This will allow room for modification of the plan to be made. In this case, it will need the re-education of the staff to be conducted, and the evaluation is conducted again. This cycle will continue until the team is satisfied with the intervention so that the implementations can be given to the team that performs the sedation procedures and be applied with a serious assessment and evaluation.

**Demonstration of leadership by professional nurses**

A professional nurse can demonstrate leadership skills by promoting quality patient care as well as initiating that influencing improvement activities, actively taking part in the RCA studies as well as the FMEA and Process Improvement Committees that can aid in increasing the patient safety and outcomes within the hospital stay.  A nurse could also demonstrate leadership skills by generating solutions as well as leading and taking part in the various improvement activities within the organization. Being updated with the latest evidence-based treatment procedures as well as new trends in nursing are other key ways that nurses act to function as a leader in their daily profession (McFadden et al., 2015). A nurse can also function as a leader by supporting quality improvement projects and related policies by conducting qualitative and quantitative research to improve the quality of the patient outcome that is provided by the healthcare organization.

Equally participating in the process of policy making, nurses can ensure that the best patient safety services are offered to result in enhanced patient care and quality outcomes.  Also by involving the nurses in the RCA and the FMEA processes, the nurses can offer their contribution regarding the processes and how the processes should be utilized in the hospital. It is wise to involve the nurses in the RCA ANDFMEA because the two processes are techniques of improving the practice and the performance of the nurses to ensure that hospital operation and patient care services are effective to minimize risks (Duffy, 2018). Thus when the nurses are involved in the two processes, proved them with a platform for participation in the transition to the where the healthcare organization should be. They are given a chance to identify problems, give them priorities so that they can formulate effective solutions for the problems.

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