

Contents

Pages 1 – 3

The Root Cause Analysis (RCA) Process, One Step at a Time

Page 4

NCPS Intranet: Highlights of Information Available to VA Employees

“Root Cause Analysis Tools” Flip Book: Highlights of Information

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The Root Cause Analysis (RCA) Process, One Step at a Time

By Joe Murphy, APR, NCPS public affairs officer; NCPS Program Analysts Paula Allstetter, M.B.A., Kathleen Dropp, Lesley Taylor; and, Crystal Heath, R.N., M.S., patient safety fellow

Your patient safety manager (PSM) has just asked you to join an RCA team. You haven't been on such a team before. The PSM said you will be reviewing a number of cognitive aides, such as the “NCPS Triage Cards™ for Root Cause Analysis” flip book.

You were also told that detailed information about conducting an RCA is available on the NCPS Internet and Intranet sites.¹ Time permitting, you will be shown a video produced by NCPS that simulates an RCA.

That's a lot of information! We thought you might like to start with an outline of the process: One you can refer to as you proceed through each step in the RCA process.

Regardless of the steps involved in an RCA, we urge you to focus on prevention, not punishment – the basis for VA's Culture of Safety. Most adverse medical events occur due to faulty systems. In the “name and blame” culture of the past, the focus was on specific errors by specific individuals. This failed approach leads to repeat problems occurring to others forced to work in poorly functioning systems – so think systems, not individuals!

It's a Marathon, not a Sprint

The PSM also said that getting a strong start is vital to the RCA process, noting that leadership and management are already involved.

Other team members will be drawn from a cross-section of clinical and administrative departments; further, a new department chief will participate to become familiar with the process. A number of volunteers were previously chosen to support facility RCA teams and have received training.

Once the RCA team has received a charter from the facility director, milestones will be set and the team will decide on meeting dates and times, along with assigning roles (such as team leader, recorder, and member).

Your team will likely meet with top management and be urged to find and fix the problem by selecting reasonable, implementable actions. You will learn that you have a 45-day time limit to complete the RCA. You will also recognize the importance of keeping those colleagues in the loop

who can potentially implement the fixes, once the actions have been approved.

The Patient Safety Information System

Your PSM will be using a web-based version of the NCPS Patient Safety Information System, nicknamed “SPOT,” to record the various stages in the RCA process.

Your team will most likely be reviewing a close call, rather than an adverse event. That's because close calls have been shown to be from 3-to-300 times more common than adverse events.

Due to the importance of close calls, we give them the same level of scrutiny as adverse events that result in actual harm. They provide an exceptional opportunity for learning and afford the chance to develop preventive strategies and actions before a patient is harmed.

You will also learn that the information the team collects during the RCA is confidential and privileged under the provisions of 38 U.S.C. 5705. This is very important! What you collect during an RCA isn't meant for casual conversation. It is legally protected quality improvement information.

If it becomes apparent that the event under consideration was the result of an “intentionally unsafe act,” your team *must* refer the event to the facility director.

Intentionally unsafe acts include criminal acts, purposely unsafe acts, or acts related to alcohol or substance abuse by an impaired provider. Detailed information is available in the “VHA National Patient Safety Improvement Handbook.” Your PSM will have a copy.²

Training

Your PSM is going to help you prepare for your responsibilities by providing you with important training. For instance, you may discuss overcoming “hindsight bias,” commonly referred to as the “Monday Morning Quarterback” affect. You might discuss the importance of brainstorming. The “rules” for brainstorming vary, but often include:

- Collect as many ideas as possible.
- Do not criticize ideas while they are being presented.
- Ensure every idea and person is afforded equal worth.

Good communication is going to be a key factor in your work – this will be an important discussion topic.

As noted above, you will also review a number of RCA tools provided by NCPS, such as the “NCPS Triage Cards™ for Root Cause Analysis” and “Root Cause Analysis Tools,” both flip book-style cognitive aides.

SPOT and Record Keeping

The RCA data you collect will be entered into SPOT. The sections below follow the questions used in SPOT to develop and record your RCA team’s work.

