Incident investigation in healthcare
From analysis to action: evidence based perspectives

Dr M. Farhad. Peerally
Clinical Research Fellow/
Gastroenterology SpR

SAPPHIRE
e: mfp6@le.ac.uk
tw: @FP_Farhad
What this workshop is about?

- Synthesis of the academic literature and policy on the challenges facing the practice of incident investigation (RCA) in healthcare.

- Review of safety critical industries literature (non-healthcare) on best practices surrounding incident investigations (in particular, translating analysis to improvement).

- Discuss applicability of practices from other safety critical industries in healthcare context.

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Academia

Practitioners
Declaration and conflict of interest

- MFP’s doctoral research funding is provided by the Health Foundation. The content of this talk does not represent the views of the funder and represents the interpretations of the presenter solely.

- No other conflicts of interest.
Structure

- Exercise 5 mins
- Talk 30 mins
- Coffee 10-15 mins
- Exercise 10 mins
- Talk 30 mins
Exercise 1 – 5 mins

The first word that comes to mind when you think of incident investigations in healthcare! Ideally an adjective!

Introduction
Why that particular word
Post-it note on flip chart
Let’s get our terms right

Domestic cat: Felis Catus

Felis who? I’d prefer “EL GATO” thank you!
Terms used during this presentation

- RCA = root cause analysis = incident investigations = accident investigation

- Actions = Solutions = Recommendations = Corrective actions = Risk controls
Current practice of incident investigation in the UK

Organisational accident causation model (Taylor-Adams, Vincent)
RCA – Genesis and fate in the NHS

Incident occurs & gets reported
- Anyone can report onto DATIX.
- Reporting needs to happen asap

If an SI – requires an RCA investigation
- Team of investigators gathered
- Team performs investigation & meets up intermittently to report and discuss findings

Final report
- Within 60 days
- Includes root and contributory factors, action plan
- Sent to commissioners who have 20 days to review & feedback
PART 1

Challenges facing the practice of incident investigation (RCA) in healthcare.
Case 1 – Undiagnosed trisomy 21

ROOT: Inaccurate measurement of NT

- Staff shortage
- Supervision & QA
- QA & Software licences
- Old machines
- New high end machines

- Senior Leadership structure
- International Recruitment
- Up to date training
- Self appraisal
- New viewpoint licences
- New licences
- New high end machines
A few months later…

…Same organisation

… Same department
Case 2: 40+ patients incorrectly measured by one operator

**ROOT:** “System failure” leading to inaccurate NT/CRL measurements

- Lack of leadership structure
- Lack of induction/competency assessment
- Staffing
- Trained on new machine
- Policy wording unclear/lack of references.
- Understanding of the word “supervision”
RCA - history

- V
- T
- T

1958

Toyoda & The 5 Whys

1958

NASA & MORT

1975

ASRS

Late 1990s

Nuclear Petro/Chemical

2000
The first problem with RCA is its name!

- Tools rooted in linearity
  - 5 whys
  - Timeline

What's in a name? That which we call a rose by any other name would smell as sweet.

- Ethnographic study of 10 PSIs investigation across 2 Trusts (DGH and Tertiary)  

William Shakespeare

are supposed to investigate. While most RCA tools are aimed at providing a helicopter view, health-care practitioners seem to favour tools that help them reconstruct the event in its temporal unfolding and from the fictitious perspective of being there, that follows a narrative instead of argumentative type of communication style.

