IHI Six-Step Root Cause Analysis Framework

Posted on July 26, 2022

Root Cause Analysis

As the name suggests, the method employs the root cause. The RCA analysis focuses on eliminating the root causes of the failures in the model. The term root cause applies to the nonconforming factors that impede the progress of a system and should be removed in order to set in motion the process. The process focuses on first defining and understanding the root cause; this is followed by brainstorming the possible causes of the problem. The analysis not only focuses on pointing out the shortcomings but also focuses on devising the scheme to avert the failures.

A1. Steps of Root Cause Analysis

According to the Institution of Healthcare Improvement (IHI), a well-elaborated RCA has a stepwise approach consisting of six major steps (Huber and Ogirnc, 2016). The first step is the identification of the root cause; the designated team, after conducting a well-elaborated survey, will determine the possible root cause of the failure. In the second step, the team highlights all the possibilities that if the staff has carried out, then they could possibly avert the situation. Thus, the aim of this second step is to highlight the shortcomings of the staff. The comparison between the findings of the two steps provides an overview of what was done and what ideally should have been done. The next step is concerned with finding the cause behind the failure; every single event is recorded. Thus, the step identifies both the contributing and the causative factors. The causative factors can be regarded as the apparent events that led to the failure, but the contributing factors are the subtle events that added up to the failure in the present scenario; it could be the critical condition of the patients or the observed healthcare practices of the institute. The next step tries to establish a connection between the failure and the suggested causes. The step requires the team to put up a formal statement for the connection of the events observed. The statement should focus on the causes and effects of the observed events (Huber and Ogirnc, 2016). Then comes the last step of the analysis, which encompasses the recommended actions that need to be taken in order to avoid such failures in the future. Thus, the RCA analysis provides an in-depth analysis of the problem, from tracing out the cause to providing the solution to avert the failure.

A2. A Causative and a Contributing Factor

Now, if the above steps of the root cause analysis are applied to the given scenario, then the first step will obviously be starting the event.

Step1: Identification

Mr B checked into the hospital and was attended by nurse J he complained about the severe pain in his leg and hip area during the course of his recent injury; the attendee nurse recorded all the vitals of Mr B. Upon examination, it was also observed that his left leg also appeared to be shorter than the right one. The affected leg also exhibits swelling and oedema. Nurse J was accompanied by Dr. T for the examination. The physician recommended a few tests afterwards. The nurse administered the following injections: diazepam 5mg IVP at 4:05 pm, hydromorphone 2mg IVP at 4:10 pm, and another at 4:15 pm. Afterwards, another 2 mg of hydromorphone IVP and 5 mg of diazepam IVP were administered at around 4:25 pm. The patient seemed to be fully sedated to carry out the hip reduction. The patient was not using assistive breathing. After the procedure, the nurse attached a blood pressure monitor set to observe the blood pressure every five minutes and a pulse-oximeter and left Mr. B. at around 4:43; the oximeter was alarmed about the low oxygen saturation level. BP dropped to 58/30 and saturation to 79%. At that moment, there were no signs of breathing or pulse in the patient. After thirty minutes of further intervention, Mr. B was intubated. Afterward, the BP was 110/70, and the ECG monitor also showed a pulse, but there was no breathing, the patient received supplemented breath, but after a week Mr. B underwent brain death and was officially declared dead.

Step 2: What Should Have Been Carried Out:

The staff carried out the moderate sedation policy without paying attention to the continuous monitoring of ECG, blood pressure, and breathing until MR. B had exhibited signs of consciousness. Moreover, after the procedure, the staff should not have left him unattended, or the nurse should have been called immediately on the first alarm of the pulse oximeter.

Step 3: Evaluation of Cause:

In the scenario mentioned, the causative factor was the overdosage of the sedative, and the contributing factor was the staff’s inattention and non-continuous monitoring of all the vitals. The team used the preset dosages while carefully observing; then, they could wait because of the physical attributes (height and weight) of the patient, which compelled them to affect him slowly.

