FRAMEWORK FOR ROOT CAUSE ANALYSIS AND CORRECTIVE ACTIONS*

The Joint Commission's Framework for Root Cause Analysis and Action Plan provides an example of a comprehensive systematic analysis. The framework and its 24 analysis questions are intended to provide a template for analyzing an event and an aid in organizing the steps and information in a root cause analysis.

An organization can use this template to conduct a root cause analysis or even as a worksheet in preparation of submitting an analysis through the online form on its *Joint Commission Connect*™ extranet site. Fully consider all possibilities and questions in seeking "root cause(s)" and opportunities for corrective actions. Be sure to enter a response in the "Analysis Findings" column for each item. Unexpected findings may emerge during the course of the analysis, or there may be some questions that do not apply in every situation. For each finding continue to ask "Why?" and drill down further to uncover why parts of the process occurred or didn't occur when they should have. Significant findings that are not identified as root causes themselves have "roots." "Corrective Actions" should be developed for every identified root cause.

While the online form provides drop-down menus for many of the form's cells, the options for these columns are provided here in the following tables:

The following are in the Root Cause Analysis section:
Root Cause Types: Table A-1 (column 1)
Causal Factors/Root Cause Details: Table A-1 (column 2)

In the Corrective Actions section, the following are added:
Action Strength: Table A-2
Measure of Success: Table A-3
Sample Size: Table A-4

*Disclaimer: The framework found on *Joint Commission Connect*™ will show the most current iteration of this form.

EVENT DESCRIPTION

When did the event occur?

Date:	Day of the week:	Time:

Detailed Event Description Including Timeline:

Diagnosis:

Medications:

Autopsy Results:

Past Medical/Psychiatric History:

ROOT CAUSE ANALYSIS - QUESTIONS

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
1	What was the intended process flow?	List the relevant process steps as defined by the policy, procedure, protocol, or guidelines in effect at the time of the event. You may need to include multiple processes. Examples of defined process steps may include, but are not limited to: • Site verification protocol • Instrument, sponge, sharps count procedures • Patient identification protocol • Assessment (pain, suicide risk, physical, and psychological) procedures • Fall risk/fall prevention guidelines ***Note**:* The process steps *as they occurred in the event* will be entered in the next question.			
2	Were there any steps in the process that did not occur as intended?	Explain in detail any deviation from the intended processes listed in Analysis Question #1 above.			
3	What human factors were relevant to the outcome?	Discuss staff-related human performance factors that contributed to the event. Examples may include, but are not limited to: • Boredom • Failure to follow established policies/procedures			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
		• Fatigue • Inability to focus on task • Inattentional blindness/confirmation bias • Personal problems • Lack of complex critical thinking skills • Rushing to complete task • Substance abuse • Trust			
4	How did the equipment performance affect the outcome?	Consider all medical equipment and devices used in the course of patient care, including automated external defibrillator (AED) devices, crash carts, suction, oxygen, instruments, monitors, infusion equipment, etc. In your discussion, provide information on the following, as applicable: • Descriptions of biomedical checks • Availability and condition of equipment • Descriptions of equipment with multiple or removable pieces • Location of equipment and its accessibility to staff and patients • Staff knowledge of or education on equipment, including applicable competencies • Correct calibration, setting, operation of alarms, displays, and controls			
5	What controllable environmental	What environmental factors within the organization's control affected the			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
	factors affected the outcome?	outcome? Examples may include, but are not limited to: • Overhead paging that cannot be heard in physician offices • Safety or security risks • Risks involving activities of visitors • Lighting or space issues The response to this question may be addressed more globally in Question #17. This response should be specific to this event.			
6	What uncontrollable external factors influenced the outcome?	Identify any factors the health care organization cannot change that contributed to a breakdown in the internal process, for example natural disasters.			
7	Were there any other factors that directly influenced this outcome?	List any other factors not yet discussed.			
8	What are the other areas in the health care organization where this could happen?	List all other areas in which the potential exists for similar circumstances. For example: • Inpatient surgery/outpatient surgery • Inpatient psychiatric care/outpatient psychiatric care • Identification of other areas within the organization that have the potential to impact patient safety in a similar manner. This information will help drive the scope of your action			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
		plan.			
9	Was staff properly qualified and currently competent for their responsibilities?	Include information on the following for all staff and providers involved in the event. Comment on the processes in place to ensure staff is competent and qualified. Examples may include but are not limited to: • Orientation/training • Competency assessment (What competencies do the staff have and how do you evaluate them?) • Provider and/or staff scope of practice concerns • Whether the provider was credentialed and privileged for the care and services he or she rendered • The credentialing and privileging policy and procedures • Provider and/or staff performance issues			
10	How did actual staffing compare with ideal level?	Include ideal staffing ratios and actual staffing ratios along with unit census at the time of the event. Note any unusual circumstance that occurred at this time. What process is used to determine the care area's staffing ratio, experience level, and skill mix?			
11	What is the plan for dealing with staffing contingencies?	Include information on what the health care organization does during a staffing crisis, such as call-ins, bad weather, or increased patient acuity. Describe the			

