USF GME

Root Cause Analysis

Toolkit

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| **Date of event analysis presentation** |  |
| **Program** |  |
| **GME participants** |  |
| **Interprofessional partners** |  |
| **RCA facilitators** | Jaimie WeberMaya BalakrishnanCuc Mai |
| **Leadership support** |  |

**Event Analysis meeting**

Root cause analysis (RCA) is a structured method widely used in healthcare to analyze serious adverse events. The principal of an RCA is to identify underlying problems that increase the likelihood of errors, while avoiding the trap of focusing on mistakes by individuals.

We will use THIS TOOLKIT in our virtual session. Please include any relevant information in this toolkit itself. **Do not create an additional PowerPoint.**

A summary of our discussion and corrective actions will be shared with the USF GME Patient Safety Council and TGH Patient Safety Council.

**LEARNING OBJECTIVES**

1. Participate in an interprofessional event analysis for an actual patient safety event.
2. Understand one organization’s process for addressing reported events and their implementation of corrective actions.
3. Use systems-based thinking to develop a causal statement.
4. Create corrective actions for the developed causal statement.

**GROUND RULES**

* All perspectives are valued. Be respectful and listen with an open mind.
* No blaming or shaming. Consider “what can we do about the system to help this error from happening again”.
* What happens here, stays here. You will have access to sensitive and confidential information. Do not share any patient or case-specific information publicly.

**VIRTUAL EVENT ETIQUETTE**

* Be engaged and interactive during this session. Allow one person to speak at a time. Use the chat window or raise hand function to ask questions or make comments.
* Mute your microphone when you are not speaking.
* Minimize background noise and distractions.
* Expand the computer window to full screen display for best view of documents being reviewed.

**Overview**

**GOAL:** Engage trainees in a real time, interprofessional safety event analysis.

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| TIMELINE FOR SUBMISSION OF PRE-WORK DELIVERABLES |
| Within 5 days of event being assigned to the trainee team | Email GME with list of stakeholders your team would like represented in the interprofessional meeting |
| At least 7 days before interprofessional meeting | Submit toolkit with completed pre-work to GME |

**Determine the Stakeholders**

Involve stakeholders in your investigation. Examples of stakeholders to consider including are the front-line nurse and/or nurse manager, Physician (possibly multiple from different specialties), Pharmacy, IT or Informatics professional, Nurse tech or other support staff, Patient/Patient representative.

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| --- | --- | --- |
|  | **Team Member?** | **Interview?** |
| **Subject matter expert on the event or close call process being evaluated** | Yes | Yes IF not a team member |
| **Individual not familiar with the event or close call process** | Yes | No |
| **Leader well versed in the RCA process** | Yes | No |
| **Staff directly involved in the event** | No | Yes |
| **Front line staff working in the area** | Yes | Yes |
| **Patient involved in the event** | No | Yes |
| **Family of patient involved in the event** | No | Yes |
| **Patient representative** | Yes | Yes |

*NOTE: Staff involved in the actual incident should NOT be members of the RCA team, but every attempt should be made to include someone who has a similar role as the involved staff (i.e., The physician who was caring for the patient should not be on the team but another physician from their group should be).*

*Example*

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Participant representative in event analysis** | **Team member?** | **Interview?** |
| Physician | Jaimie Weber | [x]  Yes [ ]  No | [x]  Yes [ ]  No |
| Floor nurse | Cuc Mai | [x]  Yes [ ]  No | [x]  Yes [ ]  No |
| Pharmacist | Elizabeth Melzer | [x]  Yes [ ]  No | [x]  Yes [ ]  No |
| IT representative | Maya Balakrishnan | [ ]  Yes [x]  No | [x]  Yes [ ]  No |
| Patient Safety Specialist | Nicole Justice | [x]  Yes [ ]  No | [ ]  Yes [x]  No |

*Think about who was directly or indirectly involved in the event and list each role in the diagram below.* ***EMAIL GME WITH LIST OF STAKEHOLDERS YOUR TEAM WOULD LIKE REPRESENTED AT THE INTERPROFESSIONAL MEETING WITHIN 5 DAYS OF EVENT BEING ASSIGNED TO THE TRAINEE TEAM.***

* Determine if each role needs to be on the core team and/or if they should be interviewed by the team.

