Townsville Hospital
and Health Service

Safe Care on the Edge of Chaos

Hong Kong Hospital Authority
Convention 7 May 2014

Queensland Government

Current State

- We know more about what goes wrong than we do about what goes right.
- In my health service we have around 300,000 episodes of care (combining outpatient, inpatient and emergency care).
- We do 20-30 RCAs per annum.
- We know an awful lot about 1 in 10,000 cases.
- We know very little about how problems were avoided in other cases.

The Frustration

- After implementing:
  - **Medical Emergency Teams** (MET) / **Modified Early Warning Scores** (MEWS)
  - **Communications skills training**
  - HEAPS (**Human Error and Patient Safety**) Training
  - **Clinician leadership** programmes
  - **Clinical Governance** reporting processes, including Variable Life Adjusted Display (**VLAD**)
  - **Continuing Professional Development** down to interns
  - Clinical Incident Management including **Root Cause Analysis**
  - **Clinical Reasoning** training including Biases and Heuristics
  - We even tried Organisational **Restructuring**… several times

And Yet…

- We still manage to have things go wrong

Safety in Patient Care

"After decades of improving the health care system, patients still receive care that is highly variable, frequently inappropriate, and too often, unsafe."[1]

1. Runciman WB, Hunt TD, Hannaford NA, Hibbert PD, Westbrook JI, Coiera EW, Day RO, Hindmarsh DM, McGlynn EA, Braithwaite J: CareTrack: assessing the appropriateness of health care delivery in Australia. *Medical Journal of Australia* 2012, 197**:**549.