Previous Events

To support the team, the PSM will search the SPOT database for previous occurrences, to see if the team might learn something useful from past RCAs.

Immediate Action and Crucial Dates

Your PSM will also be listing the actions taken immediately following an adverse event or close call, such as:

- Providing immediate care for those involved.
- Making the situation safe and preventing reoccurrence.
- Physically removing specific equipment or supplies.
- Establishing and maintaining a chain of evidence.
- Notifying top facility managers, police, or security.

Initial Understanding of the Event

Your PSM will be using this portion of SPOT to develop a flow chart to map the team’s initial understanding of the sequence of what happened and when it happened. Your “Root Cause Analysis Tools” flip book will come in handy for this part of your team’s activities.

You will use the flow chart to create a big picture perspective. It will help make clear what you know and don’t know. In

addition, your team will develop narrative highlights of the sequence of events mapped out in the flow chart, which the PSM will also enter into SPOT.

You will discuss tools and techniques that can make the process easier, such as flip charts and sticky notes.

You will also want to walk around the scene of the event – as well as conduct a safe simulation of the event to experience how things happened.

Resources, Interviews, Reference, and Triage Questions

The team will list services and departments that will be involved in this portion of the RCA, as well as information sources needed by the team (i.e., policies, procedures, reports, regulations, medical records, committee minutes, etc.).

It is important to specify what information is required and who is responsible for obtaining it, along with a timeline for conducting an analysis.

Working with other team members, you will be carrying out a fact-finding mission: conducting interviews, chart reviews, and literature reviews.

You will use a specific method to frame many of these questions. You will find further detailed information on how the system works in the “RCA Triage Cards™ for Root Cause Analysis” flip book.

For instance: Was the patient correctly identified? Was information from various patient assessments shared and used by members of the treatment team on a timely basis? Was communication between front-line team members adequate?

Final Understanding of the Event

Your team will develop a final flow chart that will map out the team’s understanding of the sequence of what happened and when it happened. The team will also use “Cause and Effect Diagramming.” This type of diagramming is noted in detail in the “Root Cause Analysis Tools” flip book.

The diagram will help your team uncover the chain of casual links that led to the event’s root causes and contributing factors. Remember to focus on asking why, why, why!

Your team will create a sequence of events using a four-step process:

1. Review the event flow diagram and clarify the problem statement.
2. Brainstorm a list of causes and choose the most important.
3. Complete the causal chain using the diagram.
4. Conclude the investigation by developing root cause/contributing factor statements.

Root Cause/Contributing Factors

Now that your RCA team has pulled all the findings together, it is time to display and describe the root cause and contributing factors in SPOT’s “Root Cause/Contributing Factors Table.” This is a critical aspect of your work! Root causes synthesize your team’s findings about what must be fixed. They guide everything else that follows – from task assignments to actions and outcome measures that can reduce system vulnerabilities.

When developing a root cause statement, ask, “If we control or eliminate ‘X,’ will we prevent or minimize vulnerabilities?”

Compare each root cause statement with the “Five Rules of Causation.”³ It is *very important* that you understand these in detail. The five rules are available in the “Root Cause Analysis Tools” flip book.

Using the five rules to develop your root cause statements is at the heart of what the team has set out to answer: What happened? Why? What are we going to do to keep it from happening again?

At this stage of the RCA process, your team will develop the first draft of an action plan. To help focus this effort, the team may be faced with answering a number of questions, such as:

- Where did we get stuck?
- Has our focus been too narrow? Too big?
- Do we need to do more interviews? Literature searches? More checks with professional colleagues?

When considering these kinds of questions, remember to stay focused on the task at hand. Select reasonable actions and outcome measures for events that you know occur frequently – focus on fixing one thing at a time.

Previous Intervention

If available, identifying corrective actions that were instituted due to a similar event in the past can help; or, you can reflect on why they weren't strong enough actions and seek a better solution to the problem this time around.

For instance, ask yourself, "If this kind of adverse event or close call occurred before, did the previous preventive actions minimize the severity or extent of this adverse event or close call?" If not, what else can your team do to reduce potential harm to patients?