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Participant representative in event analysis** | **Team member?** | **Interview?** |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |
|  |  | [ ]  Yes [ ]  No | [ ]  Yes [ ]  No |

**Describe the Event**

This is your opportunity to describe the **important** details of the event.

|  |  |
| --- | --- |
| ***DOs*** | ***DON’Ts*** |
| * *Be succinct*

*Include each of the following:** *Basic description of the process leading up to the event*
* *Involved staff*
* *Event itself*
* *Any subsequent actions taken, or knowledge gained*
 | * *Do not write as a dramatic novel.*
* *This is an inappropriate avenue for personal grievances or laying blame*
 |

***Describe important details of the event.***

*Example: Patient admitted from ED at 1am with sickle cell crisis on dilaudid PCA. PCA continued on admission and was ordered as high dose due to previously documented pain requirements. Pt sent from ED with PCA in place and current bag was continued until 10am. When new bag required, it was changed by nursing. Patient reported low pain scores throughout the day and evening. During physician chart review the next am, it was noted that the ml of dilaudid given calculated to 196mg over the last 24 hours. Nursing was contacted and reported that PCA pump was programmed for regular dosing but high dose bag was installed.*

***Write a 1-sentence, concise problem statement.***

*Example: PCA pump set for wrong dosing regimen so patient received four times the ordered amount of dilaudid*

[ ]  Problem statement is factual (does not get into causation)

**Develop a Timeline**

You will need to perform interviews to determine the timeline. As you are interviewing involved staff, make note of what the defined best practices are. If a step in the current process deviates from that best practice, document that deviation in the timeline.

*Example*

|  |  |  |
| --- | --- | --- |
| **Source**(EMR, interview, etc.) | **Event**(description and response) | **Contributing factors & deviations****from expected or best practice** |
| EMR | Patient presents with SSC requiring PCA  |  |
| EMR | Dilaudid PCA initiated at regular concentration | Chart review not completed to determine previous requirements |
| EMR | Admission orders placed and PCA continued but at high dose given previous requirements (0100 HD1) |  |
| EMR | PCA refilled with concentrated Dilaudid (1027, 1635, 2227 HD1 and 0220 HD2) | Bag of dilaudid was verified but pump programming was not |
| Interview | Physician noted on chart review that pt received almost 200mg of dilaudid in previous 24 hours (0730 HD2) |  |
| Interview | Physician spoke with nursing staff about discrepancy |  |
| Interview | Nursing staff checked pump and noted that the pump was set for regular concentration of dilaudid but had high dose bag installed. |  |
| Interview | PCA dosing was fixed |  |
|  |  |  |

*Use the following chart to make a timeline of events and* ***acknowledge if there was a deviation from expected or best practice(s).***

|  |  |  |
| --- | --- | --- |
| **Source**(EMR, interview, etc.) | **Event**(description and response) | **Contributing factors & deviations****from expected or best practice** |
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**Brainstorm**

*Use the following triggering factors to brainstorm “what happened.”*

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| FACTOR | TYPE OF CONTRIBUTING FACTOR |
| Human | * Knowledge based violation *(chose incorrect goal or strategy, lack competence)*
* Skill based violation *(slip, lapse, mistake in executing an action, action triggered by info in the environment, haste, inattention)*
* Rule based violation *(mistake – chose incorrect procedure or violated procedure, standard, guideline, failed to act on available information)*
* Physical or mental health *(stress, fatigue, work relationships)*
* Violations of procedure *(did not know procedure, not aware of or took short cut, situation dictated deviation, procedure not practice or out of date)*
* Education/experience *(training lacking or novice)*
* Not seeking help when should have
 |
| Task or Procedure | * Clarity and design of structure lacking
* Availability and use of protocols lacking
* Availability and/or accuracy of tests, results, etc. lacking
* Decision-making aids lacking or wrong
* Lack of monitoring or assessment
 |
| Teamwork-related | * Supervision *(lacking, inadequate, did not seek out)*
* Communication – written or verbal *(gaps, omissions, misunderstandings, or lack of a safe environment to communicate)*
* Culture and teamwork *(lack teamwork, breakdown, management style, hierarchical structure)*
* Team structure *(consistency, leadership, intimidation, disruptive behavior)*
 |
| Technology, Equipment, Supplies | * Design lacking
* Availability lacking
* Mainenance issue
* Failure/malfunction
* Improper use
* Outdated
 |
| Manage-ment | * Constraints
* Organizational structure
* Policy, standards, goals
* Safety culture and priorities
* Planning
 |
| Work or Environ-ment | * Staffing *(levels, skill mix)*
* Workload *(shift patterns, influx of patients)*
* Time delays
* Environment *(distractions, interruptions)*
* Administrative/managerial support issues
 |
| Patient | * Condition *(complexity, severity of illness)*
* Communication *(language barrier, interpretation)*
* Pyschosocial *(personality or social factors)*
* Detection barriers in place – effective or ineffective *(Physicial – bar coding, locked cabinets; human action – patient identity checks, surgical site marking; administrative – proceudres, checklists, alert notices)*
 |

