Root Cause Contributing Factor Statements

Applying the Five Rules of Causation

The 5 Rules of Causation presented in this learning module is based upon the work of the Department of Veterans Affairs, National Center for Patient Safety and the 1999 Federal Aviation Administration technical report "Maintenance Error Causation" written by David Marx.

Root Cause Analysis is a patient safety improvement activity that is focused on identifying, and eliminating or controlling, system vulnerabilities that can result in patient injury. System vulnerabilities identified through this process are described in root cause/contributing factor (RCCF) statements.

Applying the Five Rules of Causation to RCCFs is not a grammar exercise, or a make work exercise, for the RCA team. Root cause/contributing factor statements synthesize the teams findings and identify what must be fixed which creates a road map leading to the development of corrective actions and their respective outcome measures. The implementation of these actions is what ultimately improves patient safety.

A clear and concise root cause/contributing factor statement provides a compelling reason why it is important that the action being recommended is implemented to prevent a future occurrence resulting in patient harm.

Use of the Five Rules of Causation helps RCA teams avoid 'blame and train' reactions, leads to a deeper analysis of the event, assists in the identification of effective corrective actions, addresses why the adverse event occurred and focuses on system vulnerabilities vs. individual performance. It also provides a contextual understanding to those charged with implementing the action and helps to avoid unintended consequences.

Development of root cause/contributing factor statements is an iterative process and it will take several attempts to complete it correctly. The more experience an individual has writing root cause/contributing factor statements the easier it is to do. Root cause/contributing factor statements are comprised of three parts and once these are identified the Five Rules of Causation is applied. The three parts are: 1. cause ; 2. effect; and 3. event.

Another way to get started crafting an RCCF statement is to describe that something (1. cause), leads to something (2. effect), that increases the likelihood of an undesirable outcome (3. event).

Once the root cause contributing factor statement is in this format the Five Rules of Causation are applied. When the Five Rules are met the causation statement is complete.

Five Rules of Causation

1. Cleary show the cause and effect relationship.

2. Use specific and accurate descriptors for what occurred, rather than negative and vague words.

3. Human errors must have a preceding cause.

4. Violations of procedure are not root causes, but must have a preceding cause.

5. Failure to act is only causal when there is a pre-existing duty to act.

Here are the rules along with a discussion and example RCCF statements.

Rule 1. Cleary show the cause and effect relationship.

It is important to convey to top management why they should expend resources to correct system vulnerabilities the RCA team has identified. This is done through the RCCF statement by describing the consequences that have, or could, result from the existence of the system vulnerability.

> Example: The following statement, "A resident was fatigued" does not meet Rule 1.

> When correctly rewritten to meet Rule 1 this statement may look like: "Residents are scheduled 80 hours per week *(1. cause)* which led to increased levels of fatigue (2. effect) increasing the likelihood that dosing instructions would be misread *(3. event)*. "

> *Note: including 1. cause, 2. effect, 3. event, into the RCCF statement was done for illustrative and teaching purposes. They are not to be included in actual RCCF statements.*

Rule 2. Use specific and accurate descriptors for what occurred, rather than negative and vague words.

Negative descriptors are words that teams use as a placeholder that are not descriptive or helpful when it comes time to identify actions to address the system vulnerability.

Examples include words such as: poor, wrong, bad, failed, and inadequate. When negative descriptors are used in root cause/ contributing factor statements individuals not familiar with the details of the event (e.g., leadership) will not understand what needs to be corrected.

> Example: The following statement, "The manual was poorly written which resulted in the pump being programmed incorrectly" does not meet Rule 2.

> When correctly rewritten to meet Rule 2 the statement may look like: "The pumps user manual had 8 point font and no illustrations; as a result nursing staff rarely used it increasing the likelihood that the pump would be programmed incorrectly."

Avoiding the use of negative descriptors paints a much clearer picture of what action can be put in place to address the system vulnerability.

Rule 3. Human errors must have a preceding cause.

(For additional information on this subject see The Field Guide to Human Error Investigations 2002 by Sidney Dekker.)

Human performance is the flip side of human error and it is known that performance and cognitive ability suffer during times of fatigue, boredom, task saturation/overloading, and extreme stress (to name a few). To view adverse events occurring during these times as the result of human error misses the point that this is normal human behavior. With the knowledge that humans behave a certain way under these types of conditions systems may be designed to compensate or address these human weaknesses.

> Example: The following statement, "The Resident selected the wrong dose which led to the patient being overdosed" does not meet Rule 3.

> When correctly rewritten to meet Rule 3 it may look like: "Drugs in the Computerized Physician Order Entry (CPOE) system are presented to the user without sufficient space between the different doses on the screen increasing the likelihood that the incorrect dose could be selected leading to the patient being overdosed."

Rule 4. Violations of procedure are not root causes, but must have a preceding cause.

Patient safety operates on the premise that clinicians do not come to work to intentionally, or blatantly, disregard hospital policies or procedures. Writing a root cause/contributing factor statement identifying that a policy or procedure was not followed does little to improve patient safety. At best this statement will result in an action to remind clinical staff to follow policies and procedures which will have very minimal impact on improving patient safety. To improve patient safety it is necessary to understand why a policy or procedure was not being followed. When the reasons are understood corrective actions may be developed to target the underlying systems issues.

> Example: The following statement, "The techs did not follow the procedure for CT scans which led to the patient receiving a bolus of air from an empty syringe that resulted in a fatal air embolism" does not meet Rule 4.

> When correctly rewritten to meet Rule 4 it may look like: "Noise and confusion in the prep area coupled with production pressures increased the likelihood that steps in the CT scan protocol would be missed, resulting in the injection of a bolus of air from an empty syringe left in the auto injector."

Rule 5. Failure to act is only causal when there is a pre-existing duty to act.

No one thinks it is fair to be held responsible or accountable for failing to complete an assignment or task that was never assigned. Rule 5 says that in order for an individual to be held responsible for completing an activity or task there must be a pre existing duty to act. In other words the individuals must be told they have responsibility for completing the task before there is an expectation it will be completed. The following example describes this:

> Example: This statement, "The nurse did not check for STAT orders every half hour, which led to a delay in the start of the anticoagulation therapy increasing the likelihood of a blood clot " does not meet Rule 5.

> When correctly rewritten to meet Rule 5 the statement may look like: "The absence of an assignment for designated RNs to check orders at specified times increased the likelihood that STAT orders would be missed or delayed which led to a delay in therapy and the potential for blood clots to form."

References:

1. Veterans Affairs NCPS Patient Safety Improvement Handbook

2. Marx, David "Maintenance Error Causation" A technical report prepared for the Federal Aviation Administration; June 9, 1999