Feedback to Reporter

At this point, it is important to verify with the person(s) who initially reported the adverse event or close call to ensure the team's understanding is accurate.

If the reporter is not available, the team can choose to move on to the lessons learned section. If the reporter is available, the team should ask how the reporter rates the team's evaluation of the root causes and contributing factors. This may furnish the team with new ideas.

Lessons Learned

This portion of the process will likely be very familiar to you. When you have addressed problems in the past, you have probably asked questions such as: Who needs to know what has been done? Who could benefit from knowing these findings and recommendations?

This might include a small number of individuals at one facility – or it may have relevance to *all* VA medical facilities. In either case, the team will have to determine how best to share the information.

RCA Team Action Plan

Your team will now focus on creating an action plan for your director's concurrence (or non-concurrence).

You will likely be referring to the definitions for stronger, intermediate, and weaker actions, which you will find in the "Root Cause Analysis Tools" flip book.⁴

Your team's outcome measures should be specific and quantifiable; and, should include defined numerators, denominators, and "thresholds" (i.e., timelines, due dates, etc.).

For instance, if a 100 percent threshold is reasonable for an outcome measure, the vulnerability should be eliminated.

Outcome measures show whether or not the actions have prevented or minimized the adverse event or close call.

The team will work to define a time frame for measurement and a "sampling strategy" (i.e., sampling 15 charts per quarter, random sampling, etc.).

Your team will focus on measuring the effectiveness of an action – *not* the steps in the process related to the action.

For example: "Falls assessments will occur for 100 percent of new patients admitted to the nursing home," rather than measuring when the assessment tool was developed and how many staff members were trained.

The team will be working to set realistic thresholds for acceptable performance levels (i.e., don't ask for "100 percent compliance" unless it is possible).

Here are some other tips:

- NUMBER ONE: Focus on the issue, not on an individual.
- Review the "NCPS Triage Cards™ for Root Cause Analysis" flip book as much as necessary, focusing on "Actions and Outcomes."
- Simulate all or part of the event.
- Make your root causes small enough to develop one or two actions; segmented enough for someone to follow your logic.
- Review the NCPS "Topic Summaries" available on the NCPS Intranet site.⁵
- Review other people's ideas (similar RCAs, VA hazard summaries, VA or Joint Commission Alerts and Advisories, etc.).
- Forget things like "pay more attention" or "get more training." Instead, focus on putting knowledge "in the world through redesign."
- If applicable, develop usability testing for a device or for a software system.
- Work to increase constructive feedback and use direct communication (written and oral) to improve team work and hand-offs.
- Drive out your fear of reporting or speaking up!

RCA Costs

Your team will develop a ballpark estimate of the financial expenses associated with conducting this particular RCA.

Try to keep track of how much time you spend working on the RCA, to include meeting and research time. Inform your PSM at the end of the process. You will also be listing all analytical methods and tools used during the RCA.

Concurrence

This is what you have been working for all along! Your team has developed actions and outcomes to prevent an adverse event or close call from happening again.

The team will be collecting the names of the approving officials, obtaining signatures, and noting the dates of concurrence with the RCA team plans.

The RCA findings will also be presented to senior management to receive concurrence on the team's recommendations. Ideally, you will be asked to attend this meeting to help answer any questions or concerns that may arise.

If senior management does not concur, other actions will need to be developed. Your PSM will not delete the team's original actions from the record, but will note that management did not concur, adding the new actions suggested.

Good Luck!

What you are involved in is critical to VA's patient safety efforts.

Notes

1. VA employees: Highlights available on page 4 of this TIPS edition.
Public: Versions of the flip books noted in this article are available online: www.patientsafety.gov.
2. VA employees: Note page 4 of this TIPS edition.
Public: www.patientsafety.gov.
3. See page 4 of this TIPS edition.
4. See page 4 of this TIPS edition.
5. VA employees: See page 4 of this TIPS edition.

