USF GME

Root Cause Analysis

Toolkit

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| --- | --- |
| **Date of event analysis presentation** |  |
| **Program** |  |
| **GME participants** |  |
| **Interprofessional partners** |  |
| **RCA facilitators** | Jaimie Weber  Elizabeth Peek  Maya Balakrishnan  Cuc Mai |
| **Leadership support** |  |

**THIS IS CONFIDENTIAL AND MAY NOT BE DISCUSSED OR SHARED OUTSIDE OF THE DEFINED WORKGROUP**

**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**

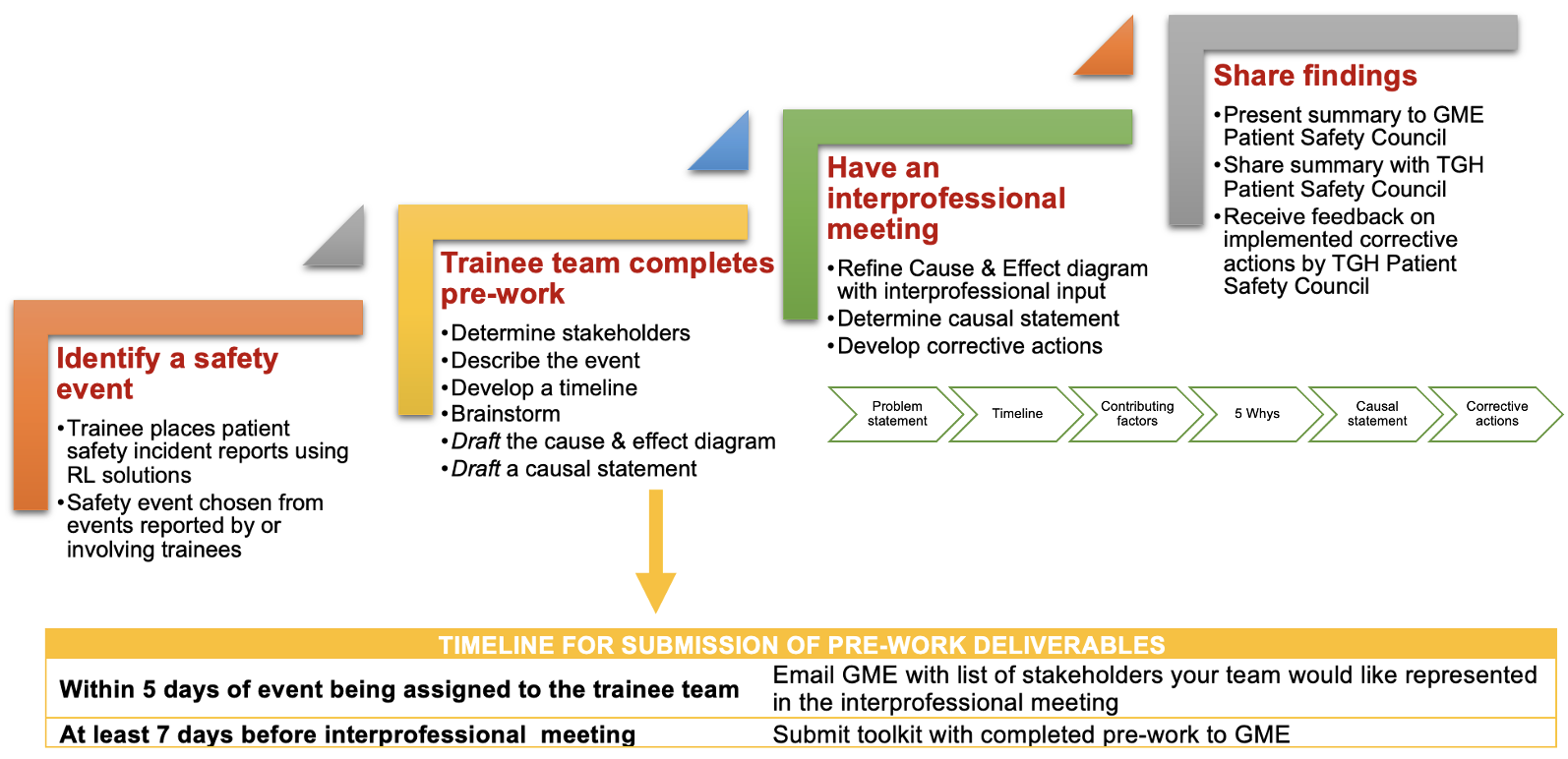
* All perspectives are valued. Be respectful and listen with an open mind.
* No blaming or shaming. Consider “what can we do about the system to help this error from happening again”.
* What happens here, stays here. You will have access to sensitive and confidential information. Do not share any patient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

**VIRTUAL EVENT ETIQUETTE**

* Be engaged and interactive during this session.
* Follow virtual meeting etiquette. 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.