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		health care organization's use of alternative staffing. Examples may include, but are not limited to: • Agency nurses • Cross training • Float pool • Mandatory overtime • PRN pool			
12	Were such contingencies a factor in this event?	If alternative staff were used, describe their orientation to the area, verification of competency, and environmental familiarity.			
13	Did staff performance during the event meet expectations?	Describe whether staff performed as expected within or outside of the processes. To what extent was leadership aware of any performance deviations at the time? What proactive surveillance processes are in place for leadership to identify deviations from expected processes? Include omissions in critical thinking and/or performance variance(s) from defined policy, procedure, protocol, and guidelines in effect at the time.			
14	To what degree was all the necessary information available when needed? Accurate? Complete?	Discuss whether patient assessments were completed, shared, and accessed by members of the treatment team, to include providers, according to the organizational processes. Identify the information systems used during patient care. Discuss to what extent the available patient information (e.g., radiology			

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	Unambiguous?	studies, lab results, or medical record) was clear and sufficient to provide an adequate summary of the patient's condition, treatment, and response to treatment. Describe staff utilization and adequacy of policy, procedure, protocol, and guidelines specific to the patient care provided.			
15	To what degree is communication among participants adequate?	Analysis of factors related to communication should include evaluation of verbal, written, electronic communication or the lack thereof. Consider the following in your response, as appropriate: • The timing of communication of key information • Misunderstandings related to language/cultural barriers, abbreviations, terminology, etc. • Proper completion of internal and external hand-off communication • Involvement of patient, family, and/or significant other			
16	Was this the appropriate physical environment for the processes being carried out?	Consider processes that proactively manage the patient care environment. This response may correlate to the response in Question #6 on a more global scale. What evaluation tool or method is in place to evaluate process needs and mitigate physical and patient care environmental risks? How are these process needs addressed organizationwide? Examples may include,			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
		but are not limited to: • Alarm audibility testing • Evaluation of egress points • Patient acuity level and setting of care managed across the continuum • Preparation of medication outside of pharmacy			
17	What systems are in place to identify environmental risks?	Identify environmental risk assessments. Does the current environment meet codes, specifications, regulations? Does staff know how to report environmental risks? Was there an environmental risk involved in the event that was not previously identified?			
18	What emergency and failure-mode responses have been planned and tested?	Describe variances in expected process due to an actual emergency or failure mode response in connection to the event. Related to this event, what safety evaluations and drills have been conducted and at what frequency (e.g. mock code blue, rapid response, behavioral emergencies, patient abduction or patient elopement)? Emergency responses may include, but are not limited to: • Fire • External disaster • Mass casualty • Medical emergency Failure mode responses may include, but are not limited to: • Computer down time • Diversion planning			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
		• Facility construction • Power loss • Utility issues			
19	How does the organization's culture support risk reduction?	How does the overall culture encourage change, suggestions, and warnings from staff regarding risky situations or problematic areas? • How does leadership demonstrate the organization's culture and safety values? • How does the organization measure culture and safety? • How does leadership address disruptive behavior? • How does leadership establish methods to identify areas of risk or access employee suggestions for change? • How are changes implemented?			
20	What are the barriers to communication of potential risk factors?	Describe specific barriers to effective communication among caregivers that have been identified by the organization. For example, residual intimidation or reluctance to report co-worker activity. Identify the measures being taken to break down barriers (e.g. use of SBAR). If there are no barriers to communication discuss how this is known.			
21	How does leadership address the continuum of patient safety events, including	Does leadership demonstrate accountability for implementing measures to reduce risk for patient harm? Has leadership provided for required resources or training? Does leadership			

