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Institute *for* Healthcare Improvement

BMJ

Resilient healthcare: How to improve quality using insights from resilient systems and Safety II

Janet Anderson, King's College London; Al Ross, University of Glasgow

Welcome

Dr Janet Anderson

- Director, Centre for Applied Resilience in Healthcare (CARe)
- Adjunct Professor University of Stavanger, Norway
- Member of the SHARE Centre for Resilience in Healthcare, University of Stavanger, Norway
- Clinical Human Factors Group Ambassador
- Expert Human Factors adviser, Healthcare Safety Investigation Branch

Dr Al Ross

- Lecturer in Behavioural Science
- Advisor to NHS Education for Scotland
- National Advisory Board on Human Factors in Dentistry (NABHF)
- Co- Chair Human Factors Special Interest Group [SIG] of the Association for Simulated Practice in Healthcare [ASPiH]
- Dental Reference Group, Scottish Patient Safety Programme

Aims

- Introduce the principles of resilient healthcare systems and safety II

- Explore the potential of resilience for improving the quality and safety of care

- Inform about tools and methods available to assist in implementing resilience in healthcare

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Our scope

- Motivation – concern with improving quality and safety and the limitations of many QI tools

- Focus on the organisation, teams, units

- This is organisational system theory – not coping skills, burnout or resilience training

- We reject the idea that resilience is a way to get more out of people or get them to do more in an under resourced or badly designed service

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RESILIENCE ENGINEERING ASSOCIATION

the official home of Resilience Engineering
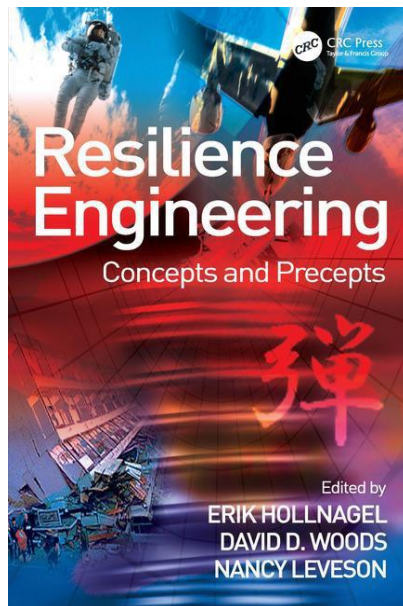
- Many organizations today have begun to recognize the limits of *compliance*—a model of success embodied in plans, procedures, quality indicators, risk management and automation.

- This model cannot effectively accommodate variability, disturbances, uncertainties or novelty, which is increasingly obvious in an interconnected and turbulent world.

Resilient Health Care

The Resilient Health Care Net (RHCN) is a non-commercial collaboration of an international group of researchers and practitioners with the aim to **apply Resilience Engineering principles in health care.**

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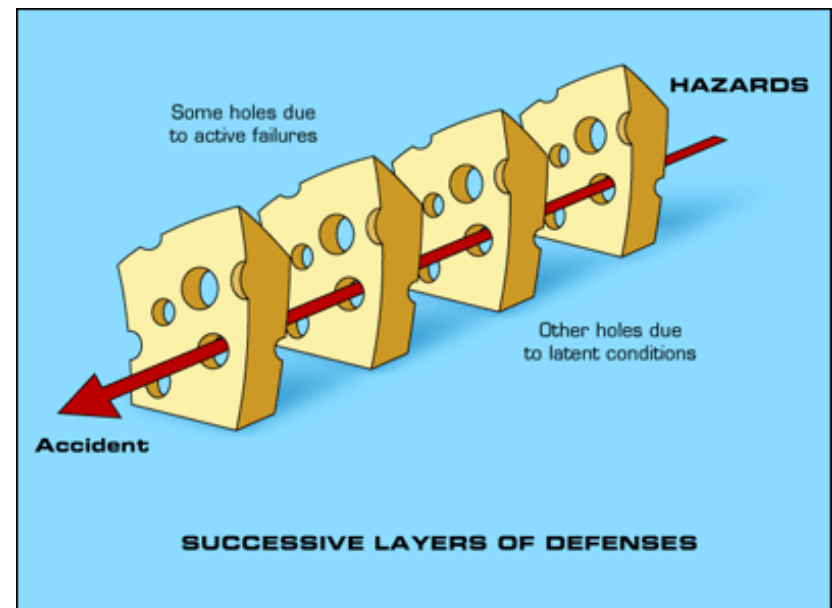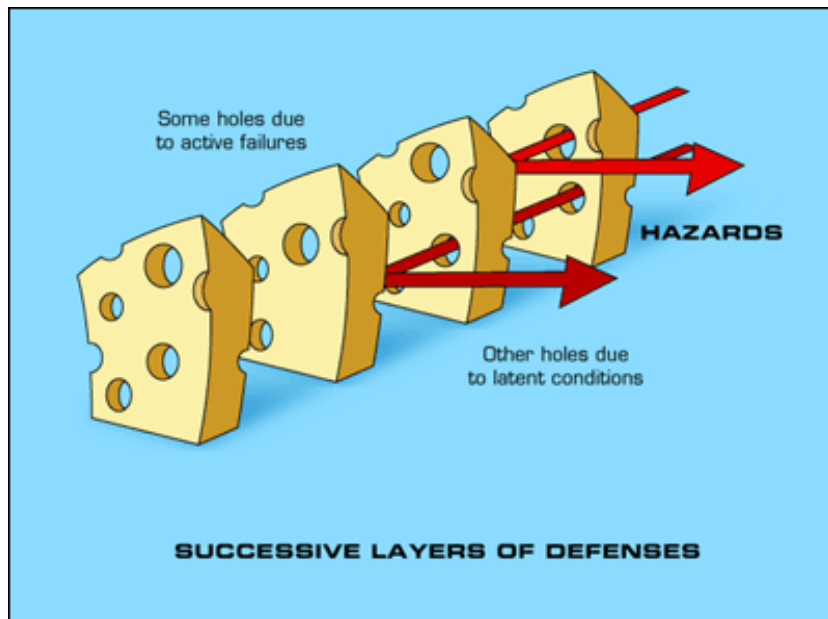KING'S College LONDON