Step 4: Making a Statement:

The hospital's sedation policy on continuous monitoring of the patient's vitals, like blood pressure, oxygen saturation, and ECG, was not followed. Moreover, the patient's change in vital signs was not addressed promptly. That results in late intervention and, thus, damage to the parent's brain.

Step 5: Recommendations:

1. All of the hospital staff should get an advanced level of training on the hospital's sedation policy.
2. For each sedation procedure, all the vitals that need to be documented in the patient's medical chart per the hospital's policy are required to be documented in the patient's medical chart.
3. There should be adequate medical staff so that all of the patients can get the required attention and treatment. LPNs must be adequately trained on patients' vital information and should report to primary nurses immediately in case of any alarming situation.

Step 6: Plan of Action

The circular for the changes and the detailed RCA analysis summary should be presented to all the concerned departments.

B. Improvement Plan

Learning from the failures is one of the primary ways to excel, learning from the losses, and making the concerned changes can decrease the likelihood of their occurrence. So, in the given scenario, the improvement plan I suggest will be based on a team's approach. IHI quality recommendations also insist on taking team-based actions. In the mentioned scenario, a team of medical directors is accompanied by representatives from the nursing and pharmaceutical staff. The ultimate purpose of the team will be to identify the cause. This identification can be easily carried out by analyzing the performance charts and questionnaires or checking the patient's outcome. After the identification, the next step is devising the proper plan while keeping the MR in view. B's death scenario. For example, if the team plans to decrease the rate of conscious sedation, then they can bring a significant improvement in the patient monitoring standards. Measuring the extent of the changes will lead the team to implement further changes to the plan. Recording the improvements in the chart can help the team visualize the progress over time. The record-keeping will also take into account the failures and will bring forth changes in plans.

Educating the staff about the new changes can help with the practical implications of the ideas. In the present scenario, conducting the skill test and training workshops on the improvised sedation policy will help reinforce the concept better. Re-education of the concerned medical staff up to the new

standard can help in the smooth flow of changes. The initial team suggested consisting of only the crucial members, but in the long run, if the unit is extended by incorporating the representatives from all the concerned departments like the ICU and respiratory therapists, it can give control over a broader spectrum. Moreover, the telemetric record of all the vitals of the patients undergoing conscious sedation until they can get discharged will not only alert the staff time but will also prevent any adverse situation.

B1. Change Theory

Kurt Lewin proposed a three-staged change model for a better understanding of the change. In Lewin's idea, a change first urges to be identified; then, it moves towards suggesting new moves, which can bring us closer to the desired level, and then after obtaining the desired results, making the change a "new normal." Depending on his theory, he named the three steps of the change model as unfreezing, changing, and refreezing.

The first change is unfreezing, which is one of the most crucial stages. For instance, take a culinary analogy: before cooking the meal, the frozen items need to be defrosted. The same can be applied to change. To induce the change, the initial steps are understanding the need for growth and then abolishing the previous practices. People are naturally adherent to new changes, and thus, people often seem blind towards the necessity for change. Cheery and Jacob, also called identification and creating awareness, are the first steps of creating change. So basically, the unfreezing stage is all about problem identification and creating awareness. So, in my proposed plan, the unfreezing stage will identify the risk factors associated with conscious sedation and create awareness about the risks involved in the current practice.

The second step is the actual call to action; the real action always follows the identification. The change step involves the aggregation of the ideas by all the concerned staff and the devising of an effective change plan, the implementation of the change plan also comes under the umbrella of the second step (Cherry & Jacob, 2014, p.303). Communication between the staff is the key to bringing significant changes. In the proposed scenario, the head of the team will circulate the official thread stating the changes to all the relevant people and obviously will decide the official deadline for the application of changes. On the due date, all the concerned members will be obliged to follow the new regulations.

The last step is refreezing, in simpler terms, making the changes to the new normal. Refreezing of the changes will depend heavily on the outcome obtained from the patients. Making the changes a ritual needs a continuous audit. To make moderate sedation a healthcare standard, an ongoing inspection of the staff will determine their level of compliance with the new standard.