The NCPS Intranet: Highlights of Information Available to VA Employees

Not a VA Employee? Learn More About RCAs – and Many Other Patient Safety Topics – on our Internet Site: www.patient.safety.gov

RCA Topic Summaries

Right side of the Intranet homepage, under “Initiatives and Studies.”

Specific topics are drawn from the SPOT database, analyzed, and summarized. Some of the topic searches are requested by PSMs; others are initiated by NCPS staff members. Examples:

- RCAs associated with the category of “Delay in Treatment/Diagnosis/Surgery” related to outpatient issues.
- Mental health and psychiatric patients coded as missing patients from the Emergency Department.
- Environmental management systems’ impact on patient safety.

RCA Tool Box

Left side of the Intranet homepage, under “Tools and Products.”

Tools

- NCPS tools and products, such as cognitive aids and control-charting.
- Directives and guidelines, including alerts and advisories.

Tips

- Program analysts’ tips for writing root causes, actions, and outcome measures.
- De-identifying an RCA – what it means, what it doesn't mean.
- Defeat the typical reasons for missing

the 45-day deadline.

- Learn from your peers.

References

- VHA National Patient Safety Improvement Handbook.
- Disclosure of RCAs under 38 U.S.C. 5705.

TIPS Newsletter

Left side of the Intranet homepage, under “Publications.”

- Nov/Dec 06: “Root Cause Analysis: Bridging the Gap Between Ideas and Execution.”
- Jul/Aug 04: “How to Make the Most of Actions and Outcome Measures.”

The “Root Cause Analysis Tools” Flip Book: Highlights of Information

Five Rules of Causation

Rule 1: Clearly show the cause and effect relationship; i.e., if you eliminate or control this root cause/contributing factor, will you prevent or minimize future events?

- *Wrong:* A resident was fatigued.
- *Correct:* Residents are routinely scheduled for 80-hour work weeks; as a result, the fatigued residents are more likely to misread instructions, which led to an incorrect tube insertion.

Rule 2: Use specific and accurate descriptors for what occurred, rather than negative and vague words; i.e., avoid words such as poorly, inadequately, haphazardly, improperly, carelessness, complacently, etc.

- *Wrong:* Poorly written manual.
- *Correct:* The training manual was not indexed, used a font that was difficult to read, and did not include any technical illustrations; as a result, the manual was rarely used and did not improve performance by the equipment operators.

Rule 3: Identify the preceding cause(s), not the human error.

- *Wrong:* The resident manager made a dosage error.
- *Correct:* Due to no automated software to check the dosage limits and no cognitive aids on dosing, there was a likelihood of this dosing error, which resulted in three times the appropriate level of insulin being ordered and administered.

Rule 4: Identify the preceding cause(s) of procedure violations.

- *Wrong:* The technicians did not follow the procedure for CT scans.
- *Correct:* Noise and confusion in the prep area and production pressures to quickly complete CT scans increased the probability of missing steps in the CT scan protocol; this resulted in an air embolism by inadvertently using an empty syringe.

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

- *Wrong:* The nurse did not check the STAT orders every half hour.
- *Correct:* The absence of an established procedure for nurses to check the STAT orders on the printer created the vulnerability that urgent orders would not be administered; this resulted in the BOLUS of antibiotics not being administered.

Action Ratings

Actions are the critical component of the RCA. Stronger actions are viewed as more likely to be successful.

Stronger actions

- Architectural/physical plant changes.
- New device, with usability testing before purchase.
- Engineering control or interlock (forcing functions).
- Simplify process and remove unnecessary steps.
- Standardize equipment/process/“care-map.”
- Tangible involvement and action by leadership in support of patient safety.

Intermediate actions

- Increase staffing/decrease workload.
- Software enhancements/mods.
- Eliminate/reduce distractions (sterile medical environment).
- Checklist/cognitive aid.
- Eliminate look-alikes/sound-alikes.
- Read back.
- Enhanced documentation/communication.
- Redundancy.

Weaker actions

- Double-checks.
- Warnings/labels.
- New procedure/memo/policy.
- Training/additional study/analysis.