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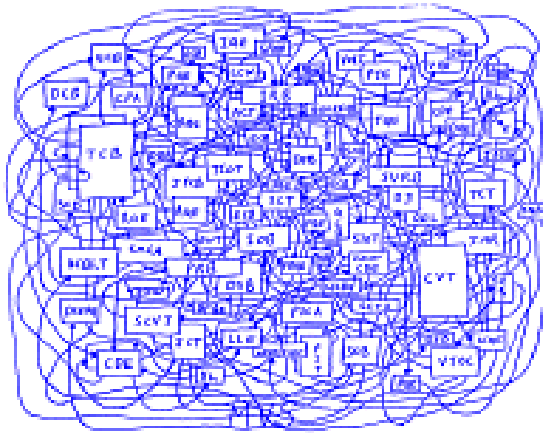# Traditional approach to safety - Safety I

- Reactive – aims to prevent future problems
- Humans are seen as unreliable – focus on human error
  - Errors are categorised and counted – error taxonomies, estimation of error rates, studies on human limits
- Safety is defined as absence of adverse incidents
- Parallels with medical models of illness – health as absence of illness, search for causes, removing cause results in health

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Swiss cheese model

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Now widely accepted clinical work is complex; not easily explained in linear terms

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Problems with Safety I

- Dissatisfaction with existing models and methods for improving safety – reactive, slow progress

- Limitations of root cause analysis, incident reporting – difficulty of establishing causes, same problems often recur, highly targeted solutions with wrong focus, time consuming

Highlights

- Learning from patient safety incidents is difficult.
- Lack of organisational support, high workload ineffective leadership hinders learning.
- Facilitating factors were participatory interactions and strong safety leadership.
- Process measures of meeting effectiveness were developed.
- Process measures highlighted important deficits in analytic effectiveness.

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How do we know we are safe?

- Safety is not the absence of error

- If we rely on error rates to indicate safety we can only know how safe we were in the past

- Clinicians' ability to adapt to pressures and challenges **creates safety**

- We need to strengthen their ability to do this – strengthen adaptive capacity

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Safety II – Resilient systems

- Proactive systems approach aimed at anticipating and preventing problems

- Based on the reality of clinical work –
    - Often messy, chaotic
    - Determined by social interaction and negotiation
    - Relies on co-ordination and articulation across groups, physical locations, time

- Adaptive capacity is the key to creating safe systems

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Organisational resilience

- Resilience is "the intrinsic ability of a system or an organisation to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions"
  (Hollnagel et al Resilient health Care Vol 1; 2011, p. xxv)

- Four potentials – anticipating, monitoring, responding and learning

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What is resilience? (Hollnagel)

Four attributes of resilient organisations -

1. **Respond** to regular and irregular conditions in an effective flexible manner
2. **Learn** from past events, both positive and negative, and understand correctly what happened and why
3. **Anticipate** long-term threats and opportunities
4. **Monitor** short-term developments and threats; revise risk models.

