Delivering Resilient Health Care: The 2018 Australian Masterclass

Macquarie Graduate School of Management (MGSM)
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Case study “A”: FRAM approach to Sepsis
Case study “A”: a review

- Functional Analysis Resonance Method (FRAM), enables systems to examine process and socio-contextual issues in treatment and management pathways.

- For sepsis, FRAM highlights the potentially unrealised gap between ‘work as imagined’ and ‘work as done’.

BACTERIA OR VIRUS LEAKS FROM BLOOD VESSELS INTO SURROUNDING TISSUE

BACTERIA IS TAKEN TO MAJOR ORGANS AND IMMUNE SYSTEM GOES INTO OVERDRIVE CAUSING WHOLE BODY INFLAMMATION, SEPTIC SHOCK AND MULTIPLE ORGAN FAILURE

LOCAL INFECTION DEVELOPS

BACTERIA FROM INFECTION GETS INTO BLOOD STREAM TRIGGERING BODY’S IMMUNE SYSTEM

RED BLOOD CELLS

BLOOD VESSEL
Case study “B”: assessment of risk identification tools

Project to assess the performance of three risk identification tools to assess sepsis cases during hospital admissions

Tools assessed:
Quick Sequential (Sepsis-related) Organ Failure Assessment (qSOFA) score; the Adult Sepsis Pathway; and the Modified St. John Rule

[Li et al. 2018. Evaluation and optimisation of risk identification tools for the early detection of sepsis in adult inpatients]
Case study “B”: assessment of risk identification tools

- First study to evaluate the Adult Sepsis Pathway and the Modified St. John Rule in NSW, comparing performance between these two tools and qSOFA score

- More than 130,000 patient admissions from 34 healthcare facilities across metropolitan, rural and regional localities to evaluate tools and explore improved alternatives

[Li et al. 2018. Evaluation and optimisation of risk identification tools for the early detection of sepsis in adult inpatients]
Case study “B”: assessment of risk identification tools

• Alert data extracted from the Cerner electronic Medical Record (eMR) system

• Three separate algorithms were developed to generate sepsis alerts based on the three risk identification tools

• Algorithms then applied to the data from two study arms (Blacktown Hospital and rural and regional NSW LHD facilities) for analyses

[Li et al. 2018. Evaluation and optimisation of risk identification tools for the early detection of sepsis in adult inpatients]
Overall, the Adult Sepsis Pathway and the Modified St. John Rule performed better when applied to the data from Blacktown Hospital than from the rural and regional NSW LHDs while the reverse was true for the qSOFA score

[Li et al. 2018. Evaluation and optimisation of risk identification tools for the early detection of sepsis in adult inpatients]
A Framework for Better Care: Useful Applications and Approaches

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The Better Care Framework

Aim to get here!

Reliable space

Disturbances (variation) controllable

In the reliable space ...

We can use methods or interventions based on **linear systems thinking**:

- variables can be **controlled**
- results can be **generalised**
- local problems can be addressed independently of the larger system

- methods might include: **RCTs and other experimental methods**, etc
- tools might include: **standardisation, checklists, RCAs, FMEA, Six sigma**, etc
Disturbances (variation) well modelled

Disturbances (variation) controllable

Robust space

In the robust space ...

We can still use methods or interventions based on linear systems thinking, BUT:

* variables may be difficult to control
* results may not be generalisable
* there is likely to be interaction between local context and the larger system
  * methods might include: quasi-experimental methods, qualitative and mixed methods, etc
  * tools might include: Lean, M&Ms, simulation, teamwork/CRM tools, etc
‘Protective’ safety

Disturbances (variation) well modelled

Disturbances (variation) controllable

ROBUST

RELIABLE

PROTECTIVE SAFETY

Disturbances (variation) NOT well modelled

Disturbances (variation) well modelled

Disturbances (variation) controllable

‘Productive’ safety

New ways of thinking …

Tools and approaches for the Resilient space

We **can no longer** use methods or interventions based on linear systems thinking:
* they won’t work
* they will further increase system complexity

We need to find ways to deal with the unexpected:
* embrace **diversity**
* understand **work-as-done**
* learn from **what goes right**
* methods need to include **qualitative** components
* tools might include: **Resilience Assessment Grid (RAG)**, **Functional Resonance Analysis Method (FRAM)**, **System Modelling**, and so on
The system is also dynamic

It changes over time:

* solving a problem does **not** mean it is solved for good
* the intervention might be effective, but we **won’t** necessarily see results (almost) immediately
* multiple interventions **cannot** be applied simultaneously, yet assessed individually
* once we have planned an intervention, we **cannot** necessarily apply the intervention exactly as planned
* consider **dynamic methods**, such as **system modelling**
Large system/organisation level

HIV Diffusion and Syringe Usage

Number of users (by HIV status)

Jan 1, 2010

Distribution of Experience (by HIV status)

0 2 4

Experience (Infected) Experience (Susceptible)

Infected users Susceptible users

0 2 4

Experience (Infected) Experience (Susceptible)
Large system/organisation level
But system is also dynamic:

Department level
Department level
But system is also dynamic:

Functional Resonance Analysis Method (FRAM)...more on this later!
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