**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. Who were the actors involved?

|  |  |  |
| --- | --- | --- |
|  | **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 | Yes  No | Yes  No |
| Floor nurse | Cuc Mai | Yes  No | Yes  No |
| Pharmacist | Elizabeth Melzer | Yes  No | Yes  No |
| IT representative | Maya Balakrishnan | Yes  No | Yes  No |
| Patient Safety Specialist | Nicole Justice | Yes  No | Yes  No |

*Think about who was directly or indirectly involved in the event and list each role in the diagram below (not the exact people involved with the incident, rather representatives of each role).* ***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.***

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 caring for the patient should not be part of the team, but another physician from their group should be).

* 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 (maximum 3 sentences).***

*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 & Brainstorm**

You will need to review the chart and perform interviews to determine the timeline. In speaking with your subject matter experts, but curious! Ask about how a process is laid out, what goes well, what leaves room for error, what they think would help the process. Leverage your team.

Think, what do you want to know? 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. Ask questions such as “What risks are there?” “What systems are in place?” “Were there competing priorities?” “What biases may be involved?”

*Example*

|  |  |  |  |
| --- | --- | --- | --- |
| **Event**  (Description and response) | **Deviations**  **from expected or best practice** | **What is the perceived risk?** | **Identify type of**  **contributing factors** |
| Patient presents with SSC requiring PCA |  |  |  |
| Dilaudid PCA initiated at regular concentration | Chart review not completed to determine previous requirements | Patient would receive too high dose | Bias toward perceived previous pain threshold |
| Admission orders placed and PCA continued but at high dose given previous requirements (0100 HD1) | No regular check up on patient pain level | Patient would continue to receive too high dose | Staffing overnight doesn’t allow regular check in with patient. Order continues over 12 hours without requiring re-order. |
| PCA refilled with concentrated Dilaudid (1027, 1635, 2227 HD1 and 0220 HD2) | Bag of dilaudid was verified but pump programming was not | Patient given high dose dilaudid instead of regular dose | Pump is the same fit for high and regular dose bag. Pump programming doesn’t require verification to start infusion. |
| Physician noted on chart review that patient received almost 200mg of dilaudid in previous 24 hours (0730 HD2) | Four times the recommended dose of dilaudid given | Hypoxic respiratory failure, falls, encephalopathy, delirium | Pump doesn’t have a hard stop or override function for such high, potential toxic doses and likely doesn’t alert/beep until the bag runs out. |
| Physician spoke with nursing staff about discrepancy. Nursing staff checked pump and noted that the pump was set for regular concentration of dilaudid but had high dose bag installed. | Delayed time to stop infusion from time physician noted dose discrepancy | Patient continued to get high doses despite knowing this was incorrect | Identified the problem at shift change, unclear if order was placed or just a verbal order |
| PCA dosing was fixed |  |  |  |

*Use the following triggering factors to brainstorm “what happened” and identify the type of contributing factor.*

|  |  |  |
| --- | --- | --- |
| CATEGORY: HUMAN FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * 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 practiced or out of date)* * Education/experience *(training lacking or novice)* * Attitude or behavior choice * Not seeking help when should have | |
| CATEGORY: TASK OR PROCEDURAL FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * 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 | |
| CATEGORY: TEAMWORK-RELATED FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * 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)* | |
| CATEGORY: TECHNOLOGY, EQUIPMENT, OR SUPPLY FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * Design lacking * Availability lacking * Maintenance issue | * Failure/malfunction * Improper use * Outdated | |
| CATEGORY: MANAGEMENT-RELATED FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * Constraints * Organizational structure * Policy, standards, goals | * Safety culture and priorities * Planning * Healthcare inequities | |
| CATEGORY: WORK OR ENVIRONMENT FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * Staffing *(levels, skill mix)* * Workload *(shift patterns, influx of patients)* * Time delays | * Environment *(distractions, interruptions, physical environment)* * Administrative/managerial support issues | |
| CATEGORY: PATIENT FACTORS. Examples of contributing factors below.   |  |  | | --- | --- | | * Condition *(complexity, severity of illness, social determinants of health)* * Communication *(language barrier, interpretation)* * Psychosocial *(personality or social factors)* | * Detection barriers in place – effective or ineffective *(Physical – bar coding, locked cabinets; human action – patient identity checks, surgical site marking; administrative – procedures, checklists, alert notices)* | |

*Use the following chart to make a timeline of events and* ***acknowledge if there was a deviation from expected or best practice(s).*** As you think through this, ask yourself “what in the system or what behavior allowed this to happen?”

|  |  |  |  |
| --- | --- | --- | --- |
| **Event**  (Description and response) | **Deviations**  **from expected or best practice** | **What is the perceived risk?** | **Identify type of**  **contributing factors** |
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**Create a Cause & Effect Diagram**

Now that we have identified contributing factors, consider each deviation from best practice, and list contributing factors in the table below. Ask yourself what in the system allowed it to occur (“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.**

NOTE: The problem statement is NOT the causal statement. Copy the problem statement into the top green box. List contributing factors and go into as much depth as possible as to the whys until you get to an actionable why.