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Resilience engineering

- Key concepts
  - Work as imagined is different to work as done
  - Ability to adapt and work flexibly is what creates safety
  - Safety and harm emerge from the complexity
  - We need to learn from what goes right as well as wrong

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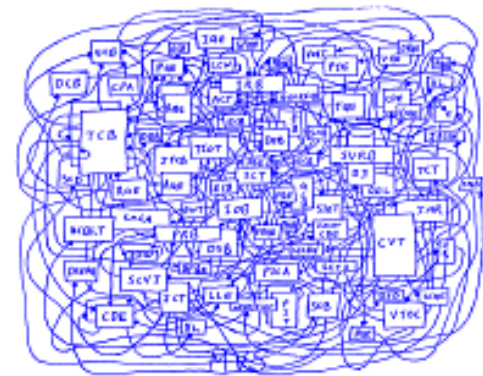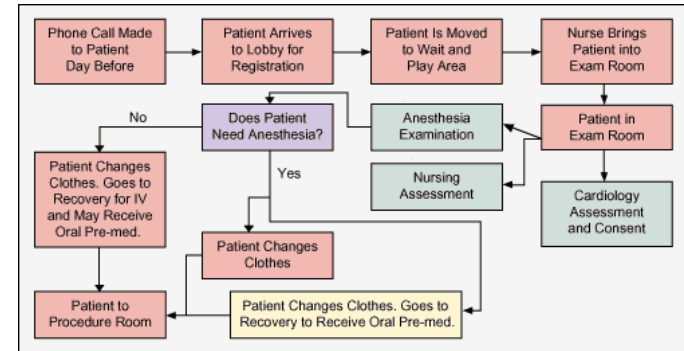
Compelling arguments

- Resonates with experience of clinical staff
  - Limitations of incident reporting
  - Focus on procedures and policies sometimes not helpful
  - Adaptation is at the heart of clinical work
  - Goal trade offs – efficiency, patient experience, effectiveness, safety

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BUT…….

- What does this mean in practice for Quality Improvement?

- How can resilience and adaptive capacity be studied in the messy clinical environment?

- Potentially powerful ideas in search of practical application……?

- Methodological guidance available but not easily translated to practice

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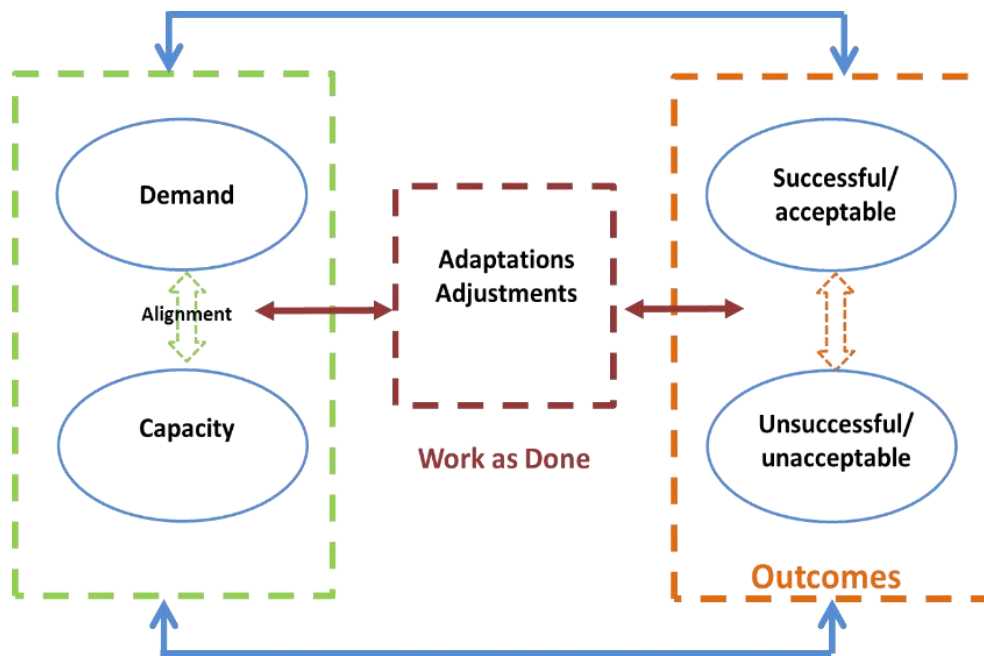
Working model

Pilot and Feasibility Studies

STUDY PROTOCOL — Open Access

Implementing resilience engineering for healthcare quality improvement using the CARE model: a feasibility study protocol

J. E. Anderson[1*], A. J. Ross[2], J. Back[1], M. Duncan[1], P. Snell[3], K. Walsh[4] and P. Jaye[5]

Three short case studies

1. Older Person's Unit (OPU) in Hospital

2. Emergency Department

3. Dental Practice

- All based on in depth empirical work

- Aim was to identify opportunities for improvement

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1. OPU - discharge

- Co-ordination of discharge tasks across staff, agencies, families and carers is complex and time consuming