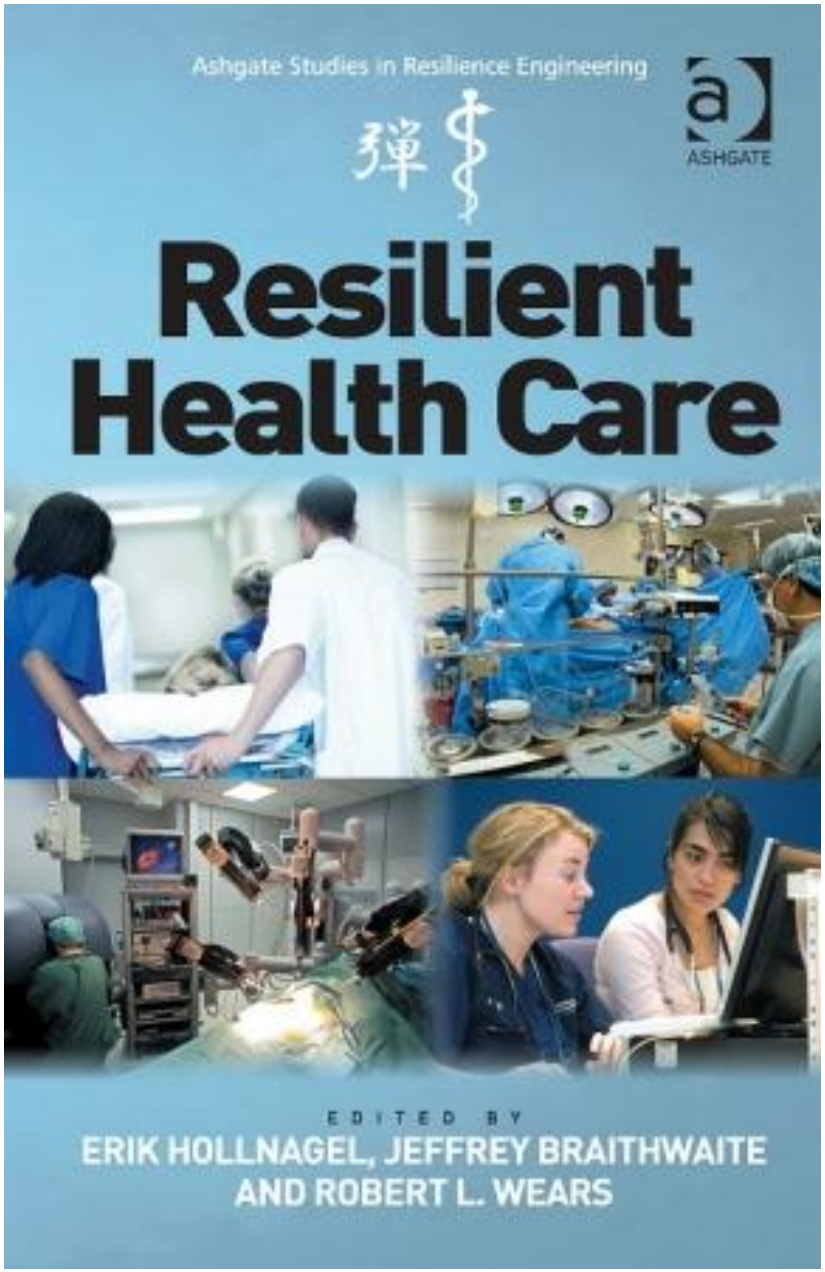
The Statistics

- 1 in 10 admissions suffer adverse events (conservative)
- 50% of those are potentially preventable (conservative)
- 5% of those injured result in permanent harm or death (conservative)
- So what is your adverse event budget?

Response

- Evolution of new model
  - Looking at what works
  - Identifying what hasn't worked
  - Integrating such evidence as is available

- Perhaps we need a new theoretical construct…


Ashgate Studies in Resilience Engineering
ASHGATE
Resilient Health Care
EDITED BY
ERIK HOLLNAGEL, JEFFREY BRAITHWAITE AND ROBERT L. WEARS

Resilient Health Care

- “resilience is the intrinsic ability of a system to adjust its functioning prior to, during or following changes/ disturbances in order to sustain required operations under expected or unexpected conditions”

Reference: Hollnagel, Dekker, Nemeth and Fujita. Resilient Health Care. Pxxv.

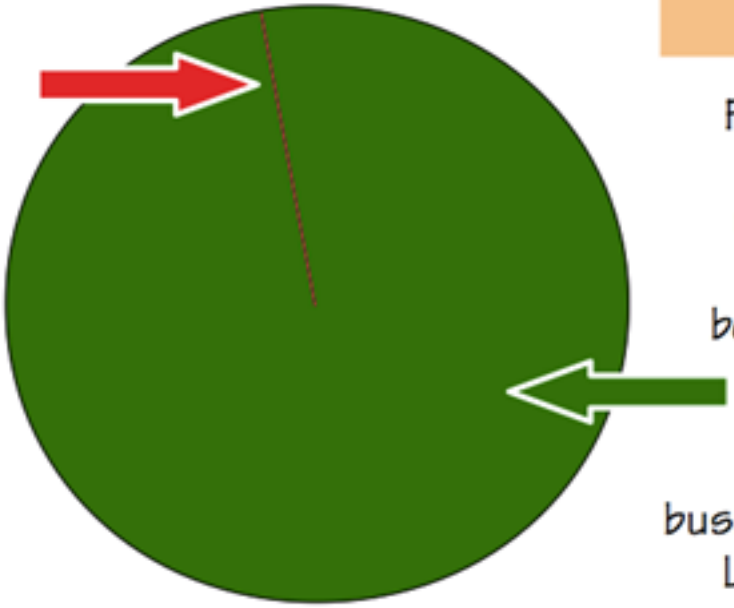
Safety I and Safety II thinking

Safety-I = Reduced number of adverse events.

Focus is on what goes wrong. Look for failures and malfunctions. Try to eliminate causes and improve barriers.

Safety and core business compete for resources. Learning only uses a fraction of the data available

