

## Root Cause Analysis

Instructional presentation on root cause analysis: what it is, and why, when and how root cause analyses are conducted

(1-1½ hour presentation and practice dialogues)

# Root Cause Analysis

A systematic method used to establish

- **What** happened?
- **Why** did it happen?
- **How** can it be prevented from happening again?
- ..... but **never** 'Who is to blame?'

When an adverse event has had serious consequences for the patient

- Actual or potential
- Death or major loss of function or risk of same

= score 3

1. The adverse event is acknowledged by frontline staff; management is involved
2. Immediate actions:
  - Decisions made on patient's continued treatment
  - Physical material or data gathered
  - Internal reporting (external if necessary)
  - Inform patient (next of kin if necessary)
  - Follow-up with staff

# Stages of the analysis

Tryg Patient

1. Begin investigation of the adverse event
2. Determine the sequence of events
3. Identify contributory factors
4. Identify tentative root causes
5. Gather additional data and perform literature review
6. Discuss, determine and confirm identified root causes
7. Prepare action plan
8. Generate report and obtain approval

- Two to three team meetings of approx. 2 hours in duration
- Procedure
  - Preparation for meetings
  - Interview
  - Literature review
  - Other materials (eg photographs)
  - Report preparation

- The event is scored
  - based on professional opinion
- Management decides – possibly in consultation with hospital leadership – to begin the root cause analysis

- The matrix score is based on the severity of injury to the patient and the probability of recurrence
  - The SAC provides fixed criteria for assessing the extent and frequency of the event
- The SAC treats potential risk of injury and actual injury equally

	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

Actual injury/potential risk of injury

## Example:

- A newborn baby, delivered by caesarean section, is immediately administered an intramuscular injection of Methergine
- The baby should have received a Vitamin K injection
- The mistake is discovered immediately after the medication is administered
- The baby is transferred to the neonatal unit for observation

- Assign a score to this adverse event:
  - Actual
  - Potential

# SAC Matrix

Tryg Patient

	Potential	Actual		
	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

Actual injury/potential risk of injury

Stage 1

- Management and the patient safety officer meet to assemble the analysis team and decide who will lead the analysis
- The team must always include:
  - someone with decision making capabilities as meeting facilitator
  - frontline staff who are part of the analysis team or
  - interviews of frontline staff not included on the team
  - the patient safety officer

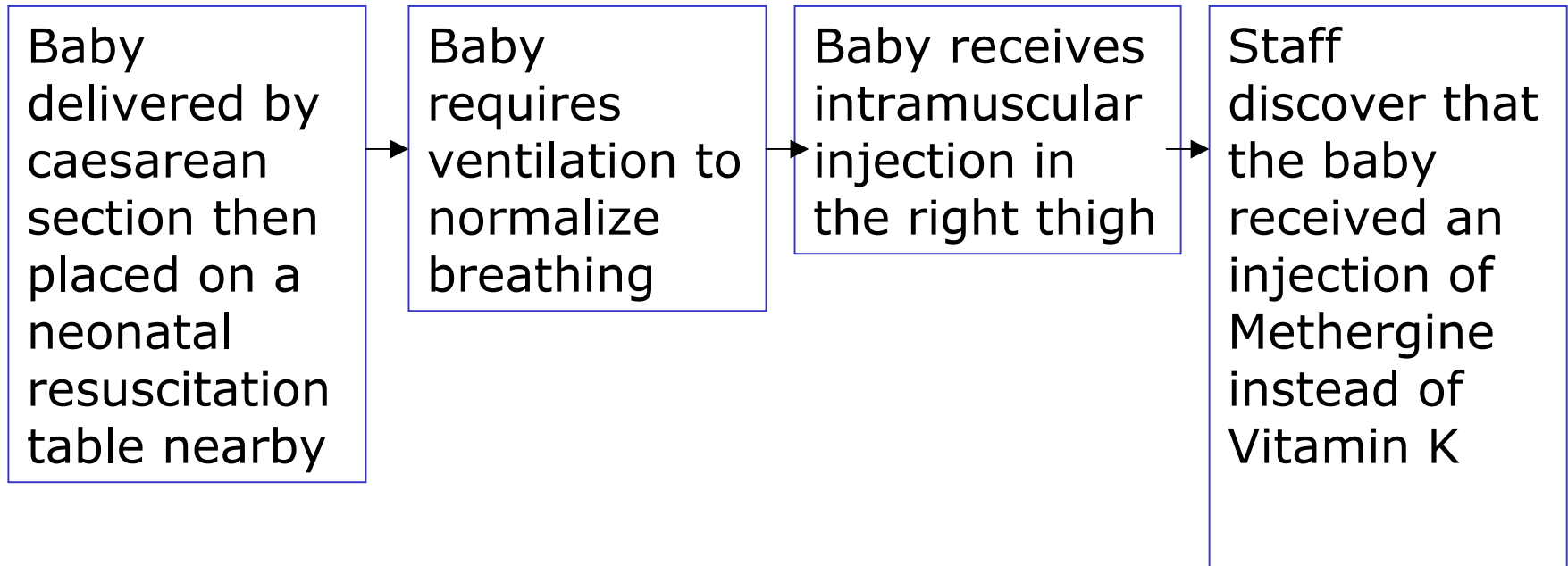
- The team meets as quickly as possible after the event
- Ensure the following
  - Meetings held on neutral ground
  - No interruptions – no mobile telephones
  - Fixed times
  - Mandatory attendance
  - Confidentiality
  - Introduce the team to the RCA method