- Misalignments between demand for services post discharge and availability

- Variability due to patient factors – carers, preferences, home environment
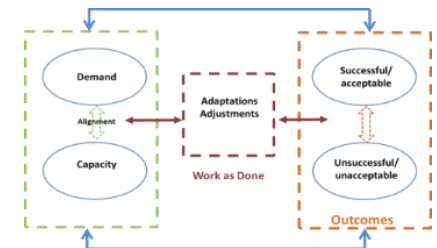
1. OPU - discharge

- Goal trade offs are common – discharge may be speeded up because of infection, weekend approaching, or delayed because of safety concerns

- Monitoring progress towards discharge is difficult because there is no shared artefact

- Need for anticipatory monitoring of discharge actions

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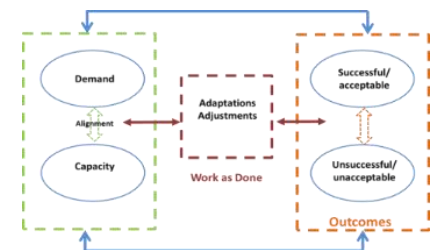
Potential interventions

Shared artefact/documentation to allow collaborative monitoring of progress towards discharge

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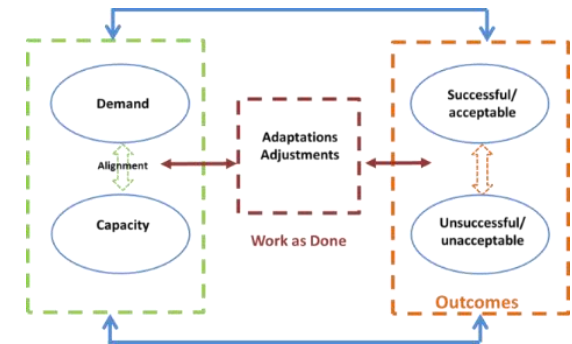
2. Emergency Department

- Patient flow is unpredictable and difficult to manage
- Monitoring involves
  - Walk around
  - Board round
  - Sitrep meetings – 2 hourly
- Multiple adaptations – flex staff, space, processes
- Difficult to judge when to escalate

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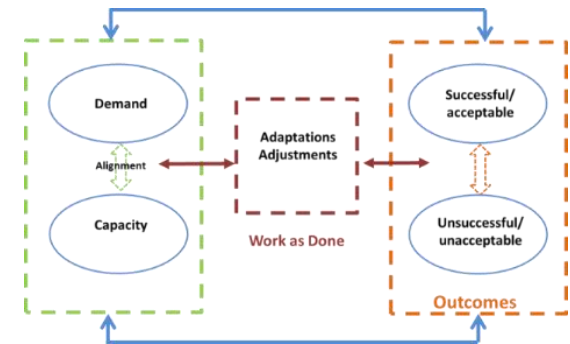
2. ED - Implications

- Opportunities for improvement
    - Making patient flow more transparent – understanding repertoire of adjustments and adaptations and under what circumstances they are successful
    - Improved monitoring of escalation actions – better targeting of actions taken during Sit.rep. meeting
    - Improved learning from what goes right – reports of previous day to include reflection on what worked and what didn't

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3. Fluoride Varnish QI Project

