

Quality Improvement Basics: Root Cause Analysis – Part 2

Slide 1 Objectives

After completing this module, participants will be able to

- Describe how to start a root cause analysis, or RCA
- Use triggering questions and a cause and effect (fishbone) diagram to identify possible causes of a problem
- Explore how to write a clear causal statement

Slide 2 Starting an RCA

The initial step in doing an RCA is to understand the sequence of events by creating a timeline. It is important to know what happened and when because often a lot of things happen in a very short period of time. A timeline helps you identify what was actually happening. It can be helpful for the facilitator to begin creating the timeline prior to the RCA meeting. Then, during the meeting team members can add additional detail or make changes rather than starting from scratch. This way everyone can be on the same page as they start to identify what happened, and any process and or system breakdowns and potential root causes. Don't assume there was always a process breakdown - maybe the process wasn't a good one to start with – maybe it wasn't workable for the team, maybe there were system or environmental factors.

This can also be a good time for the facilitator or the team to look at current literature to determine if current processes are consistent with evidence or published best practice. Oftentimes we don't get the opportunity to do that in the course of our day-to-day work, and it's important to know if there is evidence available to help guide corrective actions. If you find evidence-based practices – that will not always provide a recipe to follow, but it can help identify critical components in systems or processes that seem to be linked to better outcomes. These will need to be implemented in a customized way in your organization.

Slide 3 RCA Categories or Triage Questions

This slide shows the set of key categories of causes that are commonly used for root cause analyses in health care. These are also referred to as triage questions and are developed from the RCA process used by the Veterans Administration.

Three of the categories involve human factors as they relate to communication, training, and fatigue or scheduling. For example, events may occur due to issues related to flow of information, availability of information or to issues related to routine job training, special training, and continuing education. Events may happen due to stress and fatigue that may result from change, scheduling and staffing issues, or sleep deprivation.

The other categories of causes are environment or equipment, rules/policies/procedures, and barriers. For example, often events occur when there are distractions or other environmental factors that affect performance. Equipment can come into play if it isn't functioning properly or isn't available. Sometimes over time equipment ends up being used for a purpose other than what it was originally intended. It can be working well for a long time until an error occurs. Sometimes, there isn't a policy or procedure in place to help guide performance or the policy or procedure is outdated and no longer

appropriate, or even that there are too many policies and procedures and the ones that exist are too long, too detailed, and therefore lose value.

Barriers can be a confusing category. Barriers can be unwritten rules that have developed that dictate performance. Barriers can be the condition of a patient that prevented best practice from occurring, e.g., unable to turn a patient because they were unstable, and they end up with a pressure ulcer.

Another example would be a barrier that was in place but failed and therefore the event occurred as demonstrated by the “Swiss cheese model.”

Slide 4 Swiss Cheese Model

James Reason, a patient safety expert, proposed the Swiss cheese model to recognize that we have generally built in barriers or defenses to failure. However, these barriers are not perfect. There are flaws in each layer that if aligned, can allow an event to occur.

Thinking of RCA factors in terms of these six categories helps us remember to think broadly about what may have caused or contributed to an event. Do not jump to rapid conclusions without considering causes related to human factors, environment and equipment, rules/policies/procedures, and barriers.

Slide 5 Cause and Effect Diagram

The Fishbone or cause effect diagram is commonly used in root cause analysis. The event or problem is listed at the head of the fish with each of the chosen categories or triage questions representing each of the major bones. Once the team has gathered their information and created a timeline, they start to identify breakdowns or potential causes and contributing factors. Each of the causes are then listed under one of those categories until the team feels that they have included all the possible contributors to the event. Sometimes, potential causes will seem to fit under more than one category. In this case, the team should pick one place and not record in two categories. The goal is to just group causes as best as possible.

A complaint teams have about the Fishbone diagram is that it quickly can become messy and complicated. Therefore, some root cause analysis teams will simply list items under the various categories or create their own graphic or diagram. It doesn't have to be in the shape of a fish. What is important is that whatever tool is used, it encourages the team to keep digging deeper for those underlying causes and not settle for what seems obvious at the time.

The team then works to determine which of the causes if eliminated would have the greatest ability to prevent the problem from occurring in the future. The team should also identify any significant contributing factors. Those are the factors that by themselves did not cause the problem but made it more likely to occur.

Slide 6 Common Questions

Often at this point there are a couple common questions that are asked. The first is how do you know if you've identified a root cause? In general, you have identified a root cause if the team can confidently say that fixing this cause would make the problem much less likely to occur. If any of the team members can identify a way that this problem could still happen to somebody else, then you have not identified a root cause. This is where RCA can feel challenging to a team. If you identify bigger system

issues that are causes, you may be uncertain what you can impact. You may be limited in what you can impact and therefore limited in reducing future risk. Make sure your senior leaders are involved in responding to the causal findings in RCAs when there are bigger system issues, such as staffing, resources, physical plant, or equipment issues.