*Example*

|  |  |  |
| --- | --- | --- |
| **Problem statement:** *PCA pump set for wrong dosing regimen, so patient received four times the ordered amount of dilaudid* | | |
| **CONTRIBUTING FACTOR #1** | **CONTRIBUTING FACTOR #2** | **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:** | | |
| **CONTRIBUTING FACTOR #1** | **CONTRIBUTING FACTOR #2** | **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? |
|  | | |
| **CONTRIBUTING FACTOR #4** | **CONTRIBUTING FACTOR #5** | **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.

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** | Cause | à | Something |
| **2.** | Effect | à | Leads to something |
| **3.** | Event | à | 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.”**

|  |
| --- |
| **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.*

**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.**

*Write an example of 1 causal statement from the corrective actions table.*

**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.
* Solicit input from frontline staff and subject matter experts about what could be put into place to prevent this same event from occurring again.
* Stronger actions are actions that make it easier if not impossible to do the wrong thing (see chart below).

*Example*

|  |  |  |
| --- | --- | --- |
| **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 |

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

*Copy the causal statement into the top of this table and recommend at least one corrective action.*

|  |  |  |
| --- | --- | --- |
| **Causal statement:** | | |
| **Corrective action** | **Strength of action** | **Potential measures** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **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*

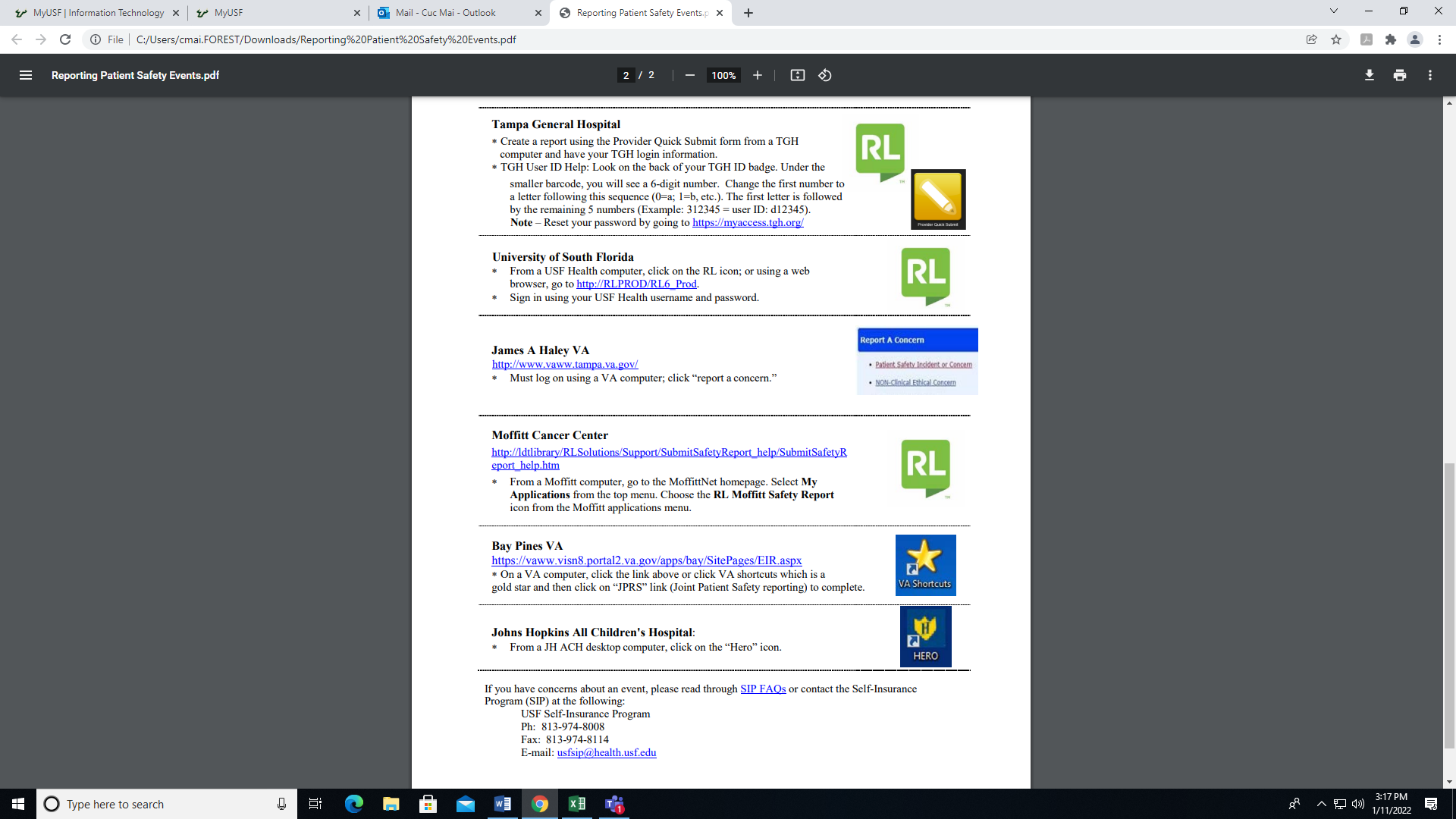
*there is an increased likelihood that errors will be caught before they reach the patient.*

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](mailto: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 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!**