Childsmile in
General Dental
Practice

SIGN 138 · Dental interventions to prevent caries in children
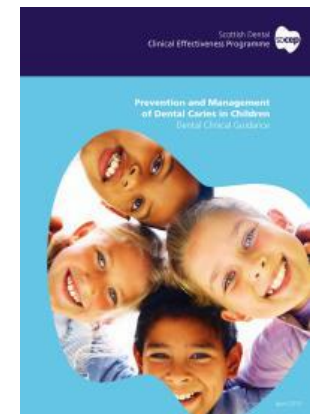
A national clinical guideline | March 2014
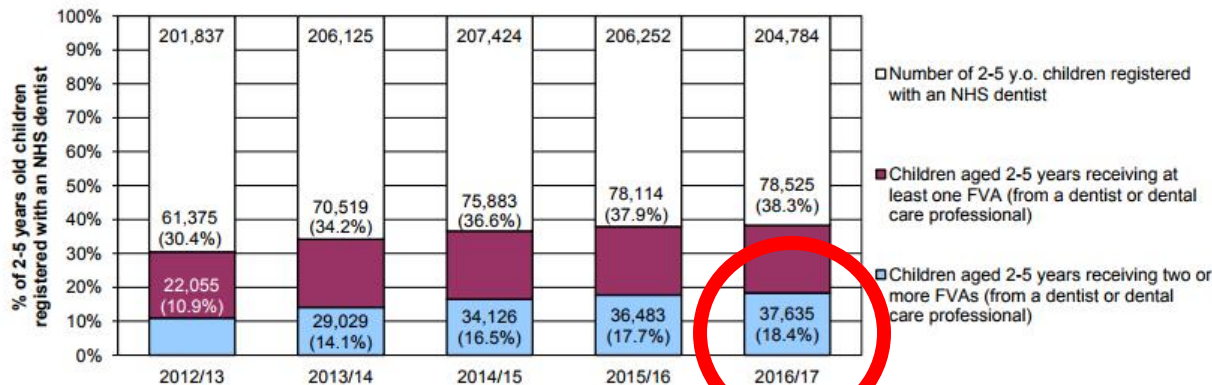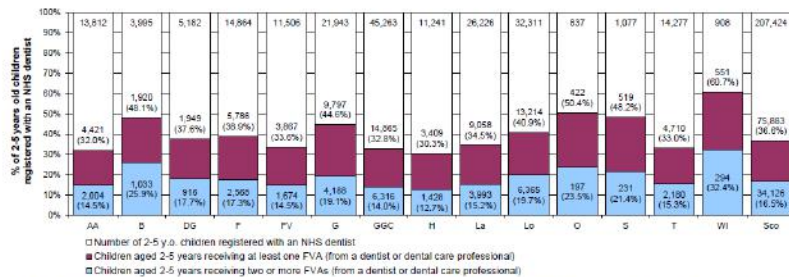

Figure 21: Proportion of 2-5 year old children registered with an NHS dentist receiving at least one FVA or two or more FVAs – Scotland, 2012/13-2016/17 financial year

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• Issue: fluoride varnish application in practice is variable

• **Simple question: why?**
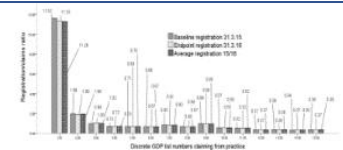 • **Draw from multiple data sources**

Figure 32: Proportion of 2-5 year old children registered with an NHS dentist receiving at least one FVA or two or more FVAs – Scotland, by NHS Board, 2014/2015 financial year

FVA – fluoride varnish application.

• **In 15/16 just 18% of 2-5 yr olds received the recommended twice yearly application in practice**

Childsmile evaluation monitoring data

GDP surveys (n= 1,090; n= 709)

Workshop (n= 56)

Interviews (n=43)

CHILDSMILE

The Scottish Government
Riaghaltas na h-Alba

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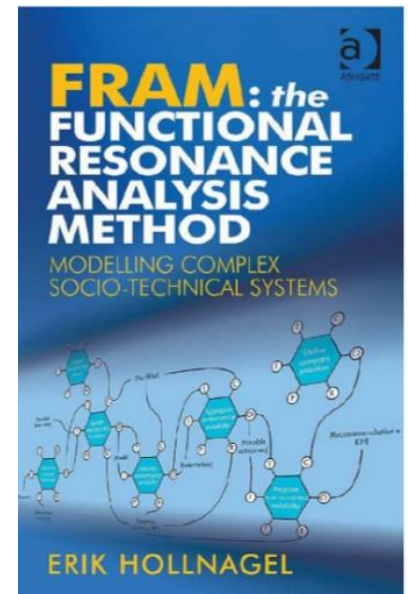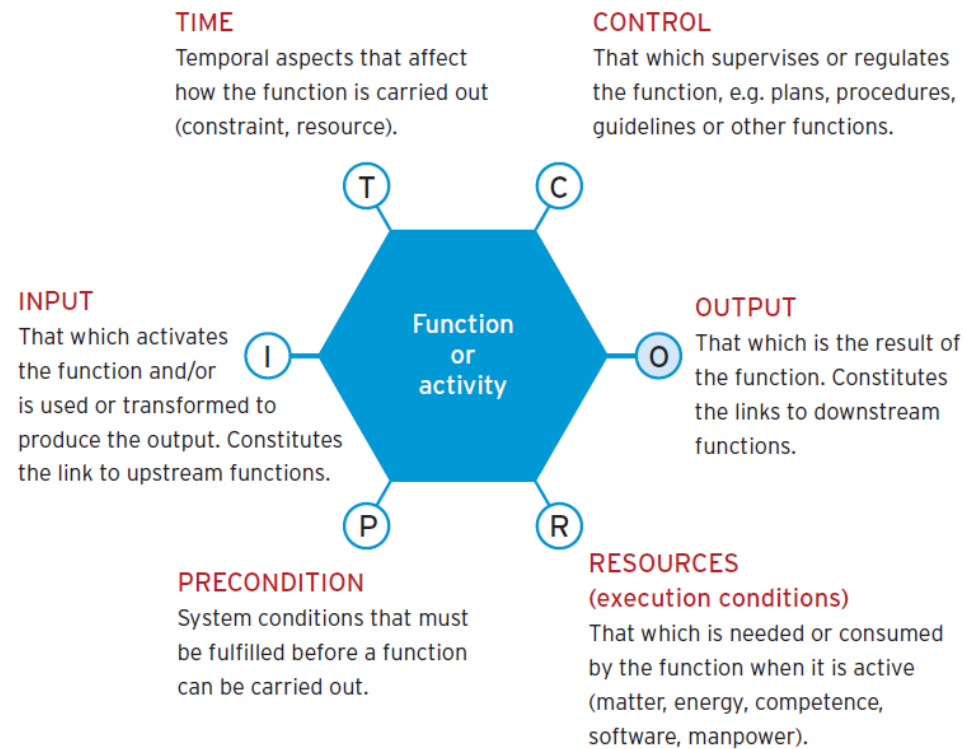
3. FRAM (Hollangel)