- A precise chronological ordering of the chain of events that preceded the occurrence of an adverse event.
  - Narrative description and/or using flow chart

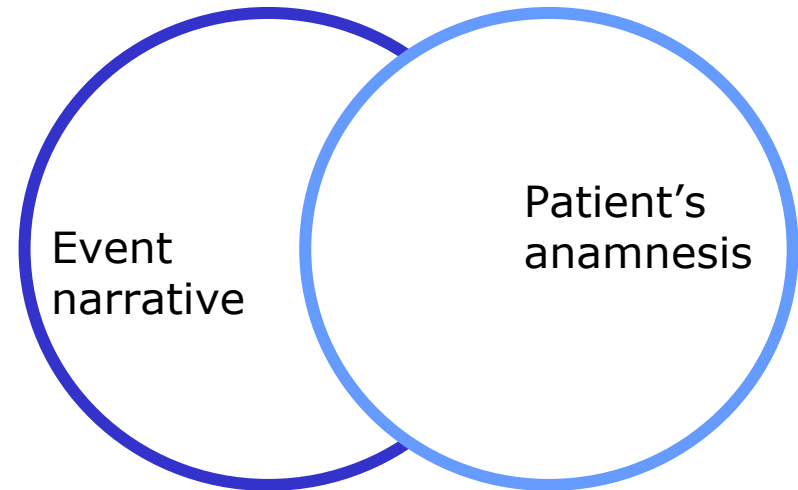
- The event sequence is determined
  - Prior to the meeting, the PSO prepares a draft event sequence (flow chart and/or text) based on the report, patient case notes and interviews with frontline personnel, if necessary

# Event sequence flow chart

Tryg Patient



- The event sequence is based on the narrative of the event, but may include elements of the patient's anamnesis



- Communication (C)
- Training (T)
- Scheduling (S)
- Environment and equipment (E)
- Rules/policies/procedures (R)
- Barriers (B)

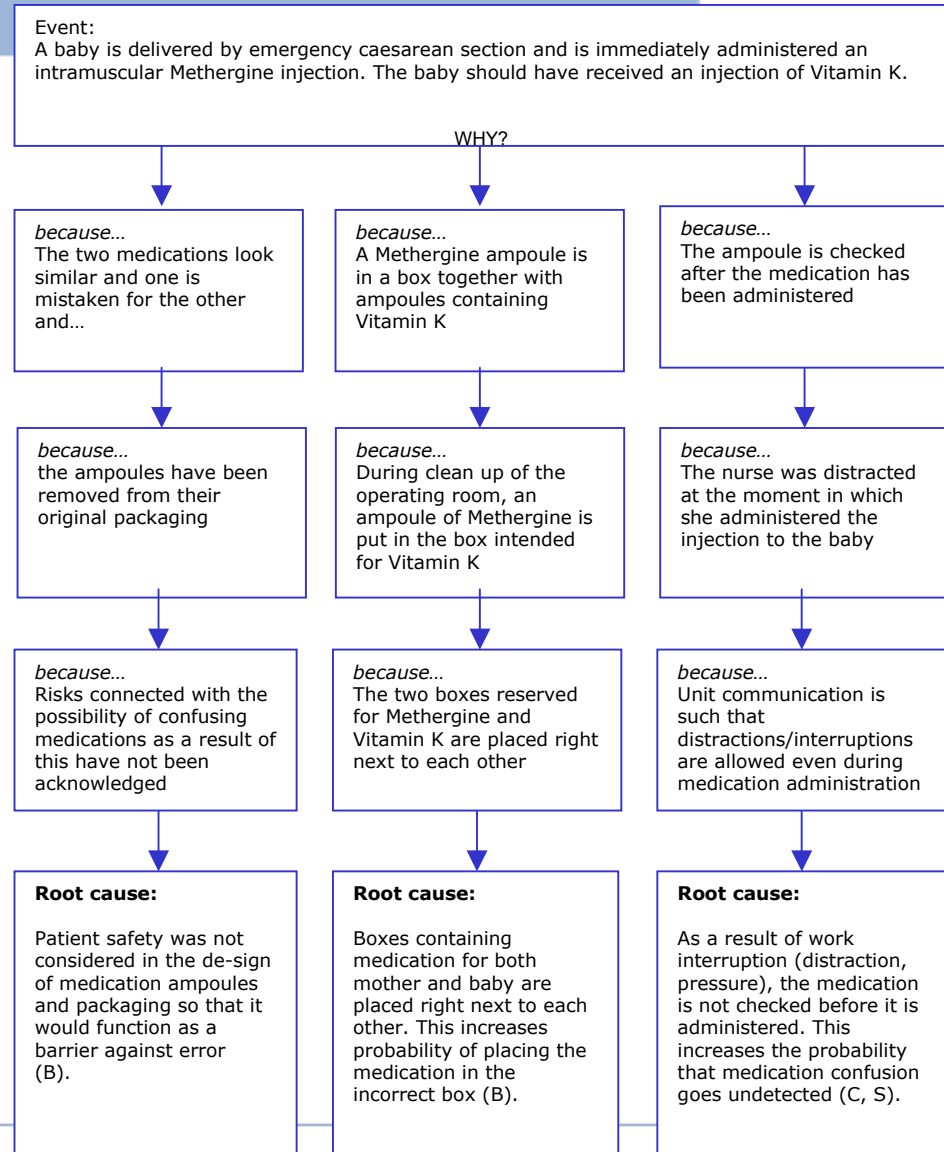
- Based on the event sequence, the team adopts a “helicopter view” of the event and asks “why” questions
  - Questions and ‘answers’ are listed on the whiteboard in the order they are mentioned
  - Statements are sorted according to issues using the yellow pages of the Handbook for Root Cause Analyses
  - Contributory factors are prioritised