10^{-4} := 1 failure in 10.000 events



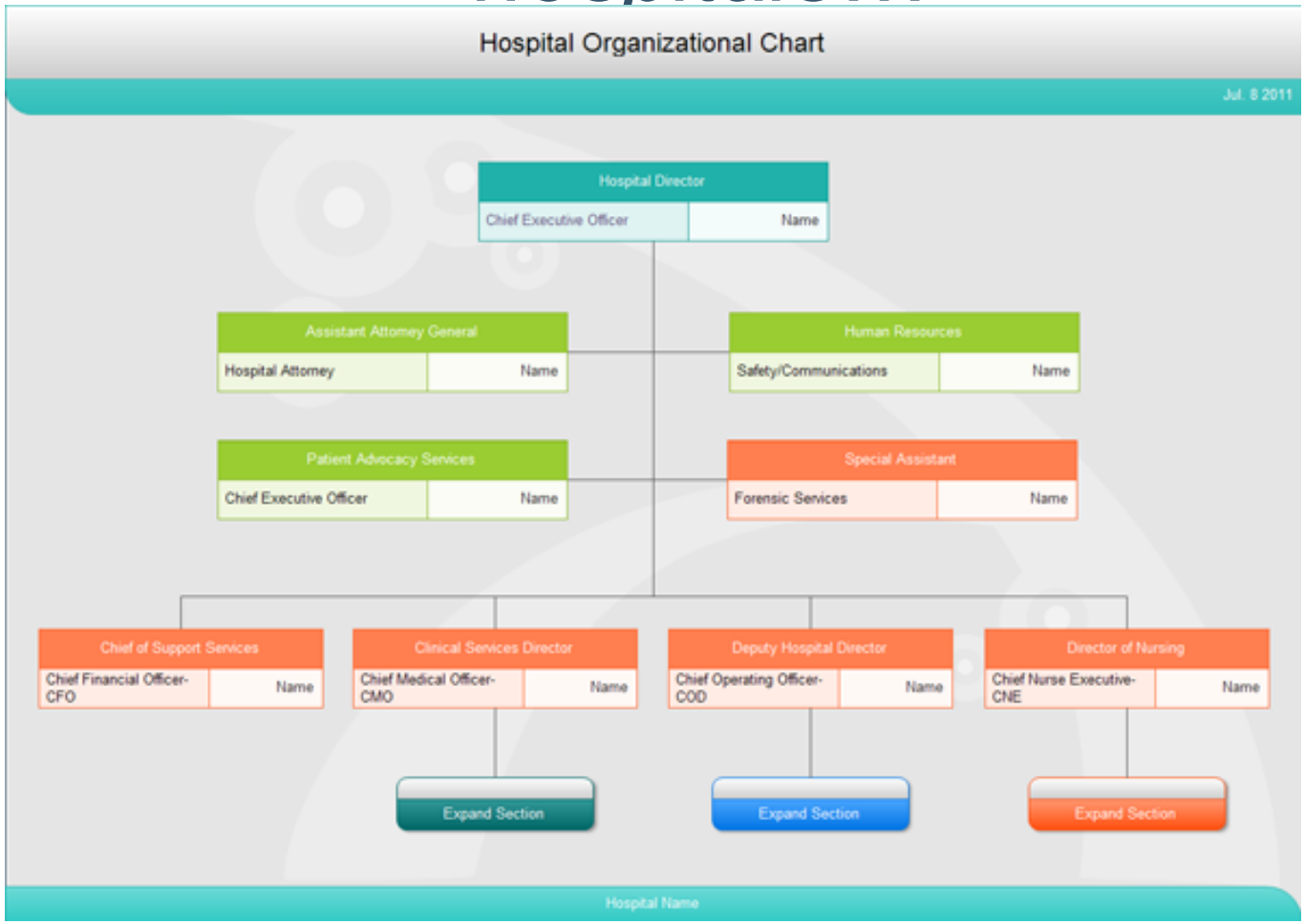
1 - 10^{-4} := 9.999 non-failures in 10.000 events

Safety-II = Ability to succeed under varying conditions.

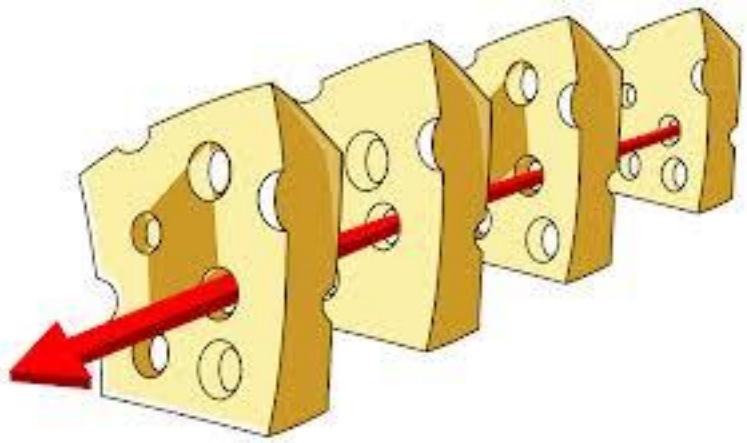
Focus is on what goes right. Use that to understand everyday performance, to do better and to be safer.