- Resilience Engineering based
- Model of how something happens or how something works
- Based on activities or functions and how they fit together
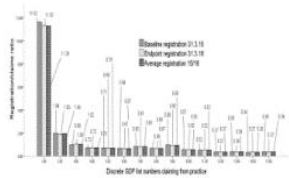- Growing health care applications..

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TIME
Temporal aspects that affect how the function is carried out (constraint, resource).

CONTROL
That which supervises or regulates the function, e.g. plans, procedures, guidelines or other functions.

INPUT
That which activates the function and/or is used or transformed to produce the output. Constitutes the link to upstream functions.

OUTPUT
That which is the result of the function. Constitutes the links to downstream functions.

Function or activity

T
C
I
O
P
R

PRECONDITION
System conditions that must be fulfilled before a function can be carried out.

RESOURCES
(execution conditions)
That which is needed or consumed by the function when it is active (matter, energy, competence, software, manpower).

Data synthesis

Childsmile in General Dental Practice

Routine monitoring data

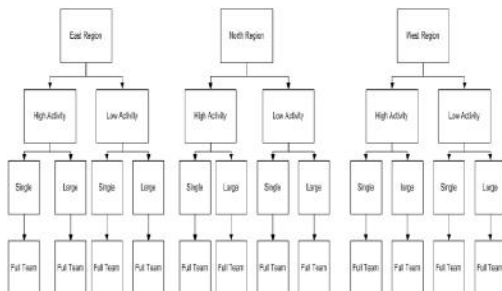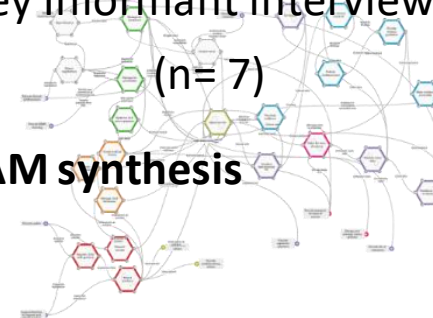World café workshop (n= 56)

Stratified practitioner interviews

(n= 36)

Questionnaire studies

(n= 1,090; n= 709)

Key Informant interviews

(n= 7)