- The team reviews the supplementary questions in the Handbook (pages 21-40) relating to the areas in which contributory factors are defined
  - The team asks: "why" and answers: "because..." until it no longer makes sense

- ... after which
  - The PSO analyses all statements and additional data
  - The PSO describes tentative root causes

# Cause-and-effect diagram

- The causal chain can either be described in words or using a cause-and-effect diagram
  - The Compendium



Depending on the nature of the RCA:

- Interviews
- Photographs
- Legislation/Procedures/guidelines etc
- Literature review – at minimum
  - Sentinel Event Alerts (JCAHO)
  - “Making Health Care Safer” (AHRQ)

- The team meets again and identifies root causes based on PSO's presentation
  - A root cause is the basic underlying cause to which an adverse event can be ultimately attributed
    - There are always several root causes of an adverse event

Verify the identified root causes by:

- observing the five rules of causation – and
- asking “If we eliminated this/these cause(s), could we have prevented this event?”
  - Handbook, pages 41 - 43

Causal statements must clearly show the 'cause and effect' relationship

**Incorrect: The doctor was tired**

**Correct: The doctor's ability to judge was reduced due to fatigue. This increased the probability of overlooking instructions and led to a medication error**

*Negative descriptors should not be used in root cause analyses*

**Incorrect: Incompetent nurse**

**Correct: The nurse had not been properly informed about the complications associated with a given examination, increasing the probability that she would not realise that the patient had become ill as a result of the examination**

*For every human error in the causal chain, there must be a corresponding condition cause that combined to contribute to the undesired effect*

**Incorrect:** The nurse made a mistake by taking the wrong medication from the cupboard and administering it to the patient

**Correct:** Several similar looking ampoules in the medication cupboard increased the probability of confusing two different medications

# Rule no. 4 - example

Tryg Patient

*Each procedural deviation must have a preceding cause. Identify the cause of a procedural violation, not the violation*

**Incorrect: The doctor commenced an outdated treatment for hypertension**

**Correct: The doctor had not been informed that the unit had updated its guidelines and only the old guidelines were available in the unit itself**

In this case, the team must look at the way in which new guidelines are disseminated in the unit in question

*Failure to act is only causal when there was a pre-existing duty to act. The duty to perform might arise from standards and guidelines for practice or other duties to provide patient care*

A doctor omitting prescription for eg blood culture in feverish patients is only causal if a well known guideline exists for the issue in question

# Stage 7: The action plan

- The team prepares a recommendation for a specific initiative for each root cause
  - **how** do we ensure it doesn't happen again?
- The action plan is addressed
  - **Who** does **what** and when?
- The team prepares recommendations on monitoring the action plan
- The PSO edits the report and submits it for approval by the team
  - (team meets again if necessary)

# Stage 8: The RCA report

- The root cause analysis is not part of the patient medical records; therefore:
  - Do not include personal registration numbers (CPR numbers) or other information that could identify the patient
- No names or other information that could identify the healthcare professionals involved in the event
- The root cause analysis is an internal working document
  - It is the property of hospital administration and the unit(s) involved

- Local instruction
  - Within the unit(s) involved in the event
- General instruction
  - At the hospital, eg
    - through the quality council, newsletters, etc
  - On a national basis
    - through [www.dpsd.dk](http://www.dpsd.dk)