Another common question is whether there are events with no root causes? Teams can conclude no root cause in events where they are finding all steps of the process were followed as expected yet the event still occurred. It is possible to have events with no root causes; however, if teams are digging deep enough it is rare. Even in cases where teams decide there was not a root cause, there are generally one or more contributing factors that could or should be addressed.

Slide 7 Developing a Causal Statement

An RCA should result in a causal statement that clearly and succinctly states what happened and based on the RCA findings, what the identified root cause or causes are. David Marx identified 5 rules of causation that should be considered when developing a causal statement.

- A good causal statement shows the cause-and-effect relationship. It can make the corrective action plan much easier to develop and helps clearly align the problem, the root cause, and the proposed actions to prevent recurrence.
- The second rule is to avoid any negative descriptors in your causal statement. For example, instead of saying the policy and procedure were poorly written, describe what was either missing or unclear.
- If human error is identified as a cause it must have a preceding cause meaning what led to the error occurring. This keeps the focus on the process rather than individual behaviors. For example, a person did not follow the process as expected because the current written policy and procedure was out of date and the new process was not yet included in staff training.
- If there was a deviation from a policy or procedure, that must also have a preceding cause. For example, an employee did not realize the appropriate steps to take as this was not included as part of orientation to their job.
- And finally, identifying failure of an individual to act can only be considered a cause if that individual was expected to or had a duty to act in the first place.

Once a causal statement is done, the next step in the root cause analysis process is to develop the corrective action plan.

Slide 8 Causal Statement Examples – Incorrect

These examples describe part of what happened but do not identify a cause that can be addressed.

The examples identify a human condition, such as fatigue, or identify that a mistake was made but they do not describe factors or causes that led to the error. They focus more on individual behavior such as not following a procedure and seem to blame individuals such as “the resident selected the wrong dose.” They do not lead us to actions we can take to eliminate or control system hazards.

Slide 9 Causal Statement Examples – Correct

Here are several examples of causal statements written correctly they show the cause-and-effect relationship and help align the problem, the root cause, and the proposed actions to prevent recurrence.

These examples describe the process breakdown, the cause and effect that led to an event. These examples do not assign blame to individuals, and they identify things that we can change in our processes and systems to prevent these errors from recurring. For example, the first causal statement for a wrong site surgery event reads Lack of standardized process (process breakdown) for repeating time out following patient position change (cause) resulted in loss of situational awareness of correct side for chest tube insertion (effect), chest tube was inserted on the incorrect side (event).

The team has identified where the breakdown occurred – they did not have a process to repeat a time out if there was a change in the patients position since the initial time out.

Other examples provided here follow a similar approach – in the test results example, there was a process breakdown identified in that there was a lack of a process in place to confirm significant findings are communicated. This can result in patients not knowing about a need for follow-up and result in a delay in diagnosis and treatment with detrimental effects.

Slide 10 Corrective Actions

Corrective action plans should target elimination of root causes or at least make it harder for them to happen. It is not uncommon for a team to go through the RCA process only to come up with a corrective action that includes reeducation, reminding people to look for warning signs, or telling people to be more careful. These types of corrective actions are rarely effective or sustained. Education is only useful as an intervention if you have documented through your RCA that the event occurred because of lack of skill or knowledge.

Slide 11 Hierarchy of Corrective Actions

For the team to develop actions that will be effective and sustainable, the team needs to consider where their actions fall in the hierarchy of strong, intermediate, or weak actions.

Strong actions change or redesign the process and/or system.

Intermediate actions are not as fool proof as strong actions. They make some changes to the process or system, but underlying process remains ultimately the same. Intermediate actions are generally an addition to the process that provides another place an error can be intercepted before it results in an adverse outcome or event.

Weak actions do not make any changes to the process, they simply enhance or enforce the existing process. Weak actions are not bad; however, you do not want a corrective action plan that is made up of entirely weak actions. You should always try to couple a weak action with a strong or intermediate action.

An important point to call out here is simplification of processes is considered a strong action.

Always try to look for how you can simplify and cut out process steps that are not bringing value. This can be hard because our human nature is to keep adding to and complicating processes. Be careful about doing this.

For more information on the hierarchy of corrective actions see the RCA2 Guide linked on the next slide.

Slide 12 RCA Resources

Check the resources listed on this slide from the National Patient Safety Foundation and the VHA Center for Patient Safety. Both provide detailed information and tools to help you do a quality root cause analysis and develop an effective action plan.

Slide 13 In Summary

- RCA steps include creation of a timeline of events, and an RCA team meeting where members identify process breakdowns and potential root causes.
- A key method in RCA is to discuss categories of causes and use triage questions to help the team assess all factors that could be causal or contributing factors.
- A cause-and-effect diagram can help teams to identify and categorize potential factors
- The team agrees on root cause(s) and writes a causal statement that clearly and succinctly states what happened and what was the identified root cause or causes. A good causal statement can make the corrective action plan much easier to develop and helps clearly align the problem, the root cause, and the proposed actions to prevent recurrence.