FRAM synthesis

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Nobody said it was easy!
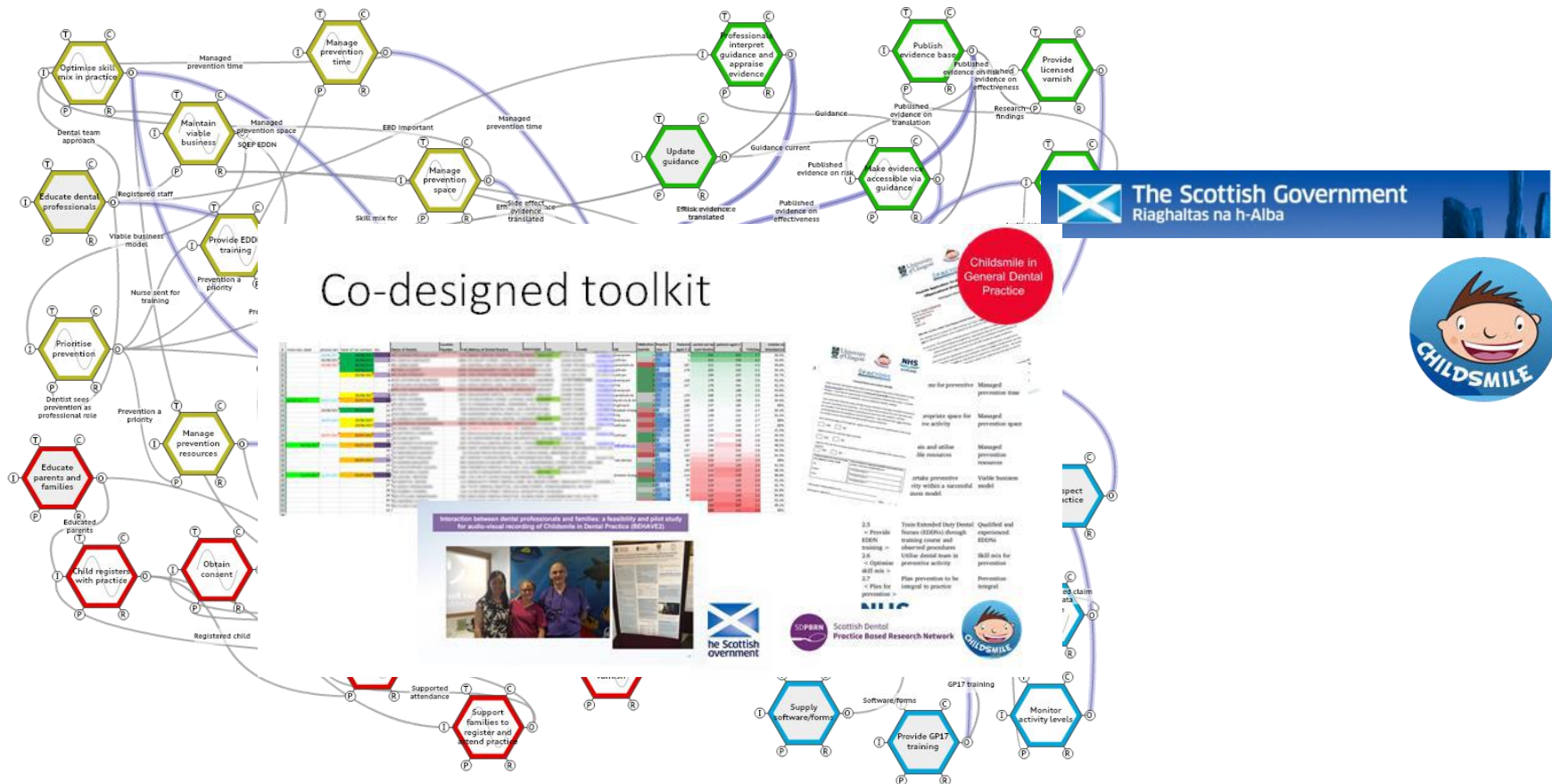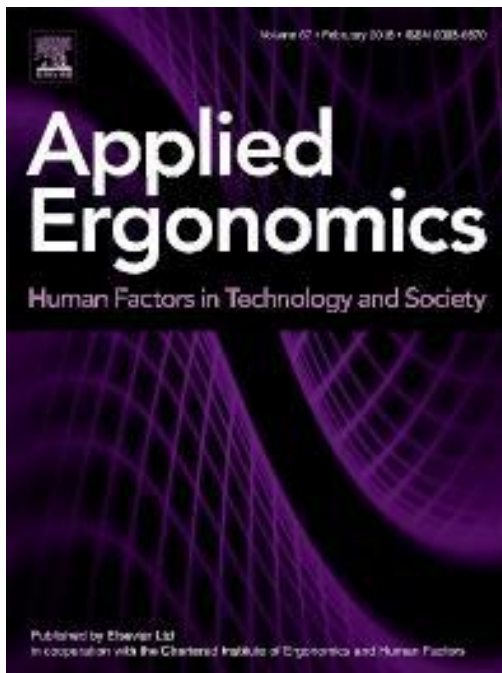
Co-designed toolkit

The Scottish Government
Riaghaltas na h-Alba

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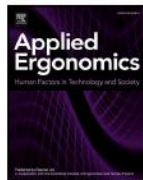
Publication

A systems approach using the functional resonance analysis method to support fluoride varnish application for children attending general dental practice

Al Ross[a,*], Andrea Sherriff[a], Jamie Kidd[a], Wendy Gnich[a], Janet Anderson[b], Leigh Deas[c], Lorna Macpherson[a]

[a] Glasgow Dental School, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, 378 Sauchiehall Street, Glasgow, G2 3JZ, UK
[b] Florence Nightingale Faculty of Nursing and Midwifery, King's College London, James Clerk Maxwell Building, 57 Waterloo Road, London SE1 8WA, UK
[c] Public Dental Services, NHS Lanarkshire, Hospital Street, Coatbridge, ML5 4DN, UK

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RHC-based toolkit

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TABLE EXERCISE [15 MINUTES]

- Aim: to look at care from a Resilient Health Care perspective

- **Read the one-page description** of an episode of care, investigation and actions taken

- **Discuss the events** at your tables We have provided questions

  - We will circulate round the room

- Then we will have **open discussion**

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Questions or comments?