#	Analysis Questions	Prompts	Analysis Findings	Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)
	close calls, adverse events, and unsafe, hazardous conditions?	communicate corrective actions stemming from any analysis following reported risks?			
22	How can orientation and in-service training be improved?	Describe how orientation and ongoing education needs of the staff are evaluated and discuss its relevance to event. (e.g., competencies, critical thinking skills, use of simulation labs, evidence based practice, etc.)			
23	Was available technology used as intended?	Describe variances in the expected process due to education, training, competency, impact of human factors, functionality of equipment, and so on: • Was the technology designed to minimize use errors or easy-to-catch mistakes? • Did the technology work well with the workflow and environment? • Was the technology used outside of its specifications?			
24	How might technology be introduced or redesigned to reduce risks in the future?	Describe any future plans for implementation or redesign. Describe the ideal technology system that can help mitigate potential adverse events in the future.			

CORRECTIVE ACTIONS

Root Cause Types (Table A-1)	Causal Factors/Root Cause Details (Table A-1)	Corrective Actions	Action Strength (Table A-2)	Measure of Success (Numerator / Denominator) (Table A-3)	Sample Size (Table A-4)
		Action Item #1:			
		Action Item #2:			
		Action Item #3:			
		Action Item #4:			
		Action Item #5:			
		Action Item #6:			
		Action Item #7:			
		Action Item #8:			

BIBLIOGRAPHY

Cite all books and journal articles that were considered in developing this root cause analysis and action plan.

TABLE A-1. ROOT CAUSES

Root Cause Types	Causal Factors / Root Cause Details
Communication factors	• Communication breakdowns between and among teams, staff, and providers • Communication during handoff, transition of care • Language or literacy • Availability of information • Misinterpretation of information • Presentation of information
Environmental factors	• Noise, lighting, flooring condition, etc. • Space availability, design, locations, storage • Maintenance, housekeeping
Equipment/device/ supply/ healthcare IT factors	• Equipment, device, or product supplies problems or availability • Health information technology issues such as display/interface issues (including display of information), system interoperability • Availability of information • Malfunction, incorrect selection, misconnection • Labeling instructions, missing • Alarms silenced, disabled, overridden
Task/process factors	• Lack of process redundancies, interruptions, or lack of decision support • Lack of error recovery • Workflow inefficient or complex
Staff performance factors	• Fatigue, inattention, distraction or workload • Staff knowledge deficit or competency • Criminal or intentionally unsafe act
Team factors	• Speaking up, disruptive behavior, lack of shared mental model • Lack of empowerment • Failure to engage patient

Management/ supervisory/ workforce factors	• Disruptive or intimidating behaviors • Staff training • Appropriate rules/policies/procedure or lack thereof • Failure to provide appropriate staffing or correct a known problem • Failure to provide necessary information
Organizational culture/leadership	• Organizational-level failure to correct a known problem and/or provide resource support including staffing • Workplace climate/institutional culture • Leadership commitment to patient safety

Adapted from: Department of Defense, Patient Safety Program. *PSR Contributing Factors List – Cognitive Aid, Version 2.0*. May 2013.