(Nicolini et al. Social Science & Med 2011)

Jonas Lundberg\textsuperscript{a,}\textsuperscript{*}, Carl Rollenhagen\textsuperscript{b}, Erik Hollnagel\textsuperscript{c,1}

\textsuperscript{a} Linköpings Universitet, Department of Science and Technology, ITN, Campus Norrköping, SE-601 74 Norrköping, Sweden
\textsuperscript{b} Royal Institute of Technology, Department of Philosophy and History of Technology, SE-100 44 Stockholm, Sweden
\textsuperscript{c} Department of Computer and Information Science, Linköpings Universitet, SE-581 83 Linköping, Sweden

\textbf{ARTICLE INFO}

\textbf{ABSTRACT}

Safety Science 47 (2009) 1297–1311
Questionable quality of RCA investigations

- Sources of varying quality
  - No black box
  - Medical notes/ Rotas/ Staff interviews and statements
  - Recall affected by hindsight bias

→ Leads to missing information (Nicolini et al. JHSR&P 2011)

There were about four different sheets with different people recording his level of pain over the same time period, none of which matched up. We would have needed the log from the PCA machine, which would have told us how many times he pressed the button in order to get the analgesia. (Clinical Director)
Questionable quality of RCA investigations

• Difficulty in placing all the right people in the same room.

  the incident. There were common difficulties in forming this group. These were normally associated with diary conflicts (Vincent, Stanhope, & Crowley Murphy, 1999), but underlying this was a general sense that staff, especially clinicians, did not want to participate in the process. In most cases, resistance to participation was not open and staff resorted to what was described as “e-mail politicking” whereby staff simply ignored phone calls or automatically discarded emails related to the RCA.

• Non participation:
  • Diary conflicts
  • Lack confidence in usefulness of RCA (Nicolini et al. Social Science & Med 2011)
Political hijack

• Strict timelines

  – 45 days in the USA/ 60 days in the UK

  – “appeared, therefore, to strike a compromise between depth of data and accuracy of the investigation with whatever and whoever they could gather.” (Nicolini et al. Social Science & Medicine 2011)
Political hijack

- **Goal displacement** *(Nicolini et al. JHSR&P 2011, Peerally et al. BMJ QS 2017)*
  
  - Need for report to look good.
  
  - Disagreements edited out.
  
  - Solutions beyond remit of organisation edited out.
27. It is clear from the evidence reviewed during the course of this inquiry that the investigative processes in the health service in England remain obscure and difficult to navigate for patients and families. As a result, patients and families are excluded by the system, which must become open and learning-focused if investigations are to lead to positive changes in the system. Families and patients should, as a matter of course, be included in investigations and should feel confident that lessons will be learned as a result of clinical incidents.
Mind the gap between Analysis and Actions

- Successful risk assessment may not always lead to successful risk control

- No systematic method to formulate actions.

- About 80% of recommendations tend to be administrative (training/policy/checklists) yet solutions based on elimination of risk and design controls were 1.6 times more likely to report success. (Card et al. JHRM. 2012,)

- Training alone is no panacea. (Mills et al. 2005, 2008)
  - Analysis of aggregated RCA (Falls/ Suicide).
  - 1738 risk controls implemented.
  - Actions focusing on training were negatively correlated with improved outcomes.
Mind the gap between recommendation and implementation

- Wide variation between implementation rates (Card et al. JHRM 2012)

- 45% of recommendations were implemented.
- 73% of those implemented were at micro level.
- Lack of management continuity affects implementation and learning.
Path dependence

Beware the investigation trap.

• Inadvertent (or perhaps intentional) focus on Never Events/ SIs with external attention.

• Economy of attention for actions.

(Buchanan et al. Journal of Change Management (2015))
Tribulations facing RCA echoed in policy

Review into the quality of care and treatment provided by 14 hospital trusts in England: overview report

Professor Sir Bruce Keogh KBE

Will the NHS ever learn? Follow-up to PHSO report ‘Learning from Mistakes’ on the NHS in England

Seventh Report of Session 2016–17

BRIEFING
Learning from serious incidents in NHS acute hospitals
A review of the quality of investigation reports

June 2016
Exercise 2

Problems:

- Improving the quality of investigations
- Model based in linearity
- Political constraints
- Causes focused on active end
- “Weak” actions
- Poor implementation/ Path dependence
- Lack fo Patient (and front-line staff) involvement
PART 2

Improving actions following incident investigations in healthcare: Perspectives from other safety critical industries
Accident causation models

- The Swiss-Cheese model is one model…Amongst MANY models!
- RCA is one technique …Amongst MANY techniques!