C. General Purpose of FMEA

FMEA is the abbreviation for failure modes and effect analysis. The model is the proactive approach to minimizing the occurrences of failures and losses. The model focuses on making a step-by-step approach to highlighting all the possible shortcomings in the model under observation. FMEA has proved itself to be one of the most effective processing and analyzing tools. Failures are one of the most important mediums to learn from them and then take the respective changes. FMEA analysis focuses on tracing out and prioritizing the faults on the scale of generated outcomes and then planning for a change that mitigates all the flaws in the proposed plan.

C1. Steps of the FMEA process

As mentioned above, FMEA follows a stepwise approach, so here is a brief overview of the steps involved in a generic FMEA analysis. The first step is to look for a model in your surroundings, which is needed for FMEA analysis; this can be elaborated as discovering the problem statement for yourself (The Institute for Healthcare Improvement, 2004). The scope of complexity of the model can be a limiting factor when selecting the FMEA process as the analytic tool. If the model governs a few sub-models, the FMEA can be an excellent analytical tool. The second step is concerned with the formation of the concerned team; it is often advised to make a team that incorporates the representatives from all the concerned departments. This makes the model application feasible on a larger scale. So before initiating the FMEA analysis, make a credible multidisciplinary field. The next step is crucial, in which the negotiations are carried out to devise the scheme of action. The more the meetings, the more credible will the designed call to action scheme. Recording the minutes of meetings and making the flowchart of the proposed plan can be an excellent safekeeping gesture. The fourth step is done in the light of the previous discussions, and all the errors along with their possible causes are recorded, it is an excellent approach to jot down all the potential flaws in the process under observation irrespective of their severity level. The next step in the queue is to rate down the problems on the scale of the possible destruction they could cause; FMEA analysis has devised the term Risk priority number for this ranking system (The Institute for Healthcare Improvement, 2004). This step will yield you with the tabulated errors arranged in the order of risk associated with them on a scale of 1 to 10. The next step is to analyze these risks and evaluate the results. The individual scores for the detection, occurrence, and severity of the failure that has been recorded in the previous step are enhanced by the 3X factor and provide a new scale for RPN ranging from 1 to 1000. The higher the score, the more it signifies the need for action. Then comes the last step, which focuses on devising the mitigation scheme for all the failures recorded.

D. Intervention Testing

Many methods can test the feasibility and efficacy of the proposed plan; here, I will suggest PADC, a

four-step iterative management process. PADC stands for plan-do-check-act; although the method has proved to be a useful tool for management in various businesses, there are established proofs of how beneficial the PADC could be in healthcare management (Cherry and Jacob, 2014, p.387). The method focuses on subjecting the organization to a few questions: what are the objectives of the change, is the change bringing improvement, and what are the further changes that can help in achieving the goal (Cherry and Jacob, 2014)? After finding the answer to these questions, the progress of the new implications will be much more transparent; the next step will be the implementation of the PADC; it will be carried out as planning, taking the necessary action, and then making the improvements in the changed setup depending upon the received input. For each hospital's running department, a plan could be made. The first step will be checking the feasibility of the proposed plan, and the next step will be the call to action. Depending upon the outcomes of implementation, the adjustments will be made accordingly. Thus, the PADC tool is one of the useful tools in the context that it can be implemented in every hospital department according to the needs.

E. Demonstrate Leadership

Nurses are the frontline caregivers for patients; the improvement in the leadership and professionalism of the nursing cohort can yield a significant decrease in the inappropriate interventions given to the patients in the emergency unit. Thus, the quality of healthcare can be significantly increased by increasing the competency level of nurses. Evidence-based practice and critical thinking are the two significant aspects of increasing the competency level of nurses. Apart from patient safety, nurses can also actively participate in improving the standards of education, so the involvement of nurses in the committees and conferences on healthcare improvement and evidence-based medical practices can bring revolution in the overall healthcare setup.

Promoting Quality Care

Nurses are at the forefront when it comes to caring for patients, so nurses can provide an efficient role in promoting quality care. Engaging with the patients and providing empathetic treatment is the highest standard of quality care. Safe and effective patient care is one of the prime features of the quality care granted to patients.