Safety and core business help each other. Learning uses most of the data available

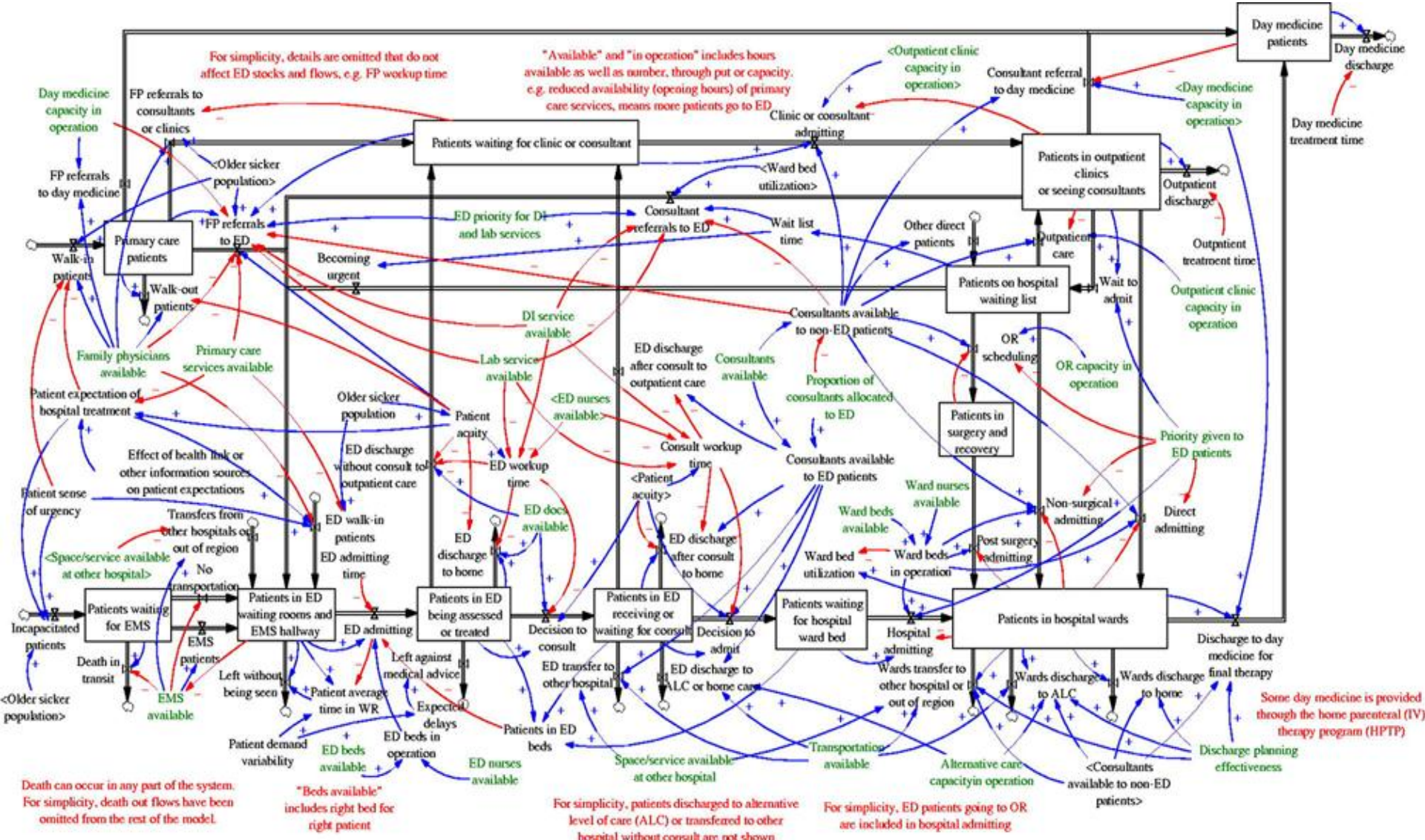
This is the way we usually see our hospitals…



and this is how we deal with error …



But healthcare really looks like this …



work as imagined vs. work as done

A Paradigm Shift

- Are patients truly just passengers on the healthcare aeroplane?
- They profoundly impact the nature of the care that is delivered, how it is delivered and the standard to which it is delivered.
- They are a participant **in**, not just a subject **of** care.
- No other system has its product (in our case patient care) so defined by the variability of the customer (the patient) who is also the primary input into the process.

A Paradigm Shift continued…

- In the aviation analogy, it could be said that in terms of the process of health care, the patient has more in common with the aeroplane than the passenger.
- Is it more appropriate to place “care” at the centre of the health care system and to characterise the patient as an element of that system?

How do we describe the system we work in?

- Complex
- Sticky…interconnected and interrelated
- Edge of Chaos…where best work is done
- Self Organising
- Emergent
- Butterfly effect…outcomes difficult to predict
- Lots of different micro/macrosystems playing out over different time frames

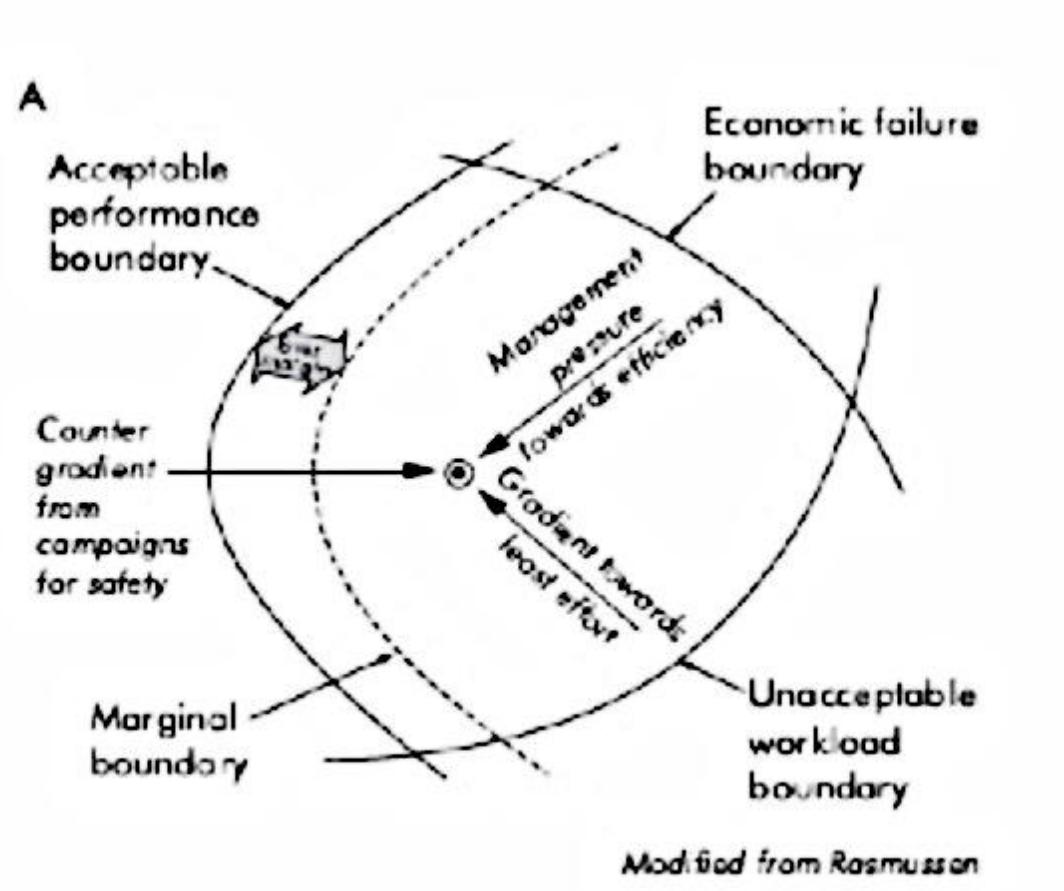
Healthcare as Complex Adaptive System

- Is this our world?
- Some hierarchical / linear / mechanical elements still exist in CAS
- The system responds to an insult by reaching a new steady state which is similar to before but in some ways different…it will **Learn** & **Adapt**

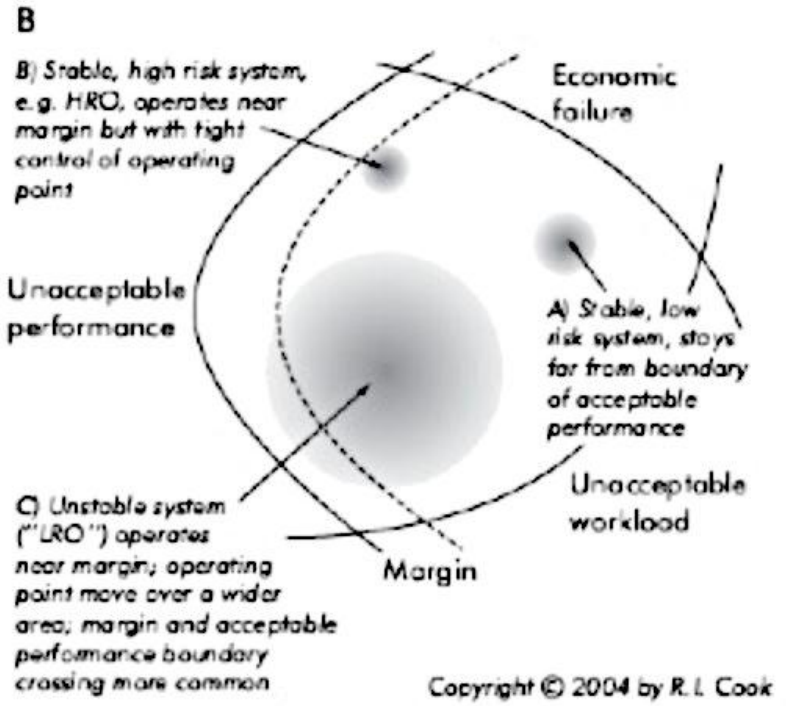
The state of play

- WAI (Work as Imagined) vs WAD (Work as Done) clinicians are from Mars & managers are from Venus
- Unacceptable outcomes in healthcare (not just us, but everywhere)
- Learning about what goes wrong rather then what goes right
- Retrospective analysis…we only learn after something bad happens!!
- Linear approach to safety…rules & systems….which are compromised by drive toward efficiency

Edge of Chaos & Law of Stretched Systems



The Law of Stretched Systems



systems under pressure move back to the ‘edge of the performance envelope’
Law of Stretched Systems (Woods 2002)

It's all about the Margin…

- Work as Imagined (WAI)…Equilibrium
- Work as Done (WAD)…On the Edge

- What skills do we need to work in this way?
- We need to plan for systems operation at edge
- Resilience vs Burnout
- Define the safety margin & the accident margin collaboratively
- Can safety and efficiency coexist??

We need to become Resilient

- What does resilience in healthcare systems look like? No one is really sure!!
- Locally, we are adding to the evolving picture

The Ten C’s

We have attempted to describe the behavioural qualities of the agents in the system that promote resilience, they are the 10C’s.

- The 10C’s model is based on CAS theory and describes the traits of Resilient systems in healthcare

The 10C's

- Cohesion
- Clear Ownership
- Communication
- Cognition
- Challenge
- Compliance
- Competence
- Culture
- Constraints
- Capture