- Systemic models
  - Rasmussen’s risk management framework and ACCIMAP (Rasmussen. Saf Sci 1997)
Rasmussen’s risk management framework

(Rasmussen. Saf Sci 1997)
Safety control structure for insulin overprescription incident (from www.systemsthinkinglab.com)
Some advantages of systemic models

- How each level interact with another accounted for.

- Macro/ meso levels feature prominently.

- Inter-organisational issues can be more easily identified.
Macro and meso level decisions

• “It often seems that managers must not be human because incident investigation reports rarely indicate that they make mistakes.” (Kletz, 2001)

• Failure to follow policy vs Why was the policy not followed?
  – Work-based constraints?
  – Unrealistic policy?
  – Normalisation of deviance?

• National context
  – Some actions are beyond the remit of individual organisations.
  – E.g. shortage of particular skills set/ Equipment design.
Investigators as Human factors expert

- Human factors air accident investigator (AAIB)
  - Remit:
    
    "managing specialists throughout an investigation, interviewing witnesses, writing detailed reports, identifying safety issues, drafting safety recommendations and giving evidence in court."

  - Requirements:
    
    - Masters in human factors
    - Extensive experience analysing incident in complex socio-tech systems
    - Accredited by HF organisation
    - One day assessment centre
Involve your frontline staff in the investigations/ action planning

Example: Columbia Accident Investigation Board Investigation vs Initial NASA investigation.

- Actors involved in incidents are silent in the final report.
- Able to detect safety deterioration, drift into failure during “incubation periods”.
- Collect data from staff not involved in the incident but involved in the particular system under investigation.

(Dien. Safety Sci 2012)
BUT!

- Not all hazards can be eliminated in healthcare.
- Remember even administrative controls, when delivered appropriately, with a sound theory of change have value (Liberati et al. ISQUA 2017).
Watch out for similar (types of) incidents

- Value of aggregated (trend) analyses.
- Reoccurrences of similar events > Search for innovative actions/ Search for actions beyond remit of department/ organisation.
Be weary of “Risk migration”

(Kirwan. Safety Science 2011; Buchanan et al. JCM 2015)
Understand your causes better through standardised taxonomies - HFACS
Better (and more purposeful) action tracking

- **Use of software** *(Vastveit et al. 2016)*
  - Integrate with other aspects of safety management system of organisation (Audits, QI projects, Risk register)

- **Monitor for effectiveness**
  - Early warnings, weak signals and near misses *(Macrae BMJ QS 2014)*
  - Safety management system based on risk-based prioritisation of incidents as opposed to outcome-based prioritisation
Demonstrate the link between the action and the cause clearly (Cedergren. Accident analysis & prevention. 2013)

- Workforce fluidity → Organisational forgetting (Wrigstad et al.)

- Link between action and cause needs to be clear in report and needs to be communicated to implementors.
Propagate the learning from the incident

- Do not rely on emails/newsletters
- Simulation/VR technology.
- Video-based reflections.
- Engage with comms team.
- Incident database = learning repository accessible to the wider organisation. (Ramanujam et al. Saf Sci. 2011)
- National bodies.
Summary

- Identify the right causes through the right model.
- Identify the right solutions for the right causes.
- Implement the right solutions.
- Monitor the right solutions (in case they are the wrong solutions!).
- Tell everyone concerned about the incident, the right causes, the right (and wrong) solutions.
Many thanks

• Acknowledgements:
  Prof Mary Dixon-Woods
  Prof Sue Carr
  Prof Justin Waring
  Prof Graham Martin

• Funder:

[The Health Foundation logo]
Select references

Problems with RCA:

Systemic incident investigation models:

WYLFIWYF:

HFACS:

Application of Systemic models in healthcare: