Root Cause Analysis (RCA)

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WHAT IS ROOT CAUSE ANALYSIS?

Root cause analysis (RCA), is a structural step by step technique that focuses on finding the real cause of a problem and deals with it.

Root Cause Analysis is a procedure for ascertaining and analyzing the cause of problems, to determine how these problems can be solved or be prevented from occurring.
RCA

- **Root Cause Analysis** is a *tool* for identifying prevention strategies. It is a process that is part of the effort to build a *culture of safety* and move beyond the culture of blame.

- In **Root Cause Analysis**, basic and contributing causes are discovered in a process similar to diagnosis of disease - with the goal always in mind of preventing recurrence.
RCA

Since the situation (condition) is usually affected by many factors (physical conditions, human behavior, behavior of systems or processes), several root causes will usually be found.
RCA

1. Inter-disciplinary, involves experts from the frontline services
2. Involves those who are the most familiar with the situation
3. Continually digging deeper by asking why, why, why at each level of cause and effect.
4. A process that identifies changes that need to be made to systems.
5. A process that is as impartial as possible
The goal is to find out:

- What happened?
- Why happened?
- What can be done to prevent the problem from happening again?
Guiding principles...

• The 5 WHY’s..
Causal factors...

Are those contributors (human, equipment, processes/measures, system, environment) that if were removed the effect would either be eliminated/prevented or its severity/risk is reduced.

Quality Progress, 2004
RCA

must include:

1. Determination of human & other factors
2. Determination of related processes and systems
3. Analysis of underlying cause and effect systems through a series of *why* questions
4. Identification of risks & their potential contributions
5. Determination of potential improvement in processes or systems
It is not a single, sharply-defined methodology; there are many different tools, processes, and philosophies of RCA in existence.

However, most of these can be classified into five, very-broadly defined "schools" that are named here by their basic fields of origin: safety-based, production-based, process-based, failure-based, and systems-based.
Avoid attributing causes to....

Remember..

RC and Problem = Roots and Weeds

Ignoring the weeds
Cutting the weeds
Removing the roots
Improving the soil
Three main steps:

1. Investigation
   - Data Collection
   - Causal Factor Charting

2. Analysis
   - Root Cause Identification
   - Root Cause Prioritization

3. Recommendations and Implementation
   - Display of Results
   - Plan of Action
**Step one;**

- The most common element of RCA method variants includes asking why today’s situation (condition) occurred.

- While the answers are recorded. Then ask why for each answer, again and again. RCA attempts to identify contributing factors and all causes possible.

- This allows you to proceed further, by asking why, until the desired goal of finding the “root” causes is reached.
Next Step:

- To evaluate best method to change the root cause, so we can improve our current condition.

- That is another process, commonly known as: corrective and preventive action.

- While we are searching for root cause, we must remember to review each found cause and factor for correction as well, since this can also provide for great improvements.
GENERAL PROCESS FOR PERFORMING RCA

1. Define the problem.
2. Gather data/evidence.
3. Identify issues that contributed to the problem.
4. Find root causes.
5. Develop solution recommendations.
6. Implement the solutions.
DISADVANTAGES OF RCA

This method, presupposes a single source of the problem. In reality, the situation may be more complex.
ROOT CAUSE ANALYSIS TOOLS

1. 5 Whys
2. Barrier Analysis
3. Change Analysis
4. Causal Factor Tree Analysis
5. Failure mode and effects analysis
6. Fish-Bone Diagram or Ishikawa diagram
7. Pareto Analysis
8. Fault Tree Analysis
TOOLS USED IN RCA

9. Surveys
10. Histograms (Frequency Charts)
11. Flowcharts
12. RC Map
13. Prioritization Grid
14. RC Summary Table
15. Trend Charts
RC Investigation

• Do NOT answer:
  – What should have happened?
  – What didn’t happen?
• Answer:
  – What did happen?
  – How did it happen?
• Be OBJECTIVE!
• Avoid: should, not, error, must, inapprop., etc.
RC Analysis

• Answer “WHY it happened?”
• Compare with “what should have happened?”
• Answer “why it did Not happen?”
• Do NOT answer “how Can I fix it?”
• Think of the environment as well!
• Subjectivity is OK!
• Apply different tools
SUMMARY OF ROOT CAUSE METHODS

Occurrence

Yes

Serious or complex

Use all applicable analytical models

FOR

Obscure cause
Organizational Behavior Breakdown

Complex barriers and controls
(Procedure or Administrative Problems)

Multi-faced Problems with long causal factor chains

People Problems

Thorough analysis of both causes and corrective action

No

Use scaled down methods or informal analysis

USE

Change Analysis
(Use concept for all cases)

Barrier Analysis

Events and causal factor charting and/or MORT

Human Performance Evaluation and/or MORT

Kepner-Tregoe Problem Solving and Decision Making
RC Recommendations

• Tie action to learning
• Objective is to remove or correct RC
• Must be practical, operational and realistic
• Choose best recommendations!
• Subjectivity is OK!
• Be careful of consequences!
• Check with IO/RC occurrence
JCAHO’s RCA Worksheet 1/3

- Identifying information
- Team members
- What happened?
  - What?
  - When?
  - Where?
  - Who?
  - How?
  - Who else?
JCAHO’s RCA Worksheet 2/3

• Why did it happen?
  – What human factors contributed?
  – What process issues contributed?
  – Were there Info Mgt issues?
  – Were there environmental issues?
  – Were there leadership issues?
  – Were there any uncontrollable factors?
JCAHO’s RCA Worksheet 3/3

• Risk Reduction Strategies/Recom.
  – What strategies to prevent recurrence?
  – How will these strategies be measured?
  – When will all strategies be fully implemented?
  – Who will carry out the implementation?
  – How will the effectiveness of these strategies be monitored?
Remember....

to close the loop!

Measure—ID Opportunities---Study---Intervene---Improve
CASE STUDY-PATIENT FALL

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Adunt Professor, Oklahoma University School of Public Health
Steps in making an RCA  
*(ROOT CAUSE ANALYSIS)*

1. Flow chart of the process  
2. Formulate a team  
3. Brainstorming for causes  
4. Do affinity diagram  
5. Draw cause and effect diagram  
6. Find Root Cause by exclusion  
7. Do PARETTO Chart  
8. Find solutions  
9. Put Action Plan  
10. Prevent Failure (Control Spread Sheet)
ROOT CAUSE ANALYSIS

TITLE OF INCIDENT: Patient Fall

TYPE OF INCIDENT:

TEAM LEADER:

TEAM MEMBERS:
SOLUTIONS must:

1. Solve the causes
2. Practical
3. Satisfy all
4. Prevent Reoccurrence
BRAINSTORMING

1. Lack of Staff
2. Poor Communication
3. Lack of training
4. Bed/chair broken
5. Side rails broken
6. No enough strategies
7. Side rail not applied
8. Failure to monitor
9. No regular checking
10. No closed Monitoring
11. No restraint fixed
12. Bad quality
13. No Budget
## AFFINITY DIAGRAM

<table>
<thead>
<tr>
<th>Manpower</th>
<th>Machine</th>
<th>Method</th>
<th>Measurement</th>
<th>Materials</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of Staff</td>
<td>• Bed/Chair</td>
<td>• Side rails not</td>
<td>• No closed</td>
<td>• No Restraint</td>
<td>• No Budget</td>
</tr>
<tr>
<td></td>
<td>Broken</td>
<td>applied</td>
<td>Monitoring fixed</td>
<td>fixed</td>
<td></td>
</tr>
<tr>
<td>• Poor</td>
<td>• Side Rails</td>
<td>• Failure to</td>
<td></td>
<td>• Bad Quality</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Broken</td>
<td>monitor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lack of Training</td>
<td>• Low Quality</td>
<td>• No regular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>checking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No enough</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>stretcher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FLOW CHART

Patient Admitted

Yes

Manage

No

Close Monitoring

Need Restraint

No

Yes

Restraint

Yes

Patient Fall

No
CAUSE AND EFFECT DIAGRAM

Patient Fall

Manpower
- Lack of Staff
- Poor Communication
- Lack of Training

Machine
- Bed/Chair Broken
- Side rails broken

Method
- Low Quality
- No enough Stretcher
- No regular checking

Measurement
- No closed Monitoring

Materials
- No Restraint Fixed
- Bad Quality

Miscellaneous
- No budget
## Weighted Selection

<table>
<thead>
<tr>
<th>Items</th>
<th>Team Members</th>
<th>Total</th>
<th>%</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aysha</td>
<td>Jolly</td>
<td>Syn</td>
<td>Rose</td>
</tr>
<tr>
<td>1. Lack of Staff</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2. Lack of communication</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3. Lack of training for restraint</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4. No frequency assessment by staff</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>5. No close monitoring</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. Bed was little up</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. Bed was not locked</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Restraint was not applied</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>9. Bed was broken</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Lack of knowledge for monitoring</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
# ACTION PLAN

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RESOURCES</th>
<th>WHO</th>
<th>ACTIONS</th>
<th>TIME FRAME</th>
<th>MEASURE OF RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hire Enough Staff</td>
<td>• Budget&lt;br&gt;• Staffing plan</td>
<td>• Finance department&lt;br&gt;• DON</td>
<td>• Approving the staff by DON &amp; Administration</td>
<td>6 months</td>
<td>&gt;80% of staff are available</td>
</tr>
<tr>
<td>Close Monitoring during patient mobilization</td>
<td>Manpower</td>
<td>DON &amp; Administration</td>
<td>Approving the staffing plan</td>
<td>6 months</td>
<td>&gt;80% of staff are available</td>
</tr>
<tr>
<td>To have restraint materials</td>
<td>• Restraint material&lt;br&gt;• Budget for purchasing</td>
<td>Purchasing Department</td>
<td>Approving the restrain by Administration</td>
<td>1 month</td>
<td>Restraining materials are available</td>
</tr>
<tr>
<td>To review the restrain policy</td>
<td>• The present policy&lt;br&gt;• Computer</td>
<td>Head nurse&lt;br&gt;HDU director</td>
<td>To add how to discover that patient is liable for fall&lt;br&gt;Patient criteria for restrain</td>
<td>1 month</td>
<td>Availability and application of the policy</td>
</tr>
<tr>
<td>VARIABLES</td>
<td>STANDARD</td>
<td>WHO DISCOVERS</td>
<td>HOW TO DISCOVER</td>
<td>ACTIONS TO BE DONE</td>
<td>RESPONSIBLE PERSON</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
</tbody>
</table>
| Patient liable to fall from dialysis bed       | Patient should not fall                          | Assigned Nurse        | During close monitoring           | • Informed attending physician to write restrain order  
• Restrain the patient                      | Head Nurse, and nurse in charge                   |
| Restrain materials are not available           | Restrain materials to be available               | Head nurse            | During checking the store inventory | • To write DR to warehouse  
• To barrow from ICU                         | Head nurse                                       |
NURSING DEPARTMENT: ROOT CAUSE ANALYSIS

Units involved: Hemodialysis Unit
OVR date: 20 August 2009

Date of Meeting: 31 August 2009 at
Committee members:
1. Attending HdU Staff
2. Staff Nurse
3. Head Nurse
4. Doctor
5. Biomed
6. Quality Member
7. Quality Director

☑ Prepared by: Submitted to:
Questions? Comments?
Thank You.