*List potential contributing factors in the below table.*

|  |  |
| --- | --- |
| **Factor** | **List of contributing factors** |
| **Human** |  |
| **Task or procedure** |  |
| **Teamwork-related** |  |
| **Technology, Equipment, Supplies** |  |
| **Management** |  |
| **Work or environment**  |  |
| **Patient** |  |

**Create a Cause & Effect Diagram**

For each deviation from best practice, ask yourself “why did this happen” until you reach something that is actionable. Sometimes it does not take asking this question 5 times to get to the “actionable why”. **This “Actionable Why” is what you will use for your causal statements.**

*Example*

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| **Problem statement:** *PCA pump set for wrong dosing regimen so patient received four times the ordered amount of dilaudid* |
| **KEY CONTRIBUTING FACTOR #1** | **KEY CONTRIBUTING FACTOR #2** | **KEY CONTRIBUTING FACTOR #3** |
| High dose dilaudid loaded in pump set for normal dosing regimen |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
| PCA dosing not checked |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
| Dose programming is not required with every bag change |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? |

Dose programming is not required with every bag change is an actionable “why”.

*List at least 3 potential contributing factors AND potential causation in the table below.*

|  |
| --- |
| **Problem statement:**  |
| **KEY CONTRIBUTING FACTOR #1** | **KEY CONTRIBUTING FACTOR #2** | **KEY CONTRIBUTING FACTOR #3** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? |
|  |
| **KEY CONTRIBUTING FACTOR #4** | **KEY CONTRIBUTING FACTOR #5** | **KEY CONTRIBUTING FACTOR #6** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| *Caused by* **↓** | *Caused by* **↓** | *Caused by* **↓** |
|  |  |  |
| [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? | [ ]  Is the last “why” is actionable? |

[ ]  Root cause analysis goes deep enough (i.e., 5 Whys exercise to an actionable “why”)

*NOTE: A sign that the root cause analysis didn’t go deep enough is if it sounds like “someone didn’t do something”. Ask RCA team to go back and ASK WHY “someone didn’t do something.”*

[ ]  This issue is unique to this area (i.e., solutions do NOT need to be scaled to other areas)

**Write Causal Statements**

Causal statements are a standardized way to present what you consider to be the “root cause” of the event.

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| **1.** | Cause | 🡪  | Something |
| **2.** | Effect | 🡪 | Leads to something |
| **3.** | Event | 🡪 | Which increases the likelihood that the adverse event will occur |

**They are always presented in the form: “Because of x (cause), y (event) occurred or was more likely to occur.”**

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| **Rules for developing causal statements1** |
| **#1: Clearly show the “cause and effect” relationship.***Incorrect:* RN was fatigued.*Correct:* RN worked three 16-hour shifts, which led to fatigue and increased risk of misreading… |
| **#2: Use specific and accurate descriptors for what occurred, rather than negative and vague descriptors.***Incorrect:* Manual was poorly written.*Correct: Manual had 8-point font and no illustrations; staff didn’t use it; increased likelihood of incorrect…* |
| **#3: Human errors must have a preceding cause.***Incorrect: RN selected wrong dose; patient overdosed.**Correct: Drugs in CPOE are presented without sufficient space between doses, increasing chance of wrong dose and overdose.* |
| **#4: Violations of procedure are not root causes but must have a preceding cause.***Incorrect: Resident didn’t follow procedure timeout prior to paracentesis.**Correct: Noise and confusion on floor, with pressures for pending admissions, increased chance that timeout protocol would be missed.* |
| **#5: Failure to act is only causal when there is a pre-existing duty to act.***Incorrect: Fellow did not check STAT order results.**Correct: No protocol for notification of abnormal STAT order results increased the likelihood that STAT order results are missed.* |
| 1 Adapted from the National Patient Safety Foundation |

*Example: Because the PCA dose programming check is not a required part of medication bag changes, medication overdose occurred.*

*Write an example of 1 causal statement in the corrective actions table on page 10.*

**What is the cause (x or contributing factor actionable why)?**

**What is the event that is being investigated from the problem statement (y)?**

Write your causal statement in the form of: **Because of (x cause),** **(y event) occurred or was more likely to occur.**

**Develop Corrective Actions**

**This step will be completed as a group in the Interprofessional meeting**

* Each causal statement should have a corrective action associated with it.
* It is important that when you are considering corrective actions that you think about how compliance with the action implementation will be measured, as well as who will be responsible for implementation and monitoring.
* Stronger actions are actions that make it easier if not impossible to do the wrong thing (see chart below).