Complex mutual Interdependence

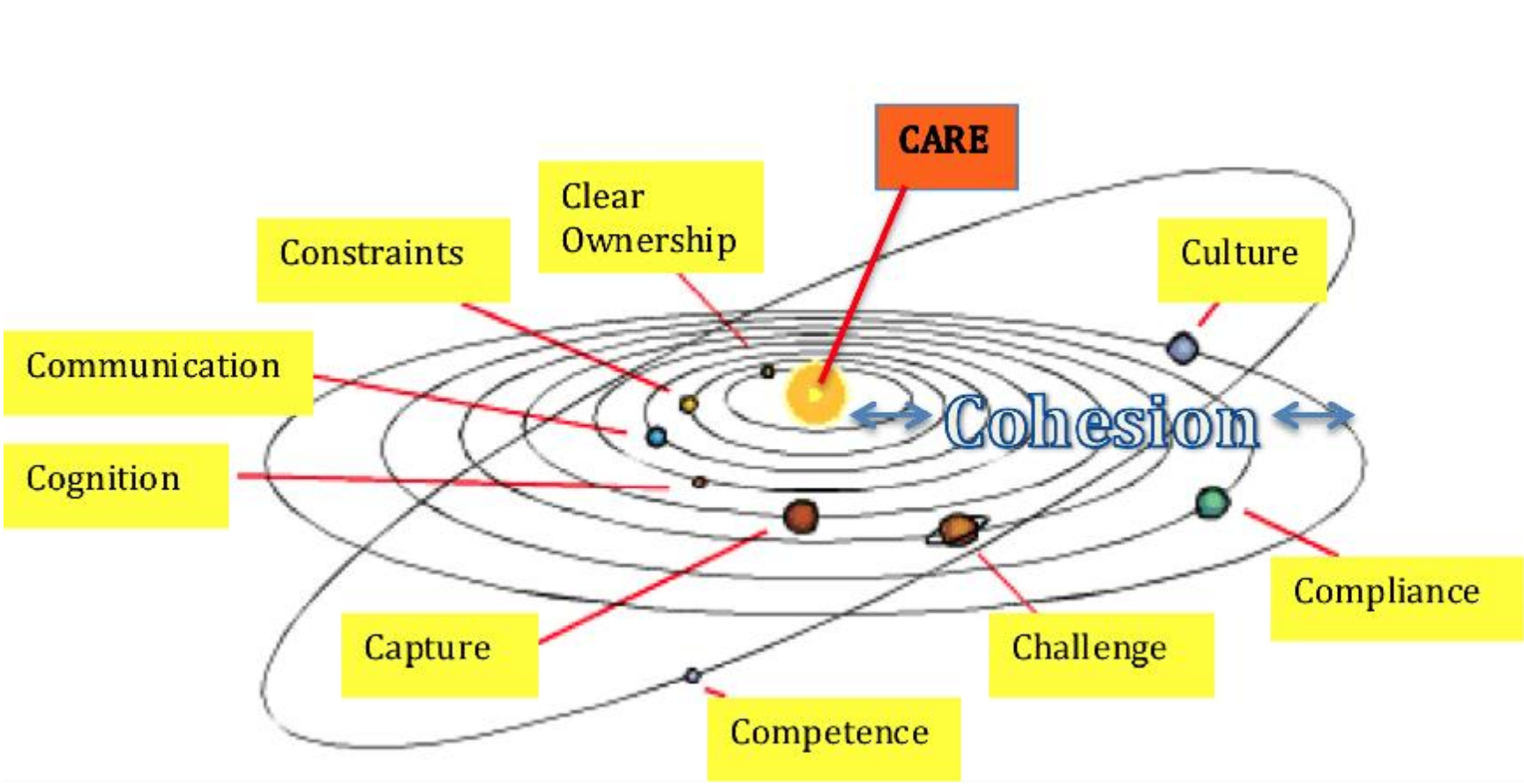
Compensate

Consequence

The Force Multiplier

Cohesion

The Ten C's


CARE
Clear Ownership
Constraints
Culture
Communication
Cohesion
Cognition
Compliance
Capture
Challenge
Competence

Some Further Thoughts

- The key to developing systemic resilience may be by increasing the resilience of the agents within the System.
- We propose to do this by teaching them the “rules” of the system.
- Recognition of operation at the Edge of Chaos provides the “declarative knowledge” to develop competence in managing through this state of disequilibrium.

What we have picked up

- Resilient Health Care as a Concept
- Safety One and Safety Two
- Health Care as a Complex Adaptive System

Light Bulbs

- Diminishing returns in RCA's
- Compensation between factors – non linear
- Patient vs Care at centre
- CASs function with few simple rules
- Individual vs System Resilience
- Non linear implementation methods
- 'Edge of Chaos'
- "Declarative" and "procedural" knowledge
- Are we currently teaching people to work in a "world as imagined" rather than a real world… Sacred vs Profane

Summary

- Healthcare is a Complex Adaptive System
- Resilience means getting the right outcome despite things going wrong
- We need to focus on what goes right as well as what things go wrong
- We need to understand better how to lead and manage in a Complex Adaptive System

In Conclusion

- Maybe if we understand the system better, we have a better chance of improving it