

Root Cause Analysis...Five Steps to System Improvement

A. Purpose

1. Identify underlying problems that increase the likelihood of errors while avoiding a focus on mistakes by individuals.
2. Use a system approach to identify both active and latent error within healthcare systems that contribute to adverse events.
3. Make system changes that lead to safer more reliable care by decreasing risk within a healthcare system.

B. Group Sensemaking Conversation

1. What happened?
2. How did it happen?
3. Why did it happen?
4. What can be done to prevent it from happening again?

C. Five Basic Steps

1. **Gather the facts** using documentation and interviews - develop a timeline of the facts
2. **Understand what happened AND Why**
 - a. Review the event and timeline. Outline the story chronologically from the first known fact through the final known fact.
 - b. Provides all team members with the same understanding of what occurred, avoiding differing interpretations of the same event.
 - c. Include key events that are crucial to understanding what happened
 - d. Using sticky notes to map the timeline will allow for rearranging and adding information
 - e. Stick with the **facts** of “what happened?”
 - f. Identify any gaps that need to be addressed with the facts/timeline – complete as quickly as possible
 - g. Why...
 - Compare each particular event in the process with
 - “What normally happens?”
 - “What does policy/procedure require?”
 - “What is best practice?”
 - “What would a similar person have done?” (substitution test)
 - Ask “why” for each variation... “why...why...why?”
 - Identify opportunities or ideas about the **system** and **human factors**
 - Participants record ideas on sticky notes – one idea per note
 - Beware of hindsight bias – jumping to conclusions, thinking you know the solution before causes have been determined
 - Don’t stop with “human error” – it is almost always preceded by a system cause
3. **Identify root causes...5 Rules of Causation**
 - a. Five Rules of Causation
 - 1) Clearly show the cause and effect relationship
 - 2) Use specific and accurate descriptors for what happened, rather than negative or vague words
 - 3) Human errors must have a preceding cause – system or human factors cause
 - 4) Violation of policy or procedure is not a root cause – must have preceding cause
 - 5) Failure to act is only causal when there is a preceding duty to act
 - b. Differentiate between root causes and contributing factors
 - Would the event have occurred if this cause had not been present?
 - Will the problem recur if this cause is corrected or eliminated?

4. Determine system improvements to minimize risk

a. Strength of improvements

	Type	Example
Stronger Treatments	Architectural/physical plant changes	Suicide-resistant door-jamb for inpatient psych rm.
	New devices with usability testing	Automated defibrillator
	Engineering control (forcing function)	IV tubing auto-clamp when pump door opens
	Simplify the process	Remove unnecessary steps for LP preparation
	Standardize equipment or process	Standard defibrillator on all code carts
	Tangible involvement by leadership	Supporting purchase of standard CVC
Intermediate Treatments	Redundancy	Abnormal x-ray f/u to physician & separate tech.
	Increase in staffing/decrease workload	2 → 3 HO-1s per ward
	Software enhancements/modifications	Computer alerts for drug-drug interactions
	Eliminate/reduce distractions	Quiet rooms for programming PCA pumps
	Checklist/cognitive aid	Ensure all anesthesia equipment is operational
	Eliminate look and sound-alikes	Losec and Lasix not stored near each other
	Standardized communication tools	Readback of critical lab value
	Enhance documentation/communication.	Medication name and dose highlighted on IV bag
	Education	Knowing cognitive biases decreases misdiagnoses
Weaker Treatments	Double checks	One person calculates dosage, another person reviews their calculation
	Warnings	Adding audio alarms or caution labels
	New procedure/memorandum/policy	Remember to check IV sites every 2 hours
	Training	In-service on hard-to-use defibrillator with hidden door

<http://www.mass.gov/eohhs/docs/borim/physicians/pca-notifications/assessing-strength.pdf>

5. Implement a strong action plan and evaluate the effectiveness of actions

a. Criteria for Action Plan

- What improvements/actions will be implemented that reduce risk or provide rationale for not implementing those improvements (e.g. cost, outcome too rare)
- Who is responsible for implementation
- When improvements/actions will be implemented
- How and when the effectiveness will be measured

b. Communicate your Action Plan

- Who needs to know the action plan and system changes?
- Who will communicate the action plan and system changes?
- How will the communication occur?
- Ensure communication throughout organization focuses on system improvement.
- Report event and RCA results to Nebraska Coalition for Patient Safety (if you are a member)

c. Evaluate the effectiveness

- When will you evaluate to determine that all improvements/actions have been implemented?
- How will you measure effectiveness?
- How will the team remain involved in the evaluation?
- Don't give up! Keep PDSA cycle going!

Resource: Veterans Affairs Center for Patient Safety. Root Cause Analysis. Available at

<https://www.patientsafety.va.gov/professionals/onthejob/rca.asp>

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