Improving Patient Outcome:

A professional nurse can effectively demonstrate leadership by providing compassionate care. Once in the medical care unit, patients are granted due care, but once discharged, the patients might lose the care, so the primary teaching about healthcare on the part of nurses can have a long-term impact on the patient's life.

Influencing Quality Care Improvement Activities

Nurses can effectively carry out new policies and healthcare activities that are bound to bring improvement. Carefully analyzing, one can trace out the potential for the implementation of the new plans in the nursing cohort. The world is moving towards outcome-based activities. Thus, the inculcation of the new activities' outcome in the healthcare setups can be presumed by the nurses, and therefore, they may suggest aborting or continuing the proposed changes.

E1. Involving professional nurses in the RCA and FEMA process

It is now one of the significant debates about what possibly could be the benefits of involving nurses in the FEMA and RCA processes. In my opinion, the involvement of the nurses in the FEMA and RCA processes can yield wonder as the nurses are not only at the frontline but are also in constant interaction with the patients. Thus, as primary healthcare providers, they are not solely responsible for interventions but could also suggest the effectiveness of evidence-based learning. So, in my opinion, nurses must be included in the suggesting and designing phase of all the processes through which they can effectively carry out its implementation. The involvement of nurses in the RCA and FEMA can broaden the spectrum of ideas and can increase the efficacy of the changes.

Reference

Cherry, B., Jacob, S. (2014). Contemporary Nursing: Issues, Trends, & Management, 6th Edition. [Western Governors University]. p. 303. Retrieved from https://wgu.vitalsource.com/#/books/978-0-323-101097/

Cherry, B., Jacob, S. (2014). *Contemporary Nursing: Issues, Trends, & Management, 6th Edition*. [Western Governors University]. p.387. Retrieved from https://wgu.vitalsource.com/#/books/978-0-323-101097/

Huber S. & Ogrinc G. (2016). Lesson 4: Learning from errors through root cause analysis. *PS105: Respond to an adverse event.* Retrieved from http://app.ihi.org/lmsspa/#/6cb1c614-884b-43ef-9abd-d90849f183d4/614af4d5-09ed-4c08-b495-59673b0a581a/lessonDetail/82f42955-31f0-40b2-bad2-c297a1e98f6c/page/2

The Institute for Quality Healthcare Improvement (2004). Failure modes and effects analysis (FMEA) tool. Retrieved from https://web5.wgu.edu/aap/content/fmea%20tool.pdf

Williams, D. (2016). Lesson 1: How changes spread. *Q201: Planning for Spread: From local improvement to system-wide change*. Retrieved from

http://app.ihi.org/lmsspa/#/6cb1c614-884b-43ef-9abd-d90849f183d4/ea07c796-a771-4713-8bd8-520188b6c793/lessonDetail/2adf747a-862f-4862-ab0c-561318f05b67/

List 4 steps in your Improvement Plan Process *	List 1 Failure Mode per step	Likelihood of Occurrence (1–10)	Likelihood of Detection (1–10)	Severity (1–10)	Risk Priority Number (RPN)
Example: On-call staff must clock in within 30 minutes of being notified.	On-call staff forgets to clock in when arriving at the unit.	4	5	2	40
1. Conducting training workshops and testing the knowledge of the staff on the sedation policies	The staff doesn't have spare time to attend the sessions or doesn't cooperate with the idea of continuous assessments.	5	4	9	180
2. Time-out procedure performance after the medical procedures and surgeries	Due to negligence, overload or lack of knowledge, staff doesn't perform the time-out	3	3	8	72
3. Continuous telemetric monitoring of the vitals of the patient until he/she is in conscious	Not enough monitoring units, devices, or staff to maintain the records for each single patient	3	7	9	189
4. one to one monitoring of the patients after the producers	The hospital setup does not hire more staff or couldn't manage the finances to afford the 1:1 monitoring	6	6	8	288

					Total RPN (sum of all RPNs): 729

FMEA Table for Your Improvement Plan*

* Refer back to your Improvement Plan response in prompt B.