Takeaways…..

- Establish a clear focus for an RH project
  - Reduce adverse events, training, introduce new systems, improve patient flow etc.
- Focus on activity and challenges not non compliance
- Focus on how things work (both well and badly)
- Consider how to support work as done
  - Allow flexibility within safe limits
  - Design to make it easy for people; reduce unwanted variation
- Safety II incorporates and extends Safety I

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Some resources…
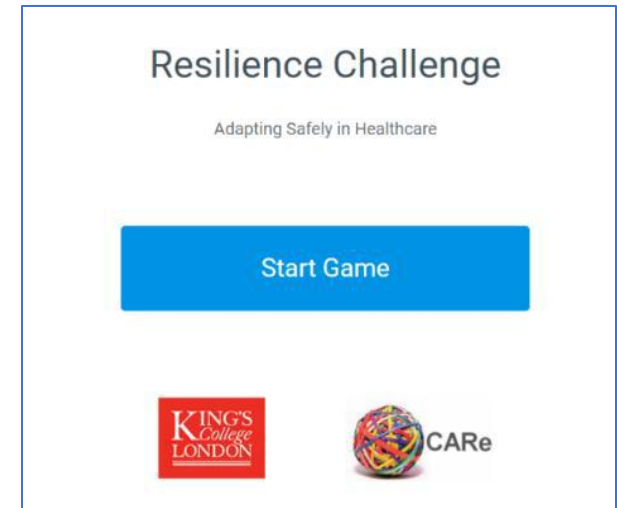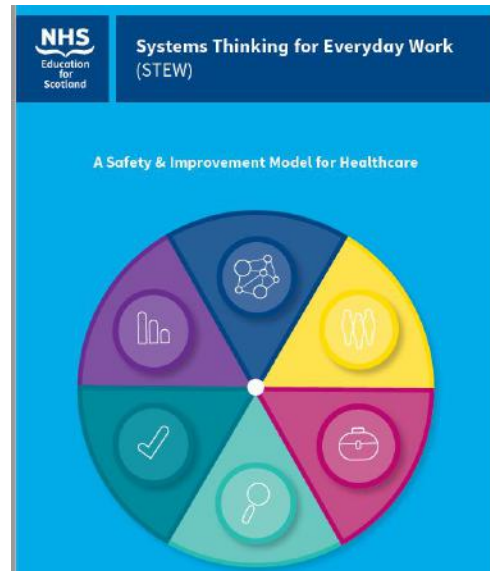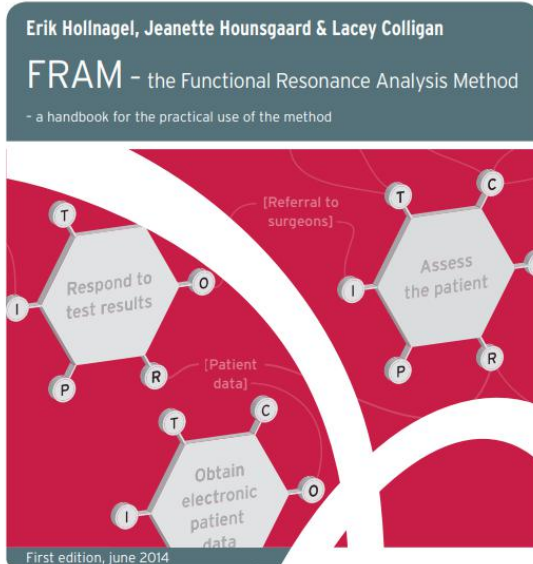
McNab D, McKay J, Shorrock S, Luty S, Bowie P. The development and application of 'systems thinking' principles to improve everyday work in healthcare. SKIRC Technical Report: NHS Education for Scotland, Edinburgh, March 2019.

Conclusions..

- Resilient healthcare is still developing but has potential to -
    - Deepen our understanding of **clinical work as done and why it is difficult**
    - Improve intervention design
    - Increase sustainability of interventions
    - Increase staff QI engagement

Please get in touch

Please fill in the further contact sheet if you are interested

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alastair.ross@gla.ac.uk

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Resilient healthcare: How to improve quality using insights from resilient systems and Safety II

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INSPIRING PEOPLE

Tapadh leibh!!

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