*Example*

|  |
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| **Causal statement:** *Because the PCA dose programming check is not a required part of medication bag changes, medication overdose occurred.* |
| **Corrective action** | **Strength of action** | **Potential measures** |
| 1. Program pumps to require a verification of dosing with every bag change | Strong | PCA bag changes with dose programming verification / total number of PCA bag changes |

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| **ACTION HIERARCHY** |
| **STRONG** | **INTERMEDIATE** | **WEAK** |
| * Architectural/physical plant changes
* New devices with usability training
* Engineering control (forcing function)
* Simplify processes
* Standardize equipment or process
* Tangible involvement by leadership
 | * Redundancy
* Increase staffing/decrease workload
* Software enhancements/ modifications
* Eliminate/ reduce distractions
* Education using simulation-based training with periodic refresher sessions and observations
 | * Checklist/cognitive aids
* Eliminate look- and sound-alikes
* Standardized communication tools
* Enhanced documentation, communication
 | * Double checks
* Warnings
* New procedure/ memorandum/ policy
* Training
 |

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| **Causal statement:** |
| **Corrective action** | **Strength of action** | **Potential measures** |
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| --- |
| **ACTION HIERARCHY** |
| **STRONG** | **INTERMEDIATE** | **WEAK** |
| * Architectural/physical plant changes
* New devices with usability training
* Engineering control (forcing function)
* Simplify processes
* Standardize equipment or process
* Tangible involvement by leadership
 | * Redundancy
* Increase staffing/decrease workload
* Software enhancements/ modifications
* Eliminate/ reduce distractions
* Education using simulation-based training with periodic refresher sessions and observations
 | * Checklist/cognitive aids
* Eliminate look- and sound-alikes
* Standardized communication tools
* Enhanced documentation, communication
 | * Double checks
* Warnings
* New procedure/ memorandum/ policy
* Training
 |

[ ]  Corrective actions DO address the root cause(s).

[ ]  Corrective actions DO prevent recurrence.

 *NOTE: Assume that human error is inherent to the process. If the corrective actions do not prevent recurrence, consider if*

*there is an increased likelihood that errors will be caught before they reach the patient.*

[ ]  Strengths of action ARE appropriately reflected in the table.

[ ]  There IS appropriate representation of action hierarchy (i.e., weak, intermediate, strong)

**NEXT STEPS**

**Reporting events in RL Solutions**



**Second victim coaching**

***CARING FOR PEOPLE WHO CARE FOR PEOPLE***

After an adverse event, the healthcare workers involved may experience blame, shame, guilt, isolation, physical effects, self-doubt, and other negative effects. When this impacts us significantly, it is referred to as the “second victim effect. Blame and shame do not create change in the system and as a learning organization on a high reliability organization journey, ensuring we apply emotional first aid is essential to moving on. **If you find yourself experiencing this effect, please reach out to the USF GME Second Victim Mentorship Program** **by contacting Dr. Melzer** (emelzer@usf.edu ).

**Useful definitions**

* **Causal factors**. Factors that may have shaped the outcome of an event.
* **Contributing factors**. Any factor that may have contributed to the event occurrence, but mitigation of this factor alone will not prevent the event from reoccurring.
* **Event**. An incident that reached the patient whether or not the patient was harmed. (Example: A patient is given an expired medication. This is considered an event even if the patient was not harmed.)
* **Near miss**. Otherwise known as a "close call," because an action intercedes to prevent the incident. It can also be purely by chance that the incident did not occur. (Example: Upon retrieving a medication from the PYXIS, the nurse notices that the medication is expired and does not administer the medication.)
* **Root cause**. The most systemic cause of the incident.
* **Sentinel event**. "A patient safety event (not primarily related to the natural course of the patient's illness or underlying condition) that reaches a patient and results in death, permanent harm, or severe temporary harm. Sentinel events are a subcategory of adverse events." (TJC)
* **Serious reportable events**. The National Quality Forum (NQF) has developed and endorsed a set of serious, preventable, and harmful clinical events to provide a standard in healthcare that identifies, at a minimum, events that should be reported, assessed, and measured to help ensure safe care.
* **Unsafe condition**. A circumstance that increases the likelihood of an event occurring. (Example: Expired medications are not removed from the pharmacy on a routine basis.)

**Useful reference:** National Patient Safety Foundation. *RCA2  Improving Root Cause Analyses and Actions to Prevent Harm*. Version 2. January 2016.

 

You have completed a Root Cause Analysis!!!

**A big thank you to our Core team, Interprofessional partners,**

**& Program and Department leadership!**