TABLE A-2. ACTION STRENGTH

Action Strength	Action Category	Example
Stronger Actions (These tasks require less reliance on humans to remember to perform the task correctly)	Architectural/physical plant changes	Replace revolving doors at the main patient entrance into the building with powered sliding or swinging doors to reduce patient falls.
	New devices with usability testing	Perform heuristic tests of outpatient blood glucose meters and test strips and select the most appropriate for the patient population being served.
	Engineering control (forcing function)	Eliminate the use of universal adaptors and peripheral devices for medical equipment and use tubing/fittings that can only be connected the correct way (e.g., IV tubing and connectors that cannot physically be connected to sequential compression devices [SCDs]).
	Simplify process	Remove unnecessary steps in a process.
	Standardize on equipment or process	Standardize the make and model of medication pumps used throughout the institution. Use bar coding for medication administration.
	Tangible involvement by leadership	Participate in unit patient safety evaluations and interact with staff; support the RCA^2 process (root cause analysis and action); purchase needed equipment; ensure staffing and workload are balanced.
Intermediate Actions	Redundancy	Use two registered nurses to independently calculate high-risk medication dosages.
	Increase in staffing/decrease in workload	Make float staff available to assist when workloads peak during the day.
	Software enhancements, modifications	Use computer alerts for drug–drug interactions.
	Eliminate/reduce distractions	Provide quiet rooms for programming patient-controlled analgesia (PCA) pumps; remove distractions for nurses when programming medication pumps.
	Education using simulation-based training, with periodic refresher sessions and observations	Conduct patient handoffs in a simulation lab/environment, with after-action critiques and debriefing.
	Checklist/cognitive aids	Use pre-induction and pre-incision checklists in operating rooms. Use a checklist when reprocessing flexible fiber optic endoscopes.
	Eliminate look- and sound-alikes	Do not store look-alikes next to one another in the unit medication room.
	Standardized communication	Use read-back for all critical lab values. Use read-back or repeat-back for all verbal

	tools	medication orders. Use a standardized patient handoff format.
	Enhanced documentation, communication	Highlight medication name and dose on IV bags.
Weaker Actions (These tasks rely more on humans to remember to perform the task correctly)	Double checks	One person calculates dosage, another person reviews their calculation.
	Warnings	Add audible alarms or caution labels.
	New procedure/ memorandum/policy	Remember to check IV sites every 2 hours.
	Training	Demonstrate correct usage of hard-to-use medical equipment.

Reference: Action Hierarchy levels and categories are based on *Root Cause Analysis Tools*, VA National Center for Patient Safety, http://www.patientsafety.va.gov/docs/joe/rca_tools_2_15.pdf. Examples are provided here.

Source: National Patient Safety Foundation. *RCA^2 Improving Root Cause Analyses and Actions to Prevent Harm.* Boston, MA: National Patient Safety Foundation; 2015. Reproduced with permission.

TABLE A-3. MEASURE OF SUCCESS

Fraction Part	Defined	Identified	Example
Numerator	The number of events being measured	Ask a specific question—what are you measuring?	Falls that resulted in hip fractures in diabetic patients over 70 years of age
Denominator	All the opportunities in which the event could have occurred	Identify the patient population from which to collect the information.	The number of diabetic patients on a unit who are older than 70 years of age

TABLE A-4. SAMPLE SIZE*

Population Size	Sample
Fewer than 30 cases	100% of cases
30 to 100 cases	30 cases
101 to 500 cases	50 cases
Greater than 500 cases	70 cases

*The sampling methodology was determined using quality assurance sampling methods which determines the sample size needed to be able to say from a sample of cases that the "defect" rate is less than a specified amount (here we used 10%) with 95% confidence if no